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경영학 석사학위논문

Don't Put Your Eggs in One Basket:  
The Effects of Alliance Portfolio Diversity and Core  
Alliance Type Concentration on Alliance  
Performance in the PC Game Industry

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## **ABSTRACT**

### **Don't Put Your Eggs in One Basket: The Effects of Alliance Portfolio Diversity and Core Alliance Type Concentration on Alliance Performance in the PC Game Industry**

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**This study examines alliance portfolio diversity, an oft-studied stream of research with inconclusive findings, in the creative industry, an industry that operates under a different set of economic and business assumptions. By utilizing all available game data from 1998 to May 2019 from Steam, the largest digital distribution platform for PC gaming, the study finds that the effects of alliance portfolio diversity on alliance performance is positive in the pc game industry, an industry in the creative industry. The study also determines that a higher concentration of alliances in the firm's core alliance type positively moderates the positive effects of alliance portfolio diversity on alliance performance through establishing organizational routines which enable firms in the creative industry to fully realize the benefits of having a diverse alliance portfolio.**

**Keywords :** creative industry, alliance portfolio diversity, alliance experience, alliance performance, routines, pc game industry

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## INTRODUCTION

The creative industries, which refer to a range of economic activities and services that are concerned with the generation or exploitation of knowledge and information, are becoming increasingly important in today's world. They are growing larger at an astonishing rate, their proponents suggesting that "human creativity is the ultimate economic resource" (Florida, 2002) and that "the industries of the twenty-first century will depend increasingly on the generation of knowledge through creativity and innovation" (Landry & Bianchini, 1995). Also referred to as the cultural industries in Europe (Hesmondhalgh, 2002) or the creative economy (Howkins, 2001), and most recently as the Orange Economy in Latin America and the Caribbean (Buitrago & Duque, 2013), they span many different sectors of products and services. Howkins in his 2001 paper define advertising, architecture, art, crafts, design, fashion, film, music, performing arts, publishing, R&D, software, toys and games, TV and radio, and video games as industries that make up the creative economy while the DCMS<sup>①</sup> recognizes the nine following creative sectors - advertising and marketing, architecture; crafts; design (product, graphic and fashion design); film, TV, video, radio and photography; IT, software and computer services; publishing; museums, galleries and libraries; and music, performing and visual arts – as of 2015. The DCMS also defines the creative industries as "those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and

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<sup>①</sup> Department for Digital, Culture, Media and Sport, a department of the United Kingdom government, with responsibility for digital policy, culture, media, and sport in England.

exploitation of intellectual property”, a definition that has been echoed by many governments. Although there are many different definitions and names for the creative industries, one concept remains certain: that the creative industries has an “irreducible core concerned with the exchange of finance for rights in intellectual property” (Lash & Urry, 1994).

The video game industry is an indisputably creative industry that is categorized as a creative industry in all of its definitions. It is an industry that has grown explosively in the last decade, largely due to the rapid development of personal computers, handheld devices, and other high-tech gaming platforms and gadgets. The Newzoo 2018 Global Games Market Report reported that the global games market generated \$121.7 billion in 2017; 27% of this revenue came from downloaded, boxed, and browser PC games. The global games market is estimated to reach the size of \$180.1 billion in 2021, showing a ten year continued annual growth rate (CAGR) of 11%. As gaming in all its forms – casual gaming, competitive gaming, and gaming content streaming – gains popularity for all age groups and becomes a way of life and a way to socialize for the younger generation (Jones, 2003; Naskar et al., 2016), to fit growing consumer needs, more and more games are developed and published each year. With the rise of cloud gaming, a “main source of innovation in the games industry... [that diminished] upfront investment required for PC gaming...by reducing the barrier of having to buy expensive hardware to play high-quality games” (Newzoo, 2018) and the rising internet connection rate around the world, there are now close to no barriers in playing a PC game for any computer user. On the game development side, however, there are still difficulties for individual game

developers and small game development studios in reaching end users. Many developers therefore choose to ally themselves to game publishers, firms that offer services such as financing, distribution, monetization, app store optimization, product strategy development, internationalization, localization, marketing, advertising, public relations, media contacts, social media, customer response, troubleshooting, and even community management and support, some specializing in particular niches or platforms (Ibisworld, 2019). Although some researchers argue that the emergence of online distribution allows content producers in the creative industries to bypass powerful distributors, it has been proven that this strategy is not viable unless the producers possess the complementary assets powerful intermediaries provide (Broekhuizen et al., 2012). Through researching the Dutch video game industry, Broekhuizen et al. find that “alliance strategy resulted in greater absolute financial performance and relative market performance compared to the self-publishing strategy.”

This paper aims to examine how the diversity of alliance types in the abovementioned alliance relationship between game developers and game publishers affect game performance by utilizing all game data up to May, 2019 in the largest PC game platform, Steam, provided by Valve Corporation. As diversity is one of the most important dimensions to increasing creativity, this research seeks to examine alliance portfolio diversity, an oft-studied research stream with various findings on its effects that lead in inconclusive directions (Duysters et al., 2012), in the creative industry – hypothesizing that the effect of alliance portfolio diversity will be positive in an industry where the benefits of diversity outweigh its costs such as the creative industry – and also



introduces the concept of concentration of alliances in the core alliance type, a variable that has never been examined before in alliance portfolio diversity literature.

