

Master Thesis
**Digital Explorers: International Mobility of
Knowledge Workers in the Dutch Game Industry**

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Abstract. In order to stimulate knowledge creation and innovation in creative industries it is important to increase the quality of human capital. To do so internationalization is important. This research aims to determine what drives knowledge workers in the Dutch game industry to migrate and what drives them to return home. From previous literature four main factors have been identified that determine the intention to migrate, i.e. an economic factor, a personality factor, a social factor and an environmental factor. By creating a database of over 500 employees active in the Dutch game industry from 1984 onwards and tracking them over time it has been determined through quantitative statistical analysis whether or not and to what extent each factor has an impact. From the binary logistic regression it could be concluded that the opportunity for monetary gains, the opportunity for achievement and the presence of migration related social capital positively influence the chances of migration, while the formation of place attachment acts as an inhibitor of both migration and return. Furthermore it has been identified that artist and employees wanting to work on adventure, RPG or simulation games are more likely to migrate, while employees wanting to work on action or racing titles are more likely to stay in the Netherlands. Based on these findings a policy and management advice has been written, offering insights on how to best retain employees and prevent them from migrating and how to best incentivise employees to return.

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1 Introduction

Video games are big business. With a global revenue of over \$66 billion in 2012 [43] the video game industry has long surpassed other popular entertainment industries such as the music and film industry with a global revenue of \$16 billion [58] and \$38 billion [56] respectively. Not only does the video game industry garner a large amount of revenue, it also displays impressive growth with an expected global revenue of over \$100 billion in 2017 [44].

The Dutch government has also realised the potential of the video game industry and has designated it, together with other creative industries such as design, media and entertainment, fashion and architecture, as an integral part of the “topsector creatieve industrie” [53]. The top sector programme is meant to stimulate cooperation between government, research institutes and the industry in order to improve knowledge creation and innovation [52].

As part of this programme a human capital agenda (HCA) has been constructed which details how to improve human capital for the creative sector. What is noteworthy is that there is no quantitative shortage of human capital in the creative sector, but rather it is the quality of the human capital where opportunities for improvement exist [51]. In order to improve the quality of human capital the HCA notes that besides improvements to the educational offerings, internationalization should be stimulated. According to the HCA “*internationalization is a must for the creative industry, not a choice*” [51] (p.14). International competences of creative talents bring about a boost in quality as it provides more diversity as these talents can combine insights from different cultures [51].

Being part of the creative sector means this also applies to the Dutch video game industry. Employees in the video game industry can be described as knowledge workers, which are defined as “*Individuals who add to a company’s products and services by applying their knowledge*” [22] or more simply put “*People who use their heads more than their hands to produce value*” [30]. To gain a more internationally oriented human capital firms can attract knowledge workers from abroad. This is known as “*brain gain*” [38]. However, since the Dutch video game industry is still developing, with only 3% of the firms having over 50 employees and 69% having 5 or less employees [34], most firms do not have the resources to attract highly skilled foreign knowledge workers. Apart from the difficulties video game firms face to attract foreign knowledge workers, there

is also a serious risk that, reversely, they lose their employees to foreign firms, known as “*brain drain*”[32].

Previous literature on brain gain and brain drain has focused on developing countries. It has shown that highly skilled knowledge workers migrate to a more developed nation to pursue better opportunities [1][6]. While it long has been thought that this phenomenon has a negative effect on the migrant’s home country, more recent “*brain circulation*” theory suggests otherwise [21][33][55]. According to this line of thought migrated knowledge workers eventually return to their home country and use their newly acquired knowledge, insights and experience to stimulate development back home. Similarly, one may ask to what extent brain drain in the Dutch video game industry should be considered as a policy problem, since a large portion of those leaving The Netherlands may return in the future, enriched with experience, networks and human capital gained abroad.

While ample literature exists on the effects of migration and returnees on the economies of nations and the development of industries [54][55], there exists no clear overview on the dynamics of migration and returnees. More specifically, while it is understood that the creative industries differs from traditional industries in the forming of clusters and thus knowledge worker mobilization [27][41], few empirical studies exist to test these claims. To garner more insight in this area the Dutch video game industry is used as a case, resulting in the following two research questions:

- What determines the decision by a knowledge worker in the Dutch video game industry to migrate?
- What determines the decision by a knowledge worker in the Dutch video game industry to return to the Netherlands?

The Dutch video game industry has been selected as the case to observe because it is a young, still developing industry with an interesting mixture of small enterprises and a few large firms [34]. This study will not only provide insights in the international mobility of employees in the Dutch videogame industry, but will also provide an indicator of the international mobility for other creative industries. Managers and policy-makers could utilize these insights to increase the quality of their human capital.

This study adds to the existing literature by providing additional empirical insights on international mobility of an industry in the creative

sector on which empirical analyses are scarce. Furthermore, by combining previously written literature on motivations for migration and presenting it as a clear conceptual model the literature becomes more accessible and easier to grasp.

Next the theoretical background will be discussed and a conceptual model along with a set of hypotheses to be tested are constructed. Then, the method for executing this study is discussed, which is followed by a description and analysis of the results. Finally, the research is reflected upon in the discussion and the research questions are answered in the conclusion along with an advice for management and policymakers as well as some suggestions for further research.

2 Theory

2.1 Case overview

The Dutch game industry is a small but ever growing industry. As of 2014 there are roughly 330 game companies active in the Netherlands, employing about 3000 people. The turnover of this industry in the Netherlands was estimated to be around 200 million euros in 2011 [11]. When compared to the international market the Netherlands logically falls short of the large powerhouses such as the USA (31,000 jobs) and Canada (16,000 jobs). However when compared to other European regions such as the UK, France and Scandinavia the Dutch game industry seems to be about the same in size [11].

When looking more closely it becomes clear that only about 250 companies are actually developing games in the Netherlands. The other firms do not develop games themselves but rather provide services in various degrees. These firms could for example be publishers, distributors or technology suppliers [34]. This also means that the total amount of creative knowledge workers in the Dutch game industry actually working on game development is not roughly 3000 people, but rather between 1600 and 2000 people [34]. That is still a large amount of people, but a lot less than one would initially think considering the amount of firms present. In fact, only 3% of all game development firms in the Netherlands have more than 50 employees and 70% have five or less employees [34]. Yet, even though the overall average firm size is small, over 8000 students were enrolled in a games related study programme in 2012 [11]. Although it is likely that most of those students will find employment in another field, it also indicates the ongoing growth of the Dutch game industry.

When looking further in depth into the actual game development firms, it becomes apparent that slightly more than half of all game development firms create so-called serious games instead of entertainment games [34]. The development of these games, with a focus on education and training, does typically occur a lot less in other countries when compared to the development of entertainment games [34]. This can be considered a strength of the Dutch game development industry, but it could also be indicative of the fact that the Dutch entertainment game sector is lagging behind. Furthermore, serious games are often developed by a division of a larger firm, such as for example the Dutch tax collector's agency [5] and IT related consultancy firms [20], and not necessarily by a dedicated game development firm.



Fig. 1. The game production process [17]

Typically game development occurs in a project based environment. The game development process is illustrated in figure 1 and starts with the pre-production, where the general concept is worked out and the production plan and risk assessment are created. After this phase, the actual production phase begins where the game itself is being created. The testing phase is next, where the game is being validated and eventually released. Finally there is the wrap-up phase where the results and the production process are being analysed and lessons are learned [17]. It

should be noted that this production process is very iterative and does not occur as a straight process, but instead feedback is generated and implemented continuously for example by using the SCRUM software development method [17].

