

APPLYING THE IMP LENSES TO A DIGITALLY DISRUPTED SUPPLY NETWORK: THE CASE OF VIDEO GAME INDUSTRY

INTRODUCTION

The video game industry (VGI) has been growing in terms of global revenues (estimated \$152.1 billion in 2019; Wijman, 2019), whilst also being disrupted by the increased growth of digital platforms such as Steam and Epic market, where now more than 80 % of videogames are sold (Yin-Poole, 2019). This represents a significant shift in the power and dependency interactions between organizations in the videogames networks, allowing for a wide range of different types of developers to engage in disintermediation by bypassing publishers and selling games directly to consumers and retaining a greater share of the retail price for themselves. In the “traditional” model, with intermediates such as distributors or retailers, the developer would receive as low as 10 % of the price, while using digital platforms generally allow 70-90 % to be retained by the developer (Tassi, 2018). Despite the significance of and ongoing changes in the VGI network, the academic research has been divergent, focusing mainly on dyadic or supply chain relations rather than taking a holistic network approach.

We argue that using the IMP network approach, specifically the actors-resources-activities (ARA) model, will explain the process and outcomes of interaction of business actors in a network environment (Håkansson & Snehota, 1995), allow for a better understanding of the conceptualization of current developments and establish implications for the wider network. Following a systematic literature review of 111 VGI papers, we have identified four main themes in the extant literature, each featuring a set of overlapping actors, resources and activities influencing the workings of the VGI networks. We believe this forms a robust basis for forming an overall ARA model of the VGI network and provides an effective platform for future empirical research.

THEORETICAL BACKGROUND

The *Industrial Marketing and Purchasing* (IMP) group has a long tradition in using a network approach towards the business activities, interactions, relationships and commitments between different organizations (e.g. Håkansson & Shenota, 1995; Håkansson & Waluszewski, 2002). Influenced by inter-organizational and micro-economic theory, versions of the IMP theoretical framework (Håkansson, 1982; Håkansson & Snehota, 2006; Håkansson et al., 2009) have been extensively used to explain a broad spectrum of phenomena (e.g. Crespín-Mazet & Dontenwill, 2012; Insanic & Gadde, 2014), by considering the process of interaction between actors within a relationship context. The IMP network approach, in models such as the Activity-Resource-Actor (ARA) model, is particularly well suited to the field of SCM, as the systematic interaction between external actors (e.g. suppliers to suppliers, customers to suppliers) can increase the efficiency of performed activities across the whole business network (Håkansson & Snehota, 1995: 18).

The ARA model seeks to explain the process and outcomes of interaction of business actors in a network environment (Håkansson & Snehota, 1995; Håkansson et al., 2009). It depicts three interdependent layers;

- activities (links), which are the technical, administrative, commercial and other activities of a company that can be connected in different ways to those of another;
- resource (ties) that connect the various resource elements (technological, material, knowledge resources and other intangibles) of two actors and in itself represents a potential resource;

- actor (bonds) that connect actors and influence how the two actors perceive each other and form their identities in relation to each other (Hakansson & Snehota 1995: 30).

These add up to a business relationship and can be used to assess, predict or explain the importance of the relationship.

DIGITALLY DISRUPTED SUPPLY CHAINS & VIDEO GAME INDUSTRY

Hoberg et al. (2015) position their definition of a Digital Supply Chain (DSC) within the wider area of digital transformation, which is: "...an organizational change process where digital technologies are used to radically change how a company creates value, how it interacts with its customers and business partners, and how it competes in established and emerging markets." (2015: 6). The fast-moving nature of technological development and its effect on the re-shaping of consumer preferences and consumption (Vendrell-Herrero et al., 2017) have created, and will continue to create, significant disruptions in DSCs and therefore their management involves: "...leveraging innovative digital technologies to change the traditional way of (1) performing supply chain planning and execution tasks, (2) interacting with all kinds of supply chain participants, and (3) enabling new corporate business models". (Farahani et al., 2016: 159). Digital technology disrupts the way product firms compete and offer services (Vendrell-Herrero, 2017) and such digitalization has many dimensions of potential disruption from automation in supply chains, servitization of products (Bughin & Van Zeebroeck, 2017) and a shift in channel management from conventional, physical distribution to the online (Büyüközkan & Göçer, 2018). Many of these dimensions appear simultaneously within one field, therefore increasing the effect of any disruptions. Due to the amount of turmoil digital disruption is causing, companies are under increasing pressure to react and create new strategies for the future (Weill & Woerner, 2015).