## **THEORY AND HYPOTHESES**

### **The Creative Industry and the Publisher-Developer Relationship**

The term “creative industries” were first used by researchers to describe industries in the British economy where creative, knowledge-based intangible inputs add significant economic and social value to goods and services (DCMS, 1998; Parkman et al., 2012). Turok, in his 2003 paper, defines the cultural and creative industries as “the overlapping area between cultural and commercial activities”. In both definitions, the creative industries are gaining importance in the Western and in the global economies as they have grown to be a major part of the current economic system (Konrad, 2013; Mietzner & Kamprath, 2013). As it is possible to produce creative goods with the key knowledge of a few experts and intangible inputs, micro-firms that employ fewer than ten employees are the predominant firm type in these industries (European Commission, 2014).

As such, the creative industries operate under a different set of economic and business assumptions from what is common for most other industries. Although there have been criticisms for the author’s rigidity, the most common characteristics that have been found by Caves (2000) for the creative industry are the following: that demand uncertainties exist because the consumers’ reactions to a product or service are

unpredictable and not easily understood; that workers care about the originality and quality of creative goods and are willing to work at lower than average wages; that relatively complex creative goods require diverse skills; that creative goods are differentiated by their distinct combinations of inputs, leading to an infinite variety of unique options; that small differences in creators' and artists' skills and talents may lead to huge differences in success, judged by financial success; that time management is of utmost importance when coordinating complex projects; and that some creative goods are protected through copyright or intellectual property laws, creating durability aspects that allows the creator to collect rents.

In this tumultuous industry, the micro-firms that make up the vast majority of the creative industries face dilemmas such as structural simplicity, as lack of resources (Das & He, 2006), time management issues, lack of financial resources and business skills, and lack of exposure to domestic and international markets (Poetttschacher, 2005; Torres, 2002). Combined with the lack of personnel in micro-firms which, by definition, employ less than ten people, these difficulties cause micro-firms to specialize in single products or services (Poutziouris, 2003), a phenomenon which is also observable in the pc game development studios on Steam. Micro-firms address these problems by engaging in strategic alliances – resource shortages, both tangible and intangible, are solved through alliances that share technology, patents, brands, production tools, distribution networks (Hoffman & Schlosser, 2001). Information concerning creation and improvement of know-how is also shared (Jaouen & Gundolf, 2009), affecting the firms' future performance, growth, and survival (Das & He, 2006). Firms in the creative

industries behave similarly to these micro-firms, undergoing strategic alliances to reduce overspecialization and to increase work-related employee pleasure and quality of life (Gundolf et al., 2018), seeking to combat high failure rates in the cultural and creative industries (Chen et al., 2015).

Game developers and game development studios undertake strategic alliances with publishers for similar reasons, to overcome tangible and intangible resource shortages through sharing in the resources of game publishers. Tangible resources may be financing – many developers get paid by publishers from the development stage by meeting publisher-set development goals – or internationalization/localization support and offline advertising and marketing, while intangible resources may range from development assistance to access to various distribution and media channels and even to game community support and troubleshooting. This developer-publisher relationship is strictly in the realms of strategic alliance where there is “symmetric cooperation agreement between two firms, based on a formal or informal contract, aiming to realize a common project or to establish a sustainable cooperation (Jaouen & Gundolf, 2009)”, differing from mere co-operations in four criteria set by Jaouen and Gundolf in their 2009 paper. The four criteria of strategic alliances and how the game developer-publisher relationship meet them are as follows: first, the engaged resources have a strategic character for at least one of the partners, being essential for the survival or development of the firm. The publisher’s financing of game development, offering expertise and means of monetization during and after launch of game service, access to firm-specific game engines (similar to patents) and optimization services according to game device

and platform fit this category. Secondly, the relationship is a strategic alliance when the objective of collaboration is specific – the publisher’s distribution, internationalization and localization functions fit this requirement. Thirdly, publishers may significantly change the organization or its activities by influencing product strategy development – for instance, by changing pricing strategies – and sometimes suggesting sequels to hit games series. Finally, the developer-publisher relationship can be categorized as a strategic alliance as it modifies the firm positioning or its representation to the environment through the publisher’s function of marketing, advertising, public relations, media contacts, social media, customer response, community management, etc. Therefore, it is certain that game publishing shares resources between developers and publishers and is an ongoing relationship, making it a form of strategic alliance in the creative industry. It is also a profitable strategic alliance, as it was found that “while video game publishing alliance required the developer to share with the publisher a substantial fraction of the value appropriated by the game, the alliance strategy resulted in greater absolute financial performance and relative market performance compared to the self-publishing strategy. The differences in performance can be traced back to specialized complementary assets required for successful commercialization. (Broekhuizen et al., 2012)”

### **Alliance Portfolio Diversity in the Creative Industry**

Although alliance portfolio diversity is a stream of research that has been examined more often in recent times possibly due to the strong trend of firms being

increasingly involved in multiple strategic alliances with different partners at the same time (Gulati and Singh, 1998), there have been different inconclusive findings as to its effects (Duysters et al., 2012). For instance, prior work showed that the expansion of alliance portfolios and increasing alliance portfolio diversity generates a variety of growth options (Powel et al., 1996; Vassolo et al., 2004), offers entrepreneurial opportunities (Ozcan & Eisenhardt, 2009), positively influences a firm's financial (Baum et al., 2000; Mouri et al., 2012), and innovative performance (Faems et al., 2005; Dell'Era and Verganti, 2010; Phelps, 2010; Srivastava & Gnyawali, 2011). In contrast, other studies have found that higher levels of alliance portfolio diversity have negative effects, suggesting that higher diversity leads to higher levels of complexity and increased managerial difficulty (Duysters & Lokshin, 2011). Some studies show that certain types of alliance diversity may also have negative effects, such as Faems et al.'s 2010 study which finds that increasing technology alliance portfolio diversity negatively influences a firm's profit margin. Vasudeva and Anand (2011) finds that high levels of alliance portfolio diversity leads negatively to knowledge utilization, while Jiang et al. (2010) finds that higher levels of governance alliance portfolio diversity related negatively to firm performance. A curvilinear, inverted-U-shaped relationship has also been proposed to reconcile these findings by Duysters et al. (2012). Since the emerging literature has identified both advantages and disadvantages of APD, the evidence on the diversity-performance relationship is inconclusive.