As development teams in the Netherlands are generally small firms they are very horizontally orientated. However as firms grow some sort of hierarchy is usually formed, as shown in figure 2. For example lead artists oversee teams of standard artists, while the art director oversees the entire art department. Producers oversee the development of the entire project [17].

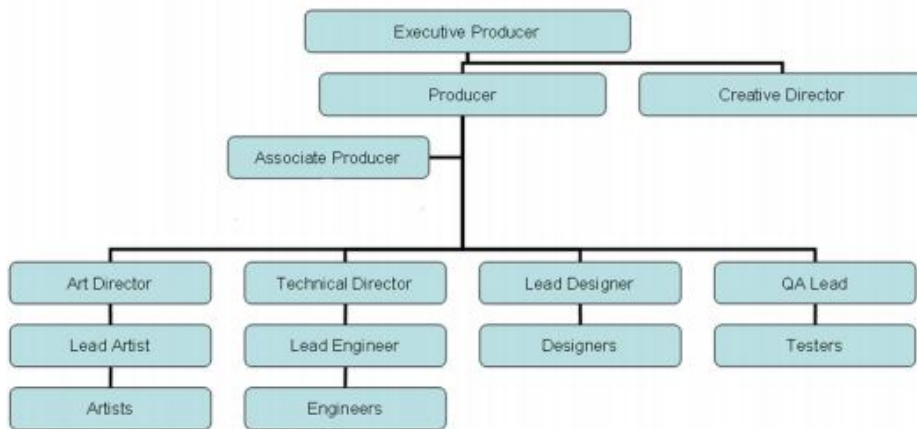


Fig. 2. Structure of a game development team [17]

As games are being developed on a project basis, teams are often restructured after the end of a project, or sometimes after the end of a project phase. This means that after completing a project employees can either stay with their current employer to work on the next project or they can leave to go work for another studio (or go work in a different industry altogether). Opportunities abroad are plentiful as well.

2.2 Migration and return theory

While there is no clear overview of the conditions and reasons under which game development employees, or creative knowledge workers in general, migrate or return there are several general theories concerning migration motives. Most theories make a distinction between push and

pull factors. The former being circumstances in the country of origin that spur someone to leave such as poor economics and employment options or political unrest and war [16][49][63], the later being features of the country of destination that attract someone to move there, which can either be economic or non-economic [49]. For this reason push factors are more prevalent in developing and former socialist countries than in western societies, such as the Netherlands [45].

Economic motivations for migration may seem straightforward, but it is not all simply about making more money. Tied to economic motivation is the intrinsic achievement motivation [64], which in turn is tied to a 'search for success' attitude [4]. Among others achievement motivations can manifest themselves in trying to rise through the ranks into a position of power, earning a reputation or simply by trying to make a difference. By striving to achieve and succeed immigrants will fulfil their economic motivations by creating economic success as well [64].

Recent studies of foreign knowledge workers in the Netherlands however suggests that it is only the top 10% of foreign knowledge workers, the so called "highly skilled" and "super skilled", that have on average larger earnings than their native counterparts. The average foreign knowledge worker falls just short of the native knowledge worker in their earnings [49]. In fact it should be noted that immigrants in general do not overtake natives in terms of earnings[64]. While they show a greater growth in earnings than natives they start at a significant disadvantage taking years if not decades to catch up with their native counterparts [8][23]. Therefore it can be argued that when there is no significant difference in income between nations, or when the nation of origin provides a high income to begin with, as is the fact with this case [7], possible monetary gains are not a factor that influence the intention to migrate.

However, economic matching theory suggests otherwise. According to matching theory individuals look for a firm that is looking for exactly what they have to offer, in order to form a mutually beneficial relationship [46]. As there are always more firms abroad the chance for a good match and therefore a greater earning potential is also more likely to be found abroad, thereby providing incentive to migrate. Based on this the following two hypotheses can be drawn for the economical factor:

- **H1:** The prospect of monetary gains does positively affect the intention to migrate.

- **H2:** The opportunity for achievement does positively impact the intention to migrate.

While economic motivations are important for people to decide whether to migrate or not they do not singlehandedly determine this [35][63], as that would imply that *"man is economically rational, an economic maximizer, and that he will perceive and evaluate migration on this basis"* [57] (pp. 59-60). More recently literature has been focusing on non-economic motivations for migration.

Non-economic motivations for migration are more fuzzy in nature, as they can entail a wide variety of factors. Non-economic motivations include, but are not limited to, cultural factors, opportunity for international experience, a desire for adventure and travel, opportunity for learning new skills and family factors [15][16][63]. Roughly they can be divided into a personality factor, a social factor and an environmental factor.

It is clear that besides the economic, environmental and social factors the personality of the migrant also plays a large role in whether or not an employee would consider migration [35]. When looking at human behaviour as being determined by a set of three major motives [36] people displaying the migrant type of personality are expected to be driven particularly by a desire for achievement and power. The former being the intrinsic drive to succeed and accomplish something and the latter being the drive to impact and have control and influence over others [35].

Migrants are expected to be less driven by the affiliation motive, i.e. the desire to form and maintain social ties [35]. A study comparing attachment styles between those who migrated from Poland to come work in the Netherlands has shown that migrants possess a more secure and more dismissive attachment style [47]. A secure attachment style indicates that a person is more self-secure, more self-efficient and more open to new unfamiliar contacts. A dismissive attachment style on the other hand indicates that a person places less value in the importance of intimate and close social ties and is less dependent on others [47]. This complies with a lesser affiliation motive that is expected to be present in migrants [35].

Furthermore migrant type personalities show a neophilia trait, which means they are attracted to new experiences [35]. People with this trait are more open to change, are more likely to take risks and in general have a more novelty and sensation seeking personality [35]. While the effects of this trait on the intention to migrate have not yet been sufficiently

empirically tested one study, looking into the desires of Croatian college students to leave their home country, did conclude that a high neophilia trait is indeed a predictor for the desire to migrate [24]. Based on this and the factors described above the following hypotheses can be formulated for the personality factor:

- **H3:** A strong desire to achieve positively affects the intention to migrate.
- **H4:** A strong desire for power positively affects the intention to migrate.
- **H5:** A strong desire for affiliation negatively affects the intention to migrate.
- **H6:** Having a neophile trait positively affects the intention to migrate.

Migrants assess their decision to migrate by framing their potential gains and losses. Their intention to migrate is heavily influenced by this. For instance, someone who stands a lot to lose and has little to gain by migrating will only do so out of desperation, while someone who has nothing to lose and sees opportunities abroad will be much more motivated [16]. Figure 3 shows the four types of migration as defined by the motivations.

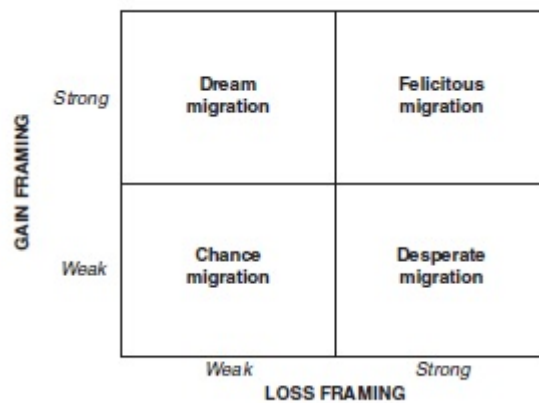


Fig. 3. Typology of migration by motivation [16]

From research into migration from India to Canada it became clear that career-related gains, a higher standard of living and monetary gains were the most prominently perceived gains for migrating. What is noteworthy is that the perceived gains do not entirely match with why the respondents choose Canada as their destination. 39% Indicated that they choose to go to Canada because they had relatives or friends in Canada, while only 7% indicated that they perceived joining their family members as a gain [63]. Therefore it can be argued that social factors do not strongly influence the decision to migrate, but do strongly influence the decision to which country to migrate.