In the creative industry, an industry that is based on work in which original ideas are important – a definition stated in the Cambridge Dictionary – knowledge is

generated through creativity and innovation (Landry & Bianchini, 1995). As the creative industry “joins the functions of conception, creation and production of cultural content with industrial modes of production exploiting economies of scale and of commercialisation”, a definition provided by the Département des Études, de la Prospective et Statistiques of the French government, it can be said that creativity and learning occurring in these organizations affect their performance (Bucic and Gudergan, 2004). Caves, in his 2000 paper, states that “in most creative industries, such as fashion, art, video game making, technology, publishing, or film, success depends not on the creativity of each idea generated during the entire development and production process, but, rather, on external audiences’ evaluation of the final product brought to market. In such industries, then, it is difficult, and often impossible, to separate creativity from innovation.” This concept was redefined as “creative innovations” in Godart et al.’s 2015 paper, where he states “given the difficulty of disentangling creativity from innovation in such contexts, we label such organizational output in creative industries as “creative innovations,” defined as the extent to which final, implemented products are novel and useful from the standpoint of relevant external audiences.”

In the creative industry, alliances are one of the venues a firm may use to increase new inputs – new resources – that can lead to a wider range of new resource combinations, enabling new output variations that offer higher chances of creative innovations. Alliances are relatively enduring inter-firm cooperative arrangements (Parkhe, 1991) often formed with an intent of strengthening both partners’ competitive positions within their industries and improving their abilities to take advantage of market

opportunities. This win-win relationship can be accomplished through leveraging the partners' resources as well as through entrepreneurial actions and modification of business practices the partners undertake to adapt to new conditions and skill requirements (Madhok and Tallman, 1998). The latter processes of adaptation relate to the organization's dynamic capabilities; these voluntary adaptations reflect the firm's ability to seek new resource combinations and relevant routines by focusing on endeavors to facilitate and shape learning (Teece, 2012). Increased diversity in input resources and new business practices, made possible through alliances, leads to increased variations: Muhr (2009) states that diversity creates variations, meaning variations in perceptions, values, ideas, opinions, and methods. Muhr states that the only way to move ahead is to perform a continual breakout from the bounds of what was already known, that only through creating variations can firms move upwards in their position within their industries. According to several papers, diversity of perspectives can also be a possible source of creativity because innovation is often dependent upon dissimilar knowledge and skills (Boschma, 2005; Leonard, 1995; Parjanen, Harmaakorpi, & Frantsi, 2010). Diversity, therefore, is important for both knowledge sharing and creativity (Oldham and Cummings, 1996). This paper theorizes that as having a more diverse alliance portfolio will lead to increased possible resource combinations and higher chances of variations, leading to higher possibilities of creative innovations which will be more positively evaluated by the external audience, leading to higher financial performance. This idea thus leads to the first hypothesis:

*Hypothesis 1. In the creative industry, alliance portfolio diversity will have a positive effect on alliance performance.*

### **Concentration of Alliances in the Core Alliance Type**

While existing research focuses on exploring the effects of alliance portfolio diversity on various measures of performance, it does not examine how the alliances are allocated according to the alliance type. Under the original alliance portfolio diversity argument, the following 8 alliances have the same weight in alliance portfolio diversity – both firms have 4 types of alliances.

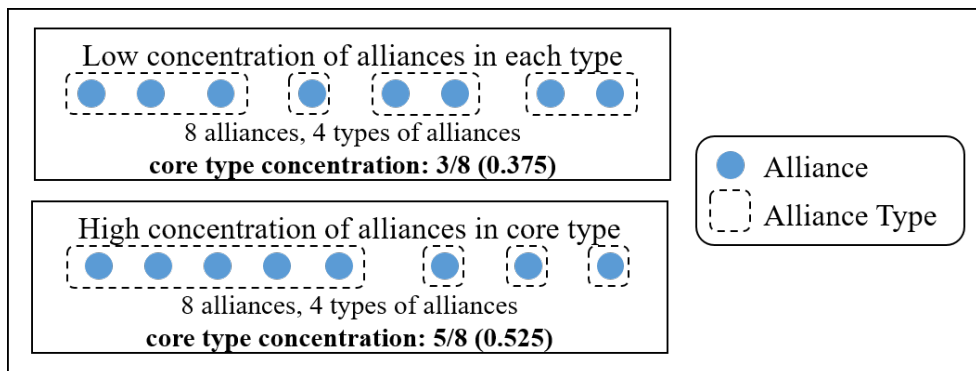


Figure 1. Concentration of alliances in the core alliance type.

As can be seen in the above figure, it is clear that the original alliance portfolio density argument fails to capture how the diverse alliances are allocated; whether there is a higher concentration of alliances in the core alliance type. This paper believes that by refining alliance portfolio diversity into high and low concentration of alliances in the firm's core alliance type, new explanations may be found for the inconclusive, differing



effects of alliance portfolio diversity on performance.

Through repeated strategic alliances, firms learn from their alliance experiences. The basic tenets of organizational learning states that experience is converted into knowledge which in turn changes the organization's context and affects future behavior (Argote and Miron-Spektor, 2011); as there is an accumulation of experience in the management of strategic alliances (Reuer et al., 2002), it can be inferred that firms' behaviors are guided by routines established through the accumulation of past alliance experiences. Organizational learning, defined as "encoding interferences from history into routines that guide behavior" (Levitt and March, 1988), emphasizes the difficulties in using new and diverse knowledge because of absorptive capacity constraints that stem from organizational routines and path dependency (Levinthal and March, 1993). Organizational routines are the primary means by which organizations accomplish much of their activities (March and Simon, 1958; Cyert and March, 1963; Thompson, 1967; Nelson & Winter, 1982). Routines are repetitive, recognizable patterns of interdependent actions (Feldman and Pentland, 2003) that provide efficiency (Argote, 1999) and continuity (Becker, 2004), allowing predictability (Cohen et al., 1996) by reducing variability (Berger & Luckmann, 1967). Routines also provide the foundation for adaptation as the organization selectively retains successful routines as a form of trial and error learning (Baum and Singh, 1994; Aldrich and Ruef, 2006). It can then be expected that repeated alliances of the same alliance type establishes organizational routines that lead to increased knowledge spillovers. There is existing evidence that partner-specific alliance experience produces a comparatively wider range of knowledge spillovers,

including but not limited to a refined understanding of each other's cultures, management systems, and weaknesses, and inter-organizational routines that smoothen interaction patterns (Zollo et al., 2002). Applying the same principles to not only partner-specific alliance experiences but also alliance experiences of the same alliance type, it can then be theorized that alliance type-specific experience may also lead to higher knowledge spillovers – which, in turn, leads to higher entrepreneurial activity (Audretsch et al., 2005) – allowing firms to benefit more from repetition of alliances in core alliance categories than from forging new alliances in new, non-core categories.

This effect may be more pronounced in the creative industry as businesses in the creative industry face higher uncertainty and higher risk of product failure (Chen et al., 2015; Turok, 2003). As businesses in the creative industry suffer the duality of having to make money while remaining artistic, these businesses typically face trade-offs between creativity and control (Caves, 2000; Howkins, 2001), cultural and commercial activities (Turok, 2003), and art and business (Eikhof & Haunschild, 2006) because creative entrepreneurs seek to manufacture products that meet certain market demands while simultaneously satisfying their own creative and artistic sensibility and vision (Torres, 2002). Because this combination of the commercial and the creative is in effect the underlying essence of the creative industry, creative businesses and entrepreneurs often face high levels of uncertainty and unpredictability (Dempster, 2006; Eikhof & Haunschild, 2006; Turok, 2003, always questioning whether their products meet current market demand and whether customers will value the new product in light of its original, often unique, character (Caves, 2000). This high uncertainty may be reduced by engaging

in repeated alliances of the firm's core alliance type, allowing the firm to reap the benefits of strategic alliances – which are envisaged only if there is trust and mutual support among the partners in the creative industry (Gundolf et al., 2018) – by the firm being able to rely on established organizational routines to “trust” and maximize the knowledge and resources offered by the partner firm. This paper theorizes that as increased repetitions of core alliance types will lead to increased familiarity with the said type of alliance partners and alliance contracts, familiarity and trust will be forms, which are important for the effective use of diverse resources for innovative problem solving (Gruenfeld et al., 1996), generation of novel ideas (Burt, 2004), increased comfort with risk taking (Baer, 2010), and exposure to a variety of political skills and influence tactics (Tesluk & Jacobs, 1998), all of which will have a positive effect on the creative innovations. This statement then leads to the following hypothesis:

*Hypothesis 2. Higher concentration of alliances in the core alliance type will positively moderate the effect alliance portfolio diversity has on alliance performance in the creative industry.*

## **METHOD AND DATA**

### **Data and Sample**

The hypotheses were tested using data from Steam, the largest digital distribution platform for PC gaming. Originally developed by Valve corporation to

provide immediate updates, it has expanded to service third-party publishers as an online web-based digital storefront. In short, Steam is the world's largest online platform for game publishers to deliver and service their games globally, also while providing auxiliary services such as streaming, social networking, and cloud saving. In 2013, the Steam platform dominated the PC gaming distribution market with a market share of 75%; in 2017, Steam users had purchased an estimated \$4.3 billion USD's worth of games, representing around 18% of global PC game sales. As of 2019, Steam has over 34,000 games in its library with over a billion registered accounts and over 90 million monthly active users, numbers which have never been seen before in the PC gaming market. Steam provides its services in 28 different languages on all available PC platforms and devices.

Steam is also known for providing data about games serviced under steam, providing the release date, language support, game developer(s), game publisher(s), supported gaming platforms, game price, minimum required gaming age, game category, game genre, number of in-game achievements, estimated number of game owners, number of game players, number of concurrent game players, number of game streaming channels and interest, and many other kinds of data for all games. Another service, Steamspy, provides community-related data for all Steam games such as positive and negative ratings, and average playtime per user. This paper uses the dataset generated from the Steam Store and SteamSpy from 1998 to May, 2019. The dataset encompasses 27,033 games, developed by 17,113 developers and published by 14,354 publishers. All observations of self-published games – in which the game developer is the same as the

game publisher – was dropped as in-company publishing may not be clearly seen as a publishing alliance between a developer and a publisher. To clean the data further, all data of expansion packs (games that are sequels to already-released games) were dropped, as well as game development tools that were wrongly registered as games.