It has for example been shown that when a person has a child the intention of migrating without his or her family is significantly lower than for a person without children. It does not significantly affect the intention of migrating with their family [2]. It has also been shown that having migration related social capital at the country of origin, such as business partners wanting to move, will increase the intention of migration and having migration related social capital at the country of destination will also strengthen the intention to migrate. Having non-migration related social capital at either the country of origin or destination on the other hand has shown to have no significant on the intention to migrate [2].

It therefore stands to reason that if an employee works at a firm that has a strong organizational proximity to a firm abroad, the chances of having migration related social capital will increase. Organizational proximity is defined as *“the extent to which relations are shared in an organizational arrangement, either within or between organizations”* (pp. 65) [10]. In total 45% of game development firms in the Netherlands indicate to collaborate with other studios, in the Netherlands or abroad, to some degree [12]. It is therefore likely that employees active with those firms have more and higher value migration related social capital. Based on this the following hypothesis for the social factor can be constructed:

•**H7** Having migration related social capital positively affects the intention to migrate.

Beside economic, personality and social factors there is also an environmental factor at play. A recent study from the Dutch Environmental Assessment Agency has shown that an attractive living environment also is a large factor for where employees chose to migrate to, although it does not show whether or not it also influences the intention to migrate [49]. What features international knowledge workers, and creative knowledge

workers more specifically, are exactly attracted to is still a point of discussion. For quite some time it has been thought it were the so called "soft factors", e.g. cultural and social facilities and amenities, that were key in attracting international knowledge workers [19][27][28]. More recent studies however show that there may not be such a disparity between international migrants and national migrants and that the soft factors are secondary to economic interests [42][49]. However, in any case it is clear that some cities are perceived as more attractive than other cities [14][40][49], making it likely that the potential destination having desirable environmental features increases the intention to migrate.

Furthermore it has been shown that having desirable features in the country of origin can result in place attachment, which is how bonded someone is to their environment and serves as an inhibitor for migration [35]. Places are not simply physical spaces or locations, but "*can be understood as nodal points within networks of social relations that have a particular significance for a person or group of people*" [25] (pp. 137). People get attached not only socially, but also psychologically. [25]. The value of places is more symbolic and emotional than practical and material [62], making it difficult for some to abandon their country of origin [35]. Based on this the following hypotheses can be constructed for the environmental factor:

- H8** The presence of desirable environmental features positively affect the intention to migrate.

- H9** The presence of a high place attachment negatively affects the intention to migrate.

Literature on motivations to return is not as prevalent as literature on why people migrate. In part this is because these motivations are for the most part the same as the motivations for migration as established above. Economic reasons and the search for a higher standard of living are still the driving forces to move [50]. It has been shown that migrants will often only return to their country of origin when a solid framework with sufficient absorptive capabilities has been developed so that opportunities for economic gain exist [33].

However, there are some differences. While social capital has no significant effect on the intention to migrate, it does however affect the duration of the stay abroad. Having social capital in the country of origin makes it more likely that people opt for a temporary stay abroad, thereby making

social capital an important incentive to return [2][50]. Furthermore the idea of identity and what "home" is also plays an instrumental part [50]. This ties directly to the willingness to integrate, which is highly determined by the migration typology of figure 3. People who have performed dream migration are more likely to successfully integrate in the new society while people who have migrated under less ideal circumstances show more resistance to integration [16]. Of course the level of integration in a certain society is also directly linked with the place attachment an individual develops, which also serves as an inhibitor for return migration.

As with general migration theory, for the creative class, which includes knowledge workers in the game industry, economic factors also play an important part in deciding whether or not to migrate. It was shown that environmental factors are more determinant in the duration of the stay and retaining the migrants while the social factor is more determinant of where to migrate to in combination with job availability [26][40]. Retaining the creative workforce is key, as they show an increased sense of mobility when compared to other types of industry with almost half of the creative workforce indicating to leave within 3 years [40].

The creative class migrates for a job rather than for a place to stay [29][9]. These claims based on empirical evidence contradict the assumption made by Florida stating that the creative class migrates primarily to locations with a high "people climate" and a strong cultural profile [27]. Florida also claims that the creative class is more mobile than more traditional industries. While this is supported by some [31][40], it is contested by others [9][21][29].

As the literature on migration motivation for knowledge workers in creative industries is conflicted, the conceptual model presented in figure 4 is based on the established hypotheses, which in turn are based on more traditional migration theories. Confirming or rejecting the hypotheses will however allow for insights to be gathered on the creative class migration debate.

3 Method

3.1 Research design

The aim of this research is to investigate what determines whether a knowledge worker in the Dutch game industry migrates abroad and whether he/she returns to his/her country of origin. In order to identify which factors play a role in this phenomenon an explorative approach is utilized, as it allows for the relevant concepts as determined in the theory section

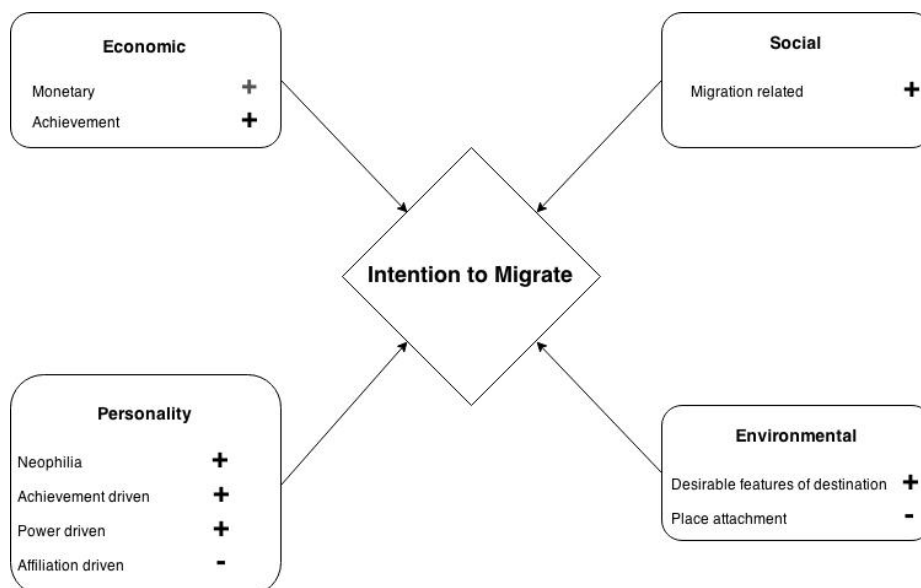


Fig. 4. Determinants of migration intention

and presented in the conceptual model to be examined and the corresponding hypotheses to be tested, as well as allowing for new concepts to be identified. By keeping an open mind and actively searching for other explanations instead of merely focusing on the predefined concepts, one allows for a richer explanation to arise as concepts may be identified which were previously overlooked.

For this purpose a quantitative study will be conducted which will provide insights in the conditions under which employees migrate and return. Testing the hypotheses set in this study and identifying potential additional concepts will allow for the central research questions to be answered.