### **Dependent Variable**

The dependent variable alliance performance is measured in terms of *Sales Revenue (log)*, the estimated sales revenue of a published game. As steam provides the price of the game in USD and Steamspy API provides the mean number of game owners, the estimated sales revenue of the game can be deduced by multiplying game price and the mean number of game owners. It should be noted that the price of the game is the price of the initial game package and does not include the price of subscriptions or any in-game purchases made which is not made public by Steam. As alliance performance, or *Sales Revenue (log)*, ranged from as small as 0 USD (for free-to-play-games) to millions, a logarithm was used to reduce variance.

### **Independent Variables**

The first hypothesis uses alliance portfolio diversity as its independent variable, which is measured as the *Number of Genres*, or different categories/types of games that the game publisher has published up to that point. There are a number of different genres in games; a game may belong in multiple genres by fulfilling the requirements of said genre. For instance, World of Warcraft, a game in which the player becomes a character

in a heavily populated fantasy world, may be identified as a role playing game (RPG), which is also massively multiplayer (MMO) with fantasy backgrounds; FIFA, a game in which the player builds a soccer team and competes with other soccer teams may be identified as a strategy games with player-versus-player factors that has a heavy sports orientation. This dataset uses the genres assigned by Steam to the game; in case of multiple genres, the genre that was mentioned first by Steam was assigned as the Steam algorithm places genre tags in order of importance and relativity. Main genres identified on Steam are indie, action, adventure, casual, simulation, strategy, role playing games (RPG), etc.

The second hypothesis utilizes the variable *Core Genre Concentration*, which is the number of games the publisher had published in its core genre divided by the total number of games the publisher had published. As the paper theorizes that the concentration of alliances in the core alliance type moderates the effects of alliance portfolio diversity on alliance performance and as alliance type – which determines alliance portfolio diversity – is measured as game genre, the core alliance type can be measured as the core game genre of the publisher, the game genre in which the publisher has published most games. By dividing the number of published core genre games by the number of total published games, the variable *Core Type Concentration* can be deduced as a number. The highest possible number is 1 – to have a *Core Type Concentration* of 1 would mean that the publisher had focused all its publishing alliances on a single genre of games only. A lower number would signify that the publisher had diversified into publishing games of different genres.

## Control Variables

Several variables were used to control for factors that may influence the commercial success of the game or the publisher. *Mean Playtime (log)* was controlled as games with higher mean playtimes could be more addictive, leading to more positive reception and therefore higher game revenue. The *Annual Number of Games Published* by the publisher was controlled as more prolific publishers could either be more spread thin or have higher publishing know-how compared to less prolific publishers. To control for other factors that may lead to a game's success, *Ratio of Positive Ratings* – the ratio of positive ratings by game owners on Steam over the number of all ratings – and *English Support Dummy* – a dummy variable for whether the game was supported in English, the most used language on Steam – were used. To control for publisher's size, several variables were used: the variable *Number of Games Published by Publisher* was used as publishers with more publishing experience could be of larger size; the variable *Maximum Number of Game Owners* was used to control for the gamer population as they could easily be motivated to seek the publisher's past and future works; and the variable *Publisher Age Dummy* was used as a binary variable for to control for publisher size as publishers that had been in the business for over three years could be of larger size. Finally, the variable *Game Price (log)* was used as gamers could be sensitive to the prices of the games, leading them to seek other games if the prices of their favored games were too high.

## **Analysis**

All models were tested through pooled-OLS regression on cross-sectional data. The first hypothesis examines the effect of alliance portfolio diversity, measured as the number of different genres the publisher has published, on alliance performance, measured as game sales revenue. The second hypothesis examines how the concentration of alliances in the core alliance type, measured as the number of core genre games published divided by the total number of games published by a publisher, moderates the abovementioned relationship between alliance portfolio diversity and alliance performance. To address concerns of possible multi-collinearity in the second hypothesis, mean centering was performed on the interaction term. The number of observations remain the same at 2,062 games for both hypotheses.

## **RESULTS**

Descriptive statistics and the correlation table is presented below in Table 1. Table 2 shows the results for the pooled-OLS regression analysis performed on Steam data for hypothesis 1 and 2. Figure 2 shows the two-way scatterplot for the variables *Number of Genres* – alliance portfolio diversity – and *Sales Revenue (log)* – alliance performance – with the fitted line showing the positive correlation between the dependent and independent variables. All following tables and figures attached below have an observation count (N) of 2,062 games, with tables 1 and 2 showing \*\*\* for p-values of under 0.01, \*\* for p<0.05, and \* for p<0.1.



**Table 1. Descriptive statistics and correlation table**

	N	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9
1 Sales Revenue (log)	2062	11.29799	1.639016	8.909235	19.63685	1								
2 Mean Playtime (log)	2062	5.198826	0.668943	0	10.13923	0.1374*	1							
3 Annual Number of Games Published	2062	0.181603	0.537276	-1.38629	3.091043	0.027	-0.0549*	1						
4 Ratio of Positive Ratings	2062	0.72097	0.237909	0	1	0.0850*	0.0121	-0.035	1					
5 English Support Dummy	2062	0.980116	0.139634	0	1	0.0354	-0.0131	0.0023	-0.0254	1				
6 Number of Games Published by Publisher	2062	4.170223	11.1058	1	207	0.1507*	-0.0839*	0.7128*	0.0124	0.0278	1			
7 Maximum Number of Game Owners	2062	122759.5	589488.2	20000	1.00E+07	0.5228*	0.1193*	0.0071	0.0716*	0.0184	0.1056*	1		
8 Publisher Age Dummy	2062	0.199321	0.399587	0	1	0.2511*	-0.0263	0.3374*	0.0506*	0.0363	0.5012*	0.1491*	1	
9 Game Price (log)	2062	1.503269	0.939644	-0.30111	4.369321	0.6975*	0.0514*	-0.0402	0.0955*	0.0351	0.0435*	0.1271*	0.1184*	1

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

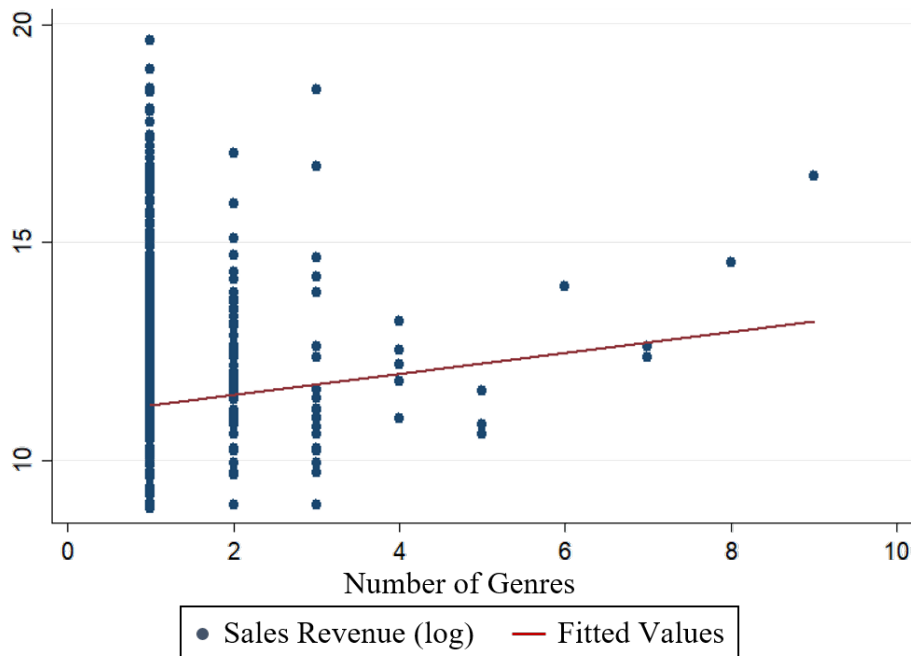
**Table 2. Pooled-OLS regression table**

VARIABLES	(1) Sales Revenue (log)	(2) Sales Revenue (log)	(3) Sales Revenue (log)
Core Genre Concentration			1.497*** (0.414)
Number of Genres		0.0617** (0.0307)	0.240*** (0.0580)
Core Genre Concentration ## Number of Genres			0.306** (0.119)
Mean Playtime (log)	0.150*** (0.0303)	0.155*** (0.0304)	0.159*** (0.0303)
Annual Number of Games Published	-0.0374 (0.0536)	-0.0858 (0.0587)	-0.0998 (0.0652)
Ratio of Positive Ratings	-0.0795 (0.0847)	-0.0688 (0.0848)	-0.0752 (0.0847)
English Support Dummy	0.0163 (0.143)	0.00996 (0.143)	0.00968 (0.143)
Number of Games Published by Publisher	0.00645** (0.00282)	0.00392 (0.00308)	0.00167 (0.00352)
Maximum Number of Game Owners	1.16e-06*** (3.50e-08)	1.15e-06*** (3.53e-08)	1.14e-06*** (3.54e-08)
Publisher Age Dummy	0.406*** (0.0585)	0.338*** (0.0675)	0.329*** (0.0784)
Game Price (log)	1.096*** (0.0217)	1.094*** (0.0217)	1.092*** (0.0217)
Constant	8.671*** (0.223)	8.831*** (0.237)	9.226*** (0.268)
Observations	2,062	2,062	2,062
R-squared	0.695	0.695	0.697

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

**Figure 2. Two-way scatterplot on *Number of Genres* and *Sales Revenue (log)***



### **Alliance Portfolio Diversity and Alliance Performance**

The relationship between alliance portfolio diversity, measured through the independent variable *Number of Genres* that the publisher has published, and alliance performance, measured through the dependent variable game *Sales Revenue (log)*, is proven positive ( $\beta=0.0617$ ) and significant ( $p<0.05$ ), supporting hypothesis 1, which theorizes that in the creative industry, alliance portfolio diversity will have a positive effect on alliance performance. Through this data, it can be said that pc game publishers on steam that have a wider diversification of game genres in their game publishing portfolios are more positively inclined to publish games with larger sales revenues. The two-way scatterplot, presented in Figure 2, also shows the relationship to be positive with

an inclining fitted line. The fitted line is of the following equation.

$$Y_{Sales\ Revenue\ (log)} = \beta_{11.02} * x_{Number\ of\ Genres} + e_t$$

Four of the eight control variables are also proven to be significant. The control variable *Mean Playtime (log)*, showing the average game playtime of game owners (players), is shown to be significant at  $p < 0.01$ , while the *Annual Number of Games Published*, possibly indicative of the publisher being stretched thin or having the resources to handle multiple contracts and also indicative of the publisher's prolificacy, the *Ratio of Positive Ratings*, the control variable measuring public reception or popular opinion about the game, and the *English Support Dummy*, whether the game provided its services in the universal language of English, were all shown to have insignificant effects on the main relationship. The publisher-related variable, *Publisher Age Dummy*, a dummy variable for experienced and possibly resource-rich publishers that had been in the business for over three years was also proven significant with a p-value below 0.01. Finally, the control variable *Game Price (log)*, which could influence the gamer's choice financially, was also shown to have a significant effect with a p-value below 0.01.