3.2 Data collection

In order to assess the conditions under which employees migrate and return a database will be constructed. This database includes data of all employees active in the Dutch game industry from the period 1984-2000, as well as data from any employee that has ever worked for a Dutch game company founded in this period of time. This means that up until the year 2000 there is a complete set of data, as it covers the entire industry as far as this research has identified, and after the year 2000 there is

a selection of employees which percentage of coverage decreases as the years progress and newer studios are founded which are not included in the analysis. As the data was collected on a firm by firm basis, this was deemed appropriate as it would allow for a complete data set, including every single employee that ever worked in the Dutch game industry, to be constructed more easily in the future. While it would be preferential to have access to data for the entire population of this study, the nature of this research ensures that a broad selection would deliver satisfactory results as well. This study looks at the phenomenon of migration and return at an individual level and tracks a total of 532 employees from their very first game in the industry until the most recent data available. Doing so allows for a temporal analysis of the migration patterns of the selected employees. The database is based on the information available on mobygames.com [39]. This website provides an exhaustive collection of video game credits, which provides insight with regards to which projects and under which firms employees were active.

From the Mobygames database the data concerning the name of the studio, the name of the project, the year of the project, the genre, the employee's name, the employee's role, collaborating studios and the publishers studio name is gathered. Since the Mobygames database does not provide any indication of geographical location, Google is used to track down the locations of where the employees have been active by searching for the studio names. In total this resulted in 2823 entries, with 532 different employees collectively working on 897 different games at 372 different game studios.

3.3 Data preparation

While the literature study revealed a set of hypotheses to be tested, they are not all possible to be tested with a statistical data analysis. While this does not render the constructed conceptual model null, it does reduce its explanatory power. To best be able to test the hypotheses some will have to be interpreted differently or in a specific way to obtain measurable data.

As the data collected is not immediately ready for analysis it has to be prepared first. In order to do this Microsoft Excel is used. The data is stored on a project basis, which means that for every employee a different line is used per project. While most variables such as project-name, studio-name and year could easily be entered without requiring extra modification, some variables required more attention.

For the economic factors, access to employee salaries could not be obtained. Therefore whether or not the prospect of monetary gains has a positive or negative impact on the intention to migrate will be unable to be determined in full. However, it can safely be assumed that as years progress and an employee moves from project to project his monetary gains will increase. If he/she is asked or is willing to move abroad for a new job, it is to be expected that a significant increase in monetary gains will have been offered as well.

Furthermore the variable **promotion** will be used to test **H1** and **H2**, which indicate the positive impact of the prospect of monetary gains and the prospect of opportunities for achievement respectively. When a promotion is gained it is to be expected that an employee's salary and compensation package increase in value as well. As a promotion also entails more responsibility, it also means that an employee will have more impact on a project and therefore has more opportunities for achievement. The promotion variable is obtained by looking at the job functions of the employees and sorting them into ranks. The ranks used range from "standard" to "lead" to "director", as well as an "additional" and "special thanks" rank. This terminology is common in the industry and allows for the indication of whether or not someone has made a promotion. For the creation of the promotion variable a dummy variable has been created which was filled out by hand by looking at the increase of the ranks through time. A value of 1 indicates that a promotion took place, while a value of 0 indicates that no promotion took place. The latter two ranks, i.e. "additional" and "special thanks", have not been used in the creation of the promotion variable as those ranks indicate the employee was not involved with the project in a full time capacity.

The personality factors, described in **H3**, **H4**, **H5** and **H6** are more difficult to measure as they are intrinsic in nature. While strong achievement and power motives may be in some way linked to the promotion variable and the opportunity to achieve in the economical factors, it is impossible to measure through quantitative data and analysis what goes on in an employee's head. Therefore, these motives as well as the affiliation and neophilia motives and their respective hypotheses will not be tested within this research.

While it may be impossible to obtain data regarding non-migration related social capital from the Mobygames database, it provides a good source to create an overview of migration related social capital. By looking at studios an employee has worked for and with which studios it has collaborated over time it can be identified whether or not organizational

proximity is a factor for determining whether or not an employee migrates or returns. This is done by once again creating a dummy variable called **collaboration**, where a value of 1 indicates that an employee has collaborated with a studio before, while a value of 0 indicates that an employee has not collaborated with a studio before. While not a perfect measure of migration related social capital, it does serve as a proxy for this concept thereby allowing for **H7** to be tested.

Finally, for the environmental factors **H8**, the hypothesis regarding environmental desirability has not been tested. While data regarding the location of the firms employees end up working is easily obtained, data regarding specific features that draw them there is not and would take additional qualitative research. With regards to **H9**, literature has shown that place attachment is a major deterrent for migration, which can be expected to increase in strength over time. This means that time is also an important factor to consider as it is likely that the longer that someone has been at a certain place the more extreme the incentives to migrate have to be. While not a perfect measure of place attachment, it does serve as a proxy for this concept. To account for the temporal factor, the amount of time someone has stayed in the Netherlands and has stayed abroad has also been tracked. This was done by subtracting the earliest instance of someone being in the Netherlands/abroad from the actual year at that time. This resulted in two new variables called **time NL** and **time abroad** which indicates the amount of years someone was in the Netherlands/abroad at any given time, which allows for the exact number of years to be determined when someone migrates or returns.

Besides the factors identified in the literature, several other variables were identified in the construction of the database. The type of job function of the employees is one such variable. As the function names of the roles employees occupy within a project vary wildly from project to project they had to be put in basic categories. In total nine different generic categories have been constructed for this purpose and have been set up as dummy variables, named after the different categories. These include artist, audio, business, designer, producer, programmer, tester, special thanks and function missing. The latter two can be dismissed as function missing could mean anything and special thanks entails a insignificant contribution in comparison with the other categories.

Another variable that was identified in the creation of the database is the genre a project fits in. The genres used in this research are bound by the genres used by the Mobygames database. The genres used can be separated into eight different categories. The genres used are Action,

Adventure, Educational, Racing, RPG (Role-Playing-Game), Simulation, Sports and Strategy. In order to more easily analyze the impact of the genres, dummy variables have been created for each category as well.

Furthermore, some employees have worked abroad before coming to the Netherlands. Since it does not really constitute as returning to the Netherlands as they have never worked there before (at least not in the game industry), a new dummy variable called **experience abroad** was created which indicates whether or not someone has had previous work experience abroad.

3.4 Data analysis

The constructed database will be used to track the migration and return habits of the employees. Through statistical regression analysis a pattern is identified, indicating the relationship between the independent variables (the factors) and the dependent variable (migrate or return) which determines the conditions under which employees migrate and return. [13]. As the dependent variable is binary in nature, the employee can either have been migrated/returned or he/she has not, a binary logistic regression is used. This method is fairly straightforward, but it provides clear and solid outcomes.

To indicate how well the model fits the data Nagelkerke's R-squared measure is used. While the Cox-Snell R-squared may generally be the more used measure it is bound by an upper limit which is not equal to 1 and can differ per analysis. Therefore by dividing the Cox-Snell R-squared by its upper limit Nagelkerke's R-squared is created which measures the goodness of fit between a value of 0 and 1, making for easy comparison [3].

Furthermore a geographical analysis will also be performed to sketch a picture of where the employees where in the world employees choose to migrate to and from where they come back. This will provide additional insights in the environmental factor that determines the intention to migrate and return.

3.5 Quality of research

External reliability is the degree to which a study can be replicated [13]. While this is generally quite difficult in the social sciences, in this research the used methods are extensively described serving as guidelines for replicating the research. For this research the important concepts and

indicators and the data collection and analysis method have been described in detail so that the research in principle can be replicated.

Internal reliability refers to the fact that similar results are produced if the study replicated by someone else, i.e. it refers to the consistency of the research [13]. Since this research is a quantitative statistical analysis, the data obtained and the analyses performed leave little to no room for interpretation. Therefore the internal reliability is strong within this study.

Internal validity indicates that the conclusions drawn from the research are warranted, which means that there is a good match between the observations and the answers given to the research question. This can for example be done by observing different cases [13]. In this research multiple cases, or employees, will be analyzed. This means that the induction problem will be minimized as much as possible and the internal validity will be warranted.