### **Moderating Role of Alliance Concentration in the Core Alliance Type**

Column 3 of Table 2 shows that the mean-centered interaction term of the variables *Core Genre Concentration* and the *Number of Genres* is positive ( $\beta = 0.306$ ) and significant ( $p < 0.05$ ), supporting hypothesis 2, which states that the higher concentration of alliances in the core alliance type will positively moderate the effect alliance portfolio diversity has on alliance performance in the creative industry. The variables *Core Genre*

*Concentration* and *Number of Genres* also remain positive and significant ( $p < 0.01$ ) in their relationship with the dependent variable *Sales Revenue (log)*, signifying that the variable *Core Genre Concentration*, or the number of games the publisher had published in its core genre divided by the total number of games in the publisher's portfolio, has a positive moderating effect on the positive and significant relationship between the variables *Number of Genres* and *Sales Revenue (log)*. This moderating relationship indicates that while it is better for game publishers to seek overall genre diversity in their portfolios, their games may also be more profitable when they focus on publishing games their core genres rather than distributing their publishing efforts evenly over a variety of different genres. In terms of alliance, it can be inferred that while having a diverse alliance portfolio is better for alliance performance, it is better to focus on the company's core alliance types – the types of alliances they undertake the most – within those diverse portfolios rather than pursuing diverse alliances of every type. As it is easy for a company to diversify its alliance portfolio blindly in an attempt to increase its alliance portfolio width, the positive moderating relationship of core alliance type concentration may explain why increased alliance portfolio diversity has negative, or an inverted U-shaped effects on alliance performance in some papers (Duysters & Lokshin, 2011; Faems et al., 2010; Vasudeva & Anand, 2011; Jiang et al, 2010, Duysters et al., 2012). Therefore, the results of this study shows that while it is better for firms in the creative industry to have diverse types of alliances in their alliance portfolio, they should not give equal weight to all of their alliance types, focusing the better part of their alliance contracts on the core type of alliances they are most familiar with and branching out only

once or twice on more peripheral, less familiar types of alliances. It is also interesting to note that the control variables that were shown to be significant for the first hypothesis, the variables *Mean Playtime (log)*, *Maximum Number of Game Owners*, *Publisher Age Dummy*, and *Game Price (log)* were shown to be significant again for hypothesis 2 with similar p-values.

## **DISCUSSION AND CONCLUSION**

There are two main goals of this paper. The first is to examine the oft-studied topic of alliance portfolio diversity in the creative industries, an industry that is becoming increasingly important in today's world. As the creative industry operates under different rules compared to other industries – being an industry in which human creativity is regarded as an ultimate economic resource (Florida, 2002) and creating value through the generation and exploitation of intellectual property – this paper sought to examine alliance portfolio diversity in such a setting. This paper hypothesized that as the micro-firms that make up the majority of the creative industries specialize in single products or services (Poutziouris, 2003) due to time and resource constraints (Das & He, 2006; Poettchacher, 2005), these firms would seek to undergo strategic alliances to reduce overspecialization and to increase the amount of possible resources. Although there are mixed findings on the effect of alliance portfolio diversity on alliance performance in other industries (Duysters et al., 2012; Baum et al., 2000; Mouri et al., 2012; Faems et al., 2010; Jiang et al., 2010), this paper proposed that in the creative industry, the

increasingly different types of inputs gathered from different types of alliances would aid creative firms to find new, novel, creative variations – or “creative innovations” (Godart et al., 2015) – that would in turn have higher commercial value, generating increased alliance performance. Through utilizing data on pc game publishers, this paper found said proposal – that increased alliance portfolio diversity would lead to increased alliance performance in the creative industry – to be empirically sound.

The second goal of the paper was to refine alliance portfolio diversity by introducing the concept of core alliance type concentration, possibly finding an explanation for the mixed findings presented on the effects of alliance portfolio diversity. This paper found that although there have been many studies conducted about both the positive (Powel et al., 1996; Vassolo et al., 2004; Ozcan & Eisenhardt, 2009; Baum et al., 2000; Mouri et al., 2012) and negative (Duysters & Lokshin, 2011; Faems et al., 2010; Vasudeva & Anand, 2011; Jiang et al., 2010) effects of alliance portfolio diversity, all of these studies have focused on measuring how many different types of alliances the firm had in its alliance portfolio. A study on how the firm’s different types of alliances are concentrated – whether having a higher concentration of alliances in the firm’s core, main alliance type has more positive effects than having a lower concentration of alliances spread across the firm’s alliance portfolio with each type bearing similar weights – has never yet been conducted. This paper, therefore, aimed to examine the effect of alliance concentration in the core alliance type, hypothesizing that by accumulating alliance experiences in the core alliance type, firms would establish routines (Argote & Miron-Spektor, 2011; Levinthal & March, 1993) that would provide

efficiency (Argote, 1999) and increased knowledge spillovers (Zollo et al., 2002). As such, the paper hypothesized that a higher concentration of alliances in the core alliance type would positively moderate the positive effect of increased alliance portfolio diversity on alliance performance, a hypothesis that was tested empirically in this paper and found to be true.