External validity is the degree to which the research is generalizable [13]. As this study only includes the Dutch game industry, this study is only generalizable to this particular industry. While the conclusions are not generalizable, they may provide an indication of what the international mobilization dynamics look like in other Dutch creative industries. In other countries there may be other institutions and regulations influencing the behavior of knowledge workers.

4 Results

4.1 Overview

In total the data collection process yielded 2823 entries, referred to here as events. An event is understood as an instance of an employee working on a specific game. That means that for every game a employee worked on a new event was created. This allowed for the instances where an employee had migrated or returned, the first game abroad or back in the Netherlands respectively, to be isolated and compared with the events where this did not occur. Of the 532 different employees observed 171 employees (32.14%) migrated at some point in time with 11 employees migrating a multitude of times, resulting in a total of 186 events observed of employees migrating abroad. Of those 171 employees that migrated a total of 32 employees (18.71%) returned to the Netherlands with 5 employees returning multiple times, resulting in a total of 38 events of employees returning observed.

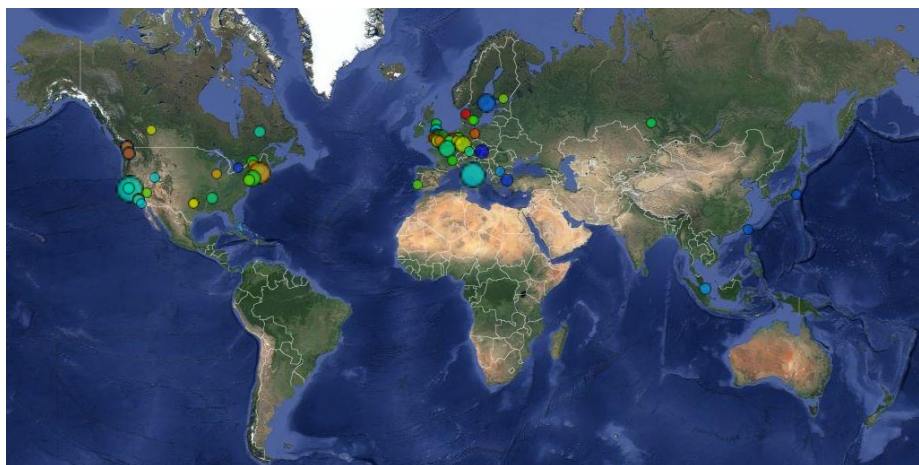


Fig. 5. Destinations of Migration

As seen in figure 5 employees migrated to go work all over the world. The size of the circles indicates the amount of employees that migrated to that specific location. The larger the circle, the more employees migrated there. Especially the US and the UK have proven to be popular destinations. This makes sense since there is virtually no language barrier and the video game industry in these countries is the most developed of the Western world [59]. Table 1 provides an overview of the top countries that employees have chosen as destination for their migration while table 2 gives a more specific overview of the 20 most popular cities within these countries. The full overview can be found in the appendix.

What is notable is that the pattern of migration has concentrated itself in certain areas instead of equally spreading around the world. These so called clusters are mainly centred around large cities on the East and West coast of the US as well as in the London area. The formation of business clusters can lead to increased productivity and innovation and is a phenomenon found throughout many industries [48]. Therefore it is no surprise to see that the video game industry behaves in a similar fashion.

The formation of clusters around large cities can be seen more up close in figure 6. What is also notable of this figure is the fact that quite a few employees migrate right across the border to Belgium and Germany. Presumably the negative impacts of migration are mitigated a bit by staying relatively close to home, allowing for more frequent visits to friends and family for example.

Table 1. Destinations of migration

Country	Frequency	Percentage
UK	49	26.1%
US	43	22.9%
CA	19	7.4%
DE	14	7.4%
IT	14	5.3%
SE	10	4.8%
FR	9	3.7%
BE	7	3.2%
AT	6	1.6%
FI	3	1.6%
DK	3	1.1%
SG	2	1.1%
BG	2	0.5%
ES	1	0.5%
JP	1	0.5%
PL	1	0.5%
PT	1	0.5%
RU	1	0.5%
TW	1	0.5%
Missing Value	19	10.1%
Total	188	100%

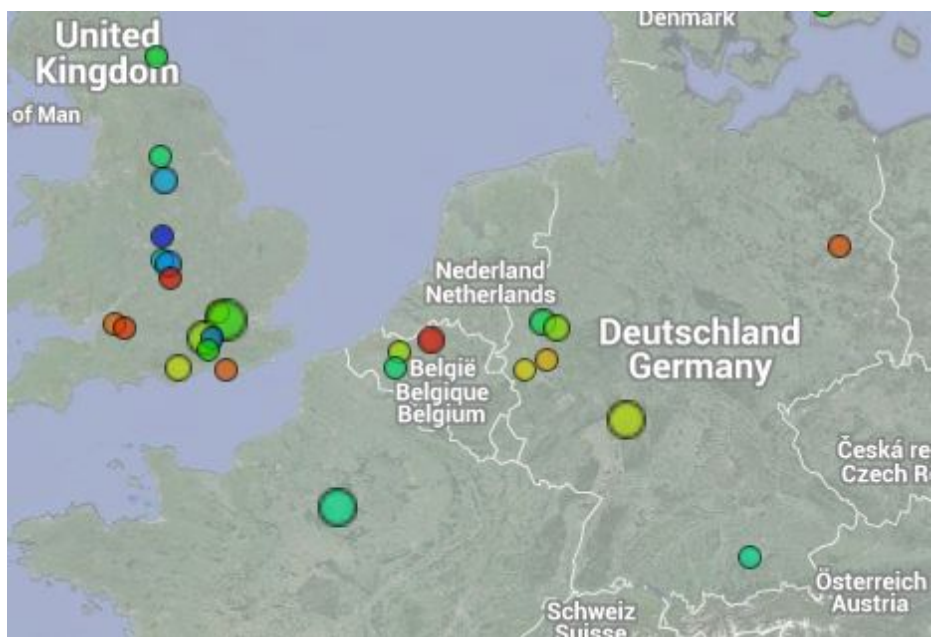
**Fig. 6.** Destinations of Migration

Table 2. Destinations of migration

City	Country	Frequency	Percentage
Redwood City	US	11	5.9%
Rome	IT	10	5.3%
London	UK	9	4.8%
Cambridge	UK	8	4.3%
Stockholm	SE	6	3.2%
Frankfurt am Main	DE	5	2.7%
Guildford	UK	5	2.7%
New York	US	5	2.7%
Paris	FR	5	2.7%
Helsinki	FI	3	1.6%
Montreal	CA	3	1.6%
Oudenaarde	BE	3	1.6%
Oxford	UK	3	1.6%
Santa Monica	US	3	1.6%
Seattle	US	3	1.6%
Southam	UK	3	1.6%
Vancouver	CA	3	1.6%
Vienna	AT	3	1.6%
Antwerpen	BE	2	1.1%
Bellevue	US	2	1.1%

Figure 7 shows the locations from which employees have returned to the Netherlands. The circles mostly correspond with the circles in figure 5, but it is noteworthy that no one has returned from the locations directly across the border, further solidifying the notion that the lack of distance between the location of migration and the country of origin mitigates the negative impacts of migration. It should be noted however that since only the location of migration and return is considered here, it could also very well be possible that the employees initially situated right across the border have moved on to other locations as well.

Before starting the analysis, the data needs to be checked for anomalies. A bivariate correlation check has been performed in order to assure that the variables do not overlap. The highest significant correlation found was between the dummy variable for the audio job function and the variable indicating collaboration has occurred before. Since this correlation was rather low, a Pearson correlation of 0.383, and the variables clearly represent different aspects this was not an issue. Table 3 shows a further descriptive analysis to check for anomalies.

What is notable about table 3 is the fact that the variables Time NL, Time Abroad and collaboration have a much lower N than the other vari-

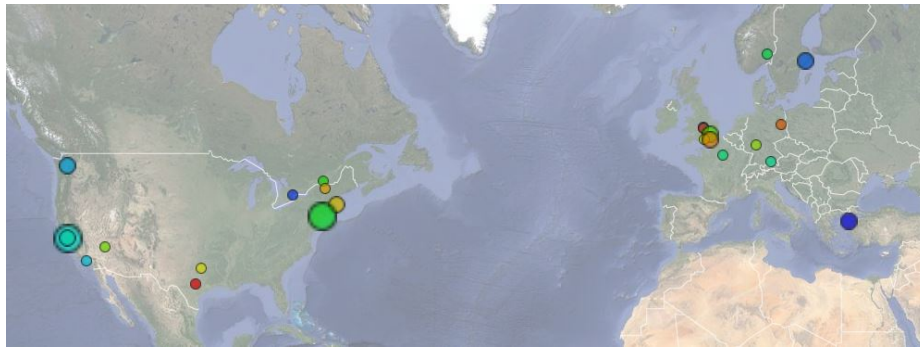


Fig. 7. Origins of Return

Table 3. Descriptives

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Migrate	2823	0	1	0.07	0.249
Return	2823	0	1	0.01	0.115
Year	2823	1984	2015	2005.66	5.589
Time NL	2215	0	19	2.14	2.905
Time Abroad	678	0	26	3.66	5.474
Experience Abroad	2823	0	1	0.01	0.115
Promotion	2823	0	1	0.07	0.250
Collaboration	2558	0	1	0.05	0.211
Artist	2823	0	1	0.30	0.457
Audio	2823	0	1	0.09	0.287
Business	2823	0	1	0.03	0.181
Designer	2823	0	1	0.16	0.365
Producer	2823	0	1	0.06	0.244
Programmer	2823	0	1	0.21	0.406
Tester	2823	0	1	0.05	0.226
Special Thanks	2923	0	1	0.09	0.292
Function Missing	2823	0	1	0.06	0.244
Action	2823	0	1	0.75	0.433
Adventure	2823	0	1	0.02	0.152
Educational	2823	0	1	0.01	0.109
Racing	2823	0	1	0.18	0.382
RPG	2823	0	1	0.05	0.209
Simulation	2823	0	1	0.04	0.192
Sports	2823	0	1	0.07	0.260
Strategy	2823	0	1	0.14	0.347

ables for which the total number of 2823 is reached. Since these variables were created after the initial data was collected they are derived from other data collected. The time NL and time abroad variables are derived from the year associated with an event and the collaborating variable is derived from the collaborating studios. To streamline this process certain data filters have been applied while filling out these variables. In all cases the Special Thanks function has been filtered out since this function is not indicative of actually having worked on a game, let alone having actually moved to work on a project. For the time variables the games having been worked on before coming to the Netherlands for the first time have also been filtered out as this data has been transformed into a separate variable and is otherwise not used in the analysis. On top of that, for the Time Abroad variable the events taking place in the Netherlands (apart for the returning event) have also been filtered out as they are not relevant for the analysis of this variable.

4.2 Migration analysis

Table 4. Migration analysis

Variable	B(model 1)	Significance	B(model 2)	Significance
Year	0.091 (0.023)	0.000*	0.094 (0.023)	0.000*
Time NL	-0.230 (0.043)	0.000*	-0.222 (0.042)	0.000*
Experience Abroad	0.799 (0.198)	0.000*	0.826 (0.195)	0.000*
Promotion	1.280 (0.274)	0.000*	1.306 (0.273)	0.000*
Collaboration	2.384 (0.450)	0.000*	/	/
Artist	0.661 (0.266)	0.013*	0.611 (0.261)	0.019*
Audio	0.482 (0.395)	0.222	0.486 (0.385)	0.207
Business	0.311 (0.472)	0.509	0.304 (0.461)	0.510
Designer	-0.135 (0.302)	0.656	-0.220 (0.300)	0.464
Producer	-0.306 (0.420)	0.456	-0.377 (0.417)	0.366
Programmer	-0.052 (0.298)	0.861	0.078 (0.287)	0.785
Tester	0.310 (0.415)	0.456	0.213 (0.412)	0.605
Action	-1.302 (0.296)	0.000*	-1.276 (0.291)	0.000*
Adventure	0.946 (0.480)	0.049*	1.111 (0.471)	0.018*
Racing	-0.838 (0.348)	0.016*	-0.883 (0.343)	0.010*
RPG	1.345 (0.369)	0.000*	1.328 (0.363)	0.000*
Simulation	1.463 (0.480)	0.002*	1.536 (0.457)	0.001*
Sports	-0.321 (0.379)	0.397	-0.073 (0.355)	0.837
Strategy	-0.611 (0.318)	0.054	-0.613 (0.314)	0.051
N	1791		1791	
R-squared	0.234		0.206	

From the analysis of the migration variable, as seen in table 4, twelve different significant results can be extracted. The results are introduced and described below. First the hypotheses as defined in the theory section will be tested. Afterwards the additional concepts that emerged from the data collection will be discussed.

One of the stronger factors indicates that when an employee gets a promotion he/she is more likely to migrate. This corresponds with the economic factors and hypotheses, which indicate that an employee is more likely to migrate when monetary gain is to be had and opportunities for achievement are to be present. It is only natural to assume that a promotion comes coupled with an increase in salary, confirming H1. A promotion also means an increase in responsibility and authority, thereby giving the employee more opportunity for achievement as he/she is given more opportunity to make an impact and therefore can more directly contribute to the success (or failure) of a project. This confirms H2 as well.

Having previously collaborated with a studio is the strongest explanatory factor for when an employee decides to migrate. This should be interpreted as that employees are more likely to accept a job offer abroad when they have previously worked with the studio before and thus are already familiar with the studio and the work they deliver. Furthermore this organisational proximity contributes to the development of migration related social capital, thereby confirming H7. It should be noted however that there are only 15 cases in which an employee has migrated to go work for a firm they have previously collaborated with. The reason why the explanatory factor is so high is because these cases miss most of the other indicators for migration. Most of these cases do not include an artist or a promotion for example and in fact consider mostly cases in the action genre which as it turns out inhibits migration. Rather they migrate despite all the indicators suggesting otherwise.

The year an event took place also has a positive effect on the change of migration. This means that the higher the value of the year variable the more likely it is that an employee will migrate. This makes sense since increased globalization is likely to cause more employees to migrate as the years progress.

On the other hand it turns out that the longer an employee stays in the Netherlands, the less likely it is for he/she to migrate. This corresponds with H9 which said that place attachment, measured by the duration of the stay in this study, negatively impacts the intention to migrate. What is noteworthy is the fact that this variable has a stronger impact

than the previous variable. This implies that the effects of globalization on the intention to migrate is less pronounced for employees that have been working and living in the Netherlands for longer periods of time. It will however have an increased impact on people recently starting out. Starters will be more likely to migrate now than they were ten or twenty years ago.

An even stronger effect can be observed when an employee already has experience abroad before coming to the Netherlands. It could be that this simply means that those employees are more likely to migrate because they are returning to their country or place of origin. However, it could also indicate that the desire for affiliation is lower with these employees as they have been traveling around before. While this could not be measured, this could indicate that the lack of a desire for affiliation increases the odds of migration, potentially reversely confirming H5 which stated that a desire for affiliation negatively impacts the intention to migrate.