This paper has three contributions. Firstly, this paper seeks to resolve whether alliance portfolio diversity has a positive or negative effect. While many scholars have studied and tested the subject in many different industries, most of them could not reconcile the positive and negative effects. The single exception is the work by Duysters et al. (2012) which finds a curvilinear, inverted-U-shaped relationship between alliance portfolio diversity and alliance performance. In contrast, the essence of this paper is to examine both the breadth and the depth of alliance portfolio diversity; the paper finds that while alliance portfolio diversity breadth – how many types of alliances the firm has in its portfolio – has a positive and significant primary effect on alliance performance, the depth of the portfolio – whether the alliances are concentrated in certain core types – determine how much more of the benefit the firm can reap from having a diversified portfolio. In this way, some of the negative effects of alliance portfolio diversity can also be explained: as the studies that have been performed before have focused only on the breadth of the alliance portfolio rather than the depth, the comparatively less positive effects of having a diversified yet shallow portfolio – in which there are many types of alliances, but no core or main type of alliance the firm can form a routine on – had not been studied, which may have been a reason for the mixed findings.



Secondly, the paper broadens the field of studies on creative industries, an industry that is growing rapidly with many possible points of study. As an industry overlapping the cultural and the commercial (Turok, 2003) based on creative, knowledge-based inputs adding both economic and social value to goods and services (Parkman et al., 2012), the creative industries operate on different economic laws compared to the norm with different firm structures. Although the industry has grown to be a major part of the current economic system (Konrad, 2013; Mietzner & Kamprath, 2013), most of the industry is made of micro-firms that employ fewer than ten employees. As many creative goods are solely digital, many sectors in the creative industries – most certainly that of music and games – have evolved in the value chain to encompass online distribution platforms where goods have short make-or-break product life cycles. Building on the work of Caves (2000) that outlined several characteristics of the creative industries – including the fact that creative goods are differentiated by their distinct combinations of inputs that lead to an infinite variety of unique options, a statement vital to this paper – and that of Broekhuizen et al. (2012) that examined alliance strategy in the Dutch video game industry, this paper seeks to give further insights into the creative and cultural industries by examining alliance portfolio diversity of the micro-firms that make up the majority of this industry.

Finally, the study also has managerial implications for businesses in the creative, cultural, and entertainment industries. The paper offers insights into the game publishing industry, an industry that has been rapidly growing over the past few years and expected to grow even more in the future. According to Newzoo's 2019 Global Games Market

Report, the global game industry had reached a net worth of \$152.1 billion USD in 2019, representing a solid 9.6% of year-over-year growth. The gamer population has now reached 2.5 billion, meaning that almost twenty percent of the world's population – and more than forty percent of the global youth population – are now gamers. With the rise of technological devices and the spread of mobile, non-gamers are becoming gamers while gamers are spending more on games. This paper contributes to this fast-growing market by helping game publishers decide on their publishing portfolio strategy. Every person working in the game industry is familiar with Steam, the largest pc game publishing platform that has 75% of the pc market share. By relying on Steam data to empirically test the hypotheses, this paper is familiar and trustworthy to game publishers. Also, through examining the game publishing industry, the paper provides findings that could be generalized to other creative, cultural and entertainment industries that share similarities to the game industries. As entertainment products and services are notorious for having (1) a hits-oriented nature (i.e., a small subset of products responsible for generating the larger proportion of the total revenue); (2) a short product life cycle in the marketplace (Epstein, 2005; Hirsch, 2000; Robins, 1993); and (3) difficulties in predicting product acceptance (De Vany, 2004), which are also characteristics of games, this paper's findings are not only limited to the game industries but can also be applied to other similar industries in the entertainment sector.

Of course, this study is not without its limitations. First, although the most important input factor of the creative industries are the creative people who generate new ideas and find novel variations, going as far as to say that “human creativity is the

ultimate economic resource” (Florida, 2002), this paper could not measure any data on the personnel in the game industry. As Steam does not provide any data on the game developers or publishers – whether they work alone or in teams, their demographics, past work experiences, or any other kinds of data that may be indicative of the personnel’s backgrounds or working styles, the paper cannot examine closely the people who generate creativity. This failure to understand the human factor, to see whether different groupings of workers lead to different combinations of resources; whether a single creative developer is worth ten normal workers; or whether some firms of diverse demographic backgrounds establish more creative processes is glaring in that this paper fails to examine the greatest factor in the creative industries.

The second limitation is that there is no data on the game developers. While much data was gathered on the publishers through several variables indicative of the publisher’s size and experience, there was no such data on part of the game developers. As publishers are only half of the game publishing alliance, it is up to the developers to actually make the games for publishers to market and distribute; even a great publisher would find it hard to market, distribute and service a subpar game. The study is therefore limited by its lack of any kind of developer data.

Another limitation of the study is its failure to identify the core genres, or core type of alliances, that the game publishers should focus on. Although the paper succeeds in proving empirically that it is better for games publishers to focus on publishing their core genres while also diversifying their portfolios – in other words, focusing most of their publishing efforts on their core genres while branching out into other genres with

only one of two peripheral games – it does not identify the core genres that are more suited for being core genres. There may be genres that are more suited for establishing routines through repeated alliance experience, certain types of games that are more predictable and suited to establishing patterns (Becker, 2004; Cohen et al., 1996). For instance, it may be easier to reap the benefits of routines – increased knowledge spillovers – in the sports genre as many games in the sports genre have similar aspects and similar types of intellectual property (Tschang, 2007). On the other hand, as it usually costs less time and money to develop casual, indie games – which are much more hits-oriented in nature – it could be theorized that firms gain less experience from the ordeal, and that the said experience could be rendered less efficient due to the hits-oriented nature of games indie and casual genres. This paper is limited in that it fails to provide insights on such matters, not being able to find whether certain genres, or certain types of alliances, are more readily adaptable to establishing alliance routines.

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