Nevertheless, of the 118 employees with previous experience abroad a total of 55 employees (46,67%) leave the Netherlands again to pursue job opportunities elsewhere in the world. This is about 15% more than the average migration rate, which includes the employees with experience abroad as well. This goes to show that the Netherlands is having serious trouble with retaining foreign talent.

When looking at the different job functions most are not more likely than the other job functions to migrate. The exception are the artists, which are indeed more likely to migrate abroad. While initially it was not expected that different functions would yield different migration rates, it is easy to see why artist would be more likely to migrate. When looking at the other job function categories it is clear that some of these functions are rather general in nature. A tester or businessman/woman for example could in most cases easily be replaced with someone else. Same goes with the other job function categories. A highly skilled programmer can make the development process a lot easier, but for most cases simply someone who can do a solid job is good enough. Unless the goal is to deliver a game of the utmost highest quality, attracting talent from abroad is simply not necessary for most of these functions. Artists on the other hand deal with the visual aspects of the game and create what is essentially the showpiece of the game. They are responsible for making sure the game catches the eye of the consumer. Their work gets noticed first. It therefore makes more sense to look for high quality talent in this job function when compared with the other job function categories. Because of this it is also

more likely for a match between an artist and a company abroad to be formed.

Looking at the different genres a game could fall under reveals some other interesting aspects. It seems that when someone wants to work on an Adventure, RPG or Simulation game for their next project they are more likely to migrate, while if someone wants to work on an Action or Racing game they are less likely to migrate. Sports and Strategy games yield no strong significant results, while the Educational genre had so little events that it has been removed from the analysis altogether. Likely these results are to be contributed to the division of genres developed in the Netherlands, as seen in table 5.

Table 5. Genres in the Netherlands

Genre	N	Frequency	Percentage
Action	1605	1320	82%
Adventure	1605	20	1%
Educational	1605	24	1%
Racing	1605	294	18%
RPG	1605	31	2%
Simulation	1605	22	1%
Sports	1605	114	7%
Strategy	1605	223	14%

With a total of 82% and 18% of all games developed in the Netherlands falling under the Action and Racing genre respectively it is clear that if an employee wishes to work on that sort of games he/she does not have to look abroad. Employees wanting to work on Adventure, RPG or Simulation games however will be hard pressed to look abroad for their next project as development in those genres is practically non-existent in the Netherlands. Note that because games can fit within multiple genre categories the total percentage exceeds 100%.

Finally, the low value of Nagelkerke's R-squared should be addressed. While it is desirable to have a R-squared as close to 1 as possible, a lower value does not undermine otherwise significant results. A low R-squared indicates simply the fact that the variability is quite high. This is an issue when trying to do precise predictions, however in this study it is less problematic as this study utilizes more broader concepts. Furthermore, as was indicated not all the concepts that were identified in the theory section were included in the analysis. A lower explanatory power was

therefore to be expected. Beyond that, it is also important to remember that the subjects of this study are human beings whose behaviour is inherently somewhat unpredictable, leading to lower R-squared values.

4.3 Return analysis

Table 6. Return analysis

Variable	B(model 1)	Significance	B(model 2)	Significance
Year	0.066 (0.045)	0.145	0.037 (0.041)	0.368
Time Abroad	-0.556 (0.178)	0.002*	-0.538 (0.174)	0.002*
Experience Abroad	-1.344 (0.496)	0.007*	/	/
Promotion	-0.138 (0.647)	0.831	-0.166 (0.625)	0.791
Collaboration	-2.024 (1.085)	0.062	-1.827 (1.069)	0.087
Artist	-0.960 (0.623)	0.123	-0.745 (0.632)	0.239
Audio	1.071 (0.808)	0.185	0.724 (0.779)	0.353
Business	-0.932 (1.192)	0.434	-1.202 (1.205)	0.318
Designer	0.302 (0.667)	0.651	-0.031 (0.662)	0.962
Producer	0.008 (0.986)	0.994	-0.011 (0.965)	0.991
Programmer	0.178 (0.683)	0.795	0.227 (0.681)	0.739
Tester	0.303 (0.845)	0.720	0.324 (0.816)	0.691
Action	0.839 (0.638)	0.188	0.876 (0.627)	0.162
Adventure	-0.593 (1.237)	0.631	-0.126 (1.203)	0.917
Racing	1.008 (0.647)	0.119	1.006 (0.626)	0.108
RPG	0.222 (0.615)	0.719	0.121 (0.611)	0.844
Simulation	-1.181 (1.183)	0.318	-1.059 (1.207)	0.380
Sports	1.412 (0.786)	0.073	1.536 (0.773)	0.047*
Strategy	0.557 (0.689)	0.418	0.511 (0.660)	0.439
N	640		640	
R-squared	0.260		0.225	

When looking at the analysis of the return variable in table 6 only two factors seem to have a significant impact. These factors are the time spent abroad and whether or not an employee had experience abroad before coming to the Netherlands. The former operates exactly the same as its counterpart with the analysis of the migration variable. In that case the longer an employee stayed in the Netherlands, the less likely he/she was to migrate. In this case it is clear that the longer an employee stays abroad, the less likely he/she is to return to the Netherlands. This confirms that H9 also applies for returning employees.

The second factor, whether or not an employee has had experience abroad before coming to the Netherlands, also negatively impacts the

likelihood an employee will return to the Netherlands. This makes sense as the chance that the Netherlands was simply a temporary stop is also more likely. It is very well possible that a large part of those who migrated from the Netherlands with previous experience abroad have in fact returned to their own country of origin.

It should be noted that when the experience abroad variable, as it is the strongest significant variable, is removed for the second analysis model that the sports variable becomes significant. This means that while not initially a strong factor, it does positively contribute to increasing the chances of return. Apparently when prior experience abroad is not taken into account employees are more likely to return if they desire to work on a sports title as their next project.

5 Conclusion and policy implications

5.1 Conclusion

This study provides an insight into what determines knowledge workers in the Dutch video game industry to migrate and to return. Table 7 provides an overview of the hypotheses as they have been confirmed in the result section.

Table 7. Hypotheses

Hypotheses	Migrate	Return
H1 Monetary Gains	YES	/
H2 Opportunity for Achievement	YES	/
H3 Desire to Achieve	/	/
H4 Desire for Power	/	/
H5 Negative Impact Desire for Affiliation	/	/
H6 Neophilia	/	/
H7 Migration Related Social Capital	YES	/
H8 Desirable Environmental Features	/	/
H9 Negative Impact Place Attachment	YES	YES

While not all the hypotheses could be tested in a quantitative setting, the economic and social factors were entirely confirmed to positively influence the chances of migration. The opportunity for monetary gains, the opportunity for achievement and the presence of migration related social capital all positively impact the chances of migration. For the personality

factor the desire for power and achievement may be linked to the promotion variable as are the economical factors. In reality the true impact of personality on migration cannot accurately be abstracted from the data, as in depth qualitative research would be necessary to achieve this. It does however provide a solid indication that these factors are likely to positively influence migration. For the environmental factor the negative impact of place attachment has been confirmed. The longer an employee stays in the Netherlands or stays abroad, the less likely he/she is to migrate or to return.

For the return variable the data was unfortunately only able to confirm the negative impact of the place attachment variable. Likely this is because of the small amount of cases and the fact that motivations to return may be more diverse and more plentiful than motivations to migrate.

Other interesting insights not found in the literature and therefore not in the conceptual model are the fact that artists are more likely to migrate and that the type of genre present and popular in a country may also influence migration as employees wanting to work on adventure, RPG or simulation games are more likely to migrate, while employees wanting to work on action and racing games are less likely to do so.

5.2 Policy and management advice

The fact that employees migrate to work on a certain genre provides interesting opportunities for policymakers to stimulate the development of certain genres in order to retain talent that would otherwise look for opportunities abroad. The retention of employees in the Netherlands is problematic as a whole. With almost a third of all employees active in the game industry leaving the Netherlands at some point and about half of the international talent that once came to the Netherlands leaving again, the brain drain is very high. Especially when one considers that less than 20% of the observed employees eventually returns to the Netherlands, meaning that there is little to no brain circulation.

In order to retain more of the international employees, policymakers as well as managers of game studios themselves, should invest more into the integration of international knowledge workers and their families. This study has proven that the longer employees stay in the Netherlands the less likely it is that they will leave. To increase the odds of employees staying for a longer period of time they need to integrate more into society, so they can feel at home and develop place attachment. This can be stimulated by various means, for example by helping out with difficult

immigration or visa problems, by involving the employees more directly in the community and by making sure their children can go to school and feel accepted there. Many other options exist, but it should be noted that the retention of international employees by increasing place attachment is imperative.

Besides stimulating the development of certain genres policymakers should also try to stimulate the growth of the industry as a whole. With only 3% of all video game firms in the Netherlands having more than 50 employees and 70% having five or less employees [34], it is clear that company growth should be stimulated more. Increased growth and larger companies means more opportunities for promotion, achievement and monetary gains. This decreases the incentives for migration and thus more talent can be kept in the Netherlands.

Policymakers should also stimulate brain circulation. Internationalisation has been deemed important for the Dutch creative industry [51], however to profit from this employees should also actually return to the Netherlands. Policymakers should therefore devise incentives for employees formerly active in the Netherlands to return. The Netherlands is strong in the development of action games as seen from the results, which may also explain why employees working on action games are less likely to migrate. This could for example be exploited more with financial stimulation for the development of high profile titles and the establishment of an action game cluster in the Netherlands. Such a policy decision would not be unprecedented as for example the state of Rhode Island has invested \$75 million in the development of the RPG *Kingdoms of Amalur* before [60] and Canada is known to stimulate the development of games as well [18][61].

Furthermore, as the results show that the amount of time spent abroad negatively influences the chances an employee will return to the Netherlands, policymakers and especially game studio managers wanting to re-hire former employees should stay in touch and try to persuade the employees to return within a timely manner. Since it becomes more unlikely that an employee will return after he/she has spend more time abroad, it is important to focus the efforts of incentivising return in the early stages of the period abroad.

6 Discussion

This research provides a quantitative statistical analysis of the international mobility of knowledge workers in the Dutch game industry. Based on existing migration theory a theoretical framework was constructed from which hypotheses were derived. From the data several factors that influence migration behaviour specific to the game industry have also been identified.

First of all, since this study only utilizes a quantitative approach several hypotheses could not be properly tested. Especially the personality factors would benefit from an additional qualitative analysis, as they consider internal psychological processes which are hard to capture in quantitative data. Future research could expand on this research by performing interviews with employees that migrated or returned to verify the findings of this study and to garner additional insights, as it is likely that additional concepts would arise from said interviews.

Secondly, since most hypotheses could not be measured directly through the available data indicators had to be used. While this is not problematic per se, it does require additional assumptions and therefore additional interpretations to be made, thereby reducing the internal validity of the research. Access to more specific data, such as salary data for example, could mitigate this problem and additional indicators could be constructed, for example from data gathered from interviews, to support the findings of the current indicators.

Additionally, all data, with the exception of the geographical data, come from one single source. While *mobygames.com* is regarded as an excellent source for video game credit information, data is entered through a wiki system, meaning that mistakes could easily slip in. While it is safe to assume that these mistakes are far and few in between and that comparing with other video game credit sources would hardly reveal any new information, other sources could be used to expand the database. For instance *Metacritic* [37] could be used to expand on the missing values in the aggregate critic review score from the *Mobygames* database while video game sales data, available through various other sources, could also be used to construct entirely new indicators.

As a whole the database could also be expanded to include the entire population of the Dutch game industry. As of now it only includes all the employees active in the period from 1984 until 2000 and only a selection of them afterwards. While this is plenty of data to work with, it also means that some of the data is a bit outdated. For most factors this is

not a problem, however for some, such as the identified genres, it becomes more problematic. It could very well be that in the last 15 years several new studios have opened that chose to focus on genres typically not found in the Netherlands, reducing the need for migration to go work on those genres in more recent years.

The analysis method used in this study is rather straightforward. For the purpose of identifying the determinants of migration and return, as was the goal of this study, this is not problematic. However, more advanced analysis methods could be used to obtain some more interesting results. For instance a Cox regression analysis could sketch a more detailed picture of the impact of the factors over time on the intention to migrate or return.

Besides improving on this study, further research could delve more deeply into the locations where employees migrate to as this is where much of the debate in the literature exists [27]. This study shows the existence of clusters, but does not indicate why they are formed in those specific locations. However it is likely that as projects in the video game industry are more of a team based effort, and therefore are more bound to a certain location, that employees are less inclined to take notice of the soft factors and simply move to where the job is at.

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8 Appendix

	Frequency	Percent	Valid Percent	Cumulative Percent
Missing values	21	11,2	11,2	11,2
Redwood City	11	5,9	5,9	17,0
Rome	10	5,3	5,3	22,3
London	9	4,8	4,8	27,1
Cambridge	8	4,3	4,3	31,4
Stockholm	6	3,2	3,2	34,6
Frankfurt am Main	5	2,7	2,7	37,2
Guildford	5	2,7	2,7	39,9
New york	5	2,7	2,7	42,6
Paris	5	2,7	2,7	45,2
Helsinki	3	1,6	1,6	46,8
Montreal	3	1,6	1,6	48,4
Oudenaarde	3	1,6	1,6	50,0
Oxford	3	1,6	1,6	51,6
Santa Monica	3	1,6	1,6	53,2
Seattle	3	1,6	1,6	54,8
Southam	3	1,6	1,6	56,4
Vancouver	3	1,6	1,6	58,0
Vienna	3	1,6	1,6	59,6
Antwerpen	2	1,1	1,1	60,6
Bellevue	2	1,1	1,1	61,7
Burbank	2	1,1	1,1	62,8
Burnaby	2	1,1	1,1	63,8
Culver City	2	1,1	1,1	64,9
Fareham	2	1,1	1,1	66,0
Hattingen	2	1,1	1,1	67,0
Horsham	2	1,1	1,1	68,1
Los Angeles	2	1,1	1,1	69,1
Oberhausen	2	1,1	1,1	70,2
Quebec	2	1,1	1,1	71,3
Redwood	2	1,1	1,1	72,3
Royal leamington	2	1,1	1,1	73,4
Sheffield	2	1,1	1,1	74,5
Singapore	2	1,1	1,1	75,5
Troy	2	1,1	1,1	76,6
Aalborg	1	,5	,5	77,1
Banbury	1	,5	,5	77,7
Bath	1	,5	,5	78,2
[h] Berlin	1	,5	,5	78,7
Brighton	1	,5	,5	79,3
Bristol	1	,5	,5	79,8
Bromley	1	,5	,5	80,3
Burlington	1	,5	,5	80,9
Chicago	1	,5	,5	81,4
Cologne	1	,5	,5	81,9
Copenhagen	1	,5	,5	82,4
Dallas	1	,5	,5	83,0
Duren	1	,5	,5	83,5
Edgware	1	,5	,5	84,0
Edmonton	1	,5	,5	84,6