A stark example of the significant and far-reaching effect of digitization is seen in the printing and publishing industries, as the printing and shipping of physical media gave way to online distribution, undermining traditional advertising funded business models and also postal services in the process (Stewart & Stanford, 2017). Similarly, low complexity industry digitization is seen in examples such as Airbnb using digital technology to offer community-owned surplus space to users, Uber undercutting traditional taxis (Weill & Woerner, 2015) and eBooks supplanting traditional bookstores (Gilbert, 2015).

The VGI can be seen as a pioneer in digitalization efforts, demonstrating a number of relevant DSC characteristics, including enhanced and accelerated innovation, personalized experiences, rapid responsiveness and greater flexibility (De Prato et al., 2010). Hence, a contextual study on the VGI network not only provides specific insights for the network/industry itself but also for other emerging and disrupted DSCs. Increasing home Internet availability and the continued iteration of Microsoft, Sony and Nintendo products (alongside the PC) meant consumers gained greater access to videogame content online (Gretz, 2010). For example platforms that distribute products digitally, without the need for a physical boxed product and reducing the reliance on physical distribution and retail, bringing with it significant changes in the inter-organizational flows of materials, information and money. In addition, there has also been a significant increase in self-publishing via platforms such as Steam, without the need for a traditional publishing house and offers developers different distribution options with the process of disintermediation taking place throughout the VGI network. The significance of the VGI and the magnitude and speed of technological, distribution and consumer buying behavior changes, mean that there is now a pressing need for research focused on the interrelationships and activities between the actors in the VGI.

TOWARDS THE ARA MODEL OF VGI NETWORK

In our previous research, we underwent a systematic literature review closely following the methodology of Fischl et al. (2014). We searched for articles in journals listed in the Chartered Association of Business Schools (CABS) 2018 Journal Guide using the following keywords: Network, Supply Chain Management, Supplier, Supply, Consumer, Market, Transaction, Customer, Value Chain, Governance, Exchange, Purchase, Virtual, Logistics, Digitalisation, Distribution. After assessing for relevancy, we were left with 111 papers for a thematic analysis of the field, in which we have identified four main themes that emerged from the current VGI research.

The first theme was *consumer behavior*, with papers discussing timings of product release (Dew & Ansari, 2015) and versioning (Cox, 2014), the effect and power of consumer reviews and word of mouth on pricing and consumer behavior (Hervas-Drane, 2015), and the relationship between perceptions of product quality and consumer buying intentions (Cox, 2014). In the second theme, *marketplace competition and the constituent parts of the network*, market entry characteristics (Sun & Tan, 2012) and barriers such as network effects (Schilling, 2003; De Vaan et al., 2015) and incomplete market information (Pan, 2017), as well as exclusive contracts in vertical relationships between the platform provider and software supplier (Cox, 2014) are discussed. A subtheme within this area deals with logistics and delivery aspects mainly focusing on differences between physical and digital distributions (Waterman & Wook Ji, 2012; Broekhuizen et al., 2013). The third theme, *interrelationships between the complementary nature of hardware and software*, includes indirect network effects such as installation base and software supply (Gretz, 2010) or complementary products (McIntyre & Srinivasan, 2017). The final theme focuses on *product development process* and resources in the form of capabilities, such as creativity (Aoyama & Izushi, 2003) and inter-firm mobility (Storz et al., 2015).

Table 1: Elements of the ARA model per themes

Theme	Actors	Resources	Activities
(1) Consumer behavior	Customers; developers; publishers; professional reviewers	Information (reviews); relationships; digital platforms	Forming relations (with other players); outsourcing of development activities;
(2) Marketplace competition and the constituent parts of the network	Developers; publishers; physical retailers	Innovation (disruptive); information (incomplete); digital platforms	Market engagement; price making; market entry/blocking; self-publishing; logistics (digital or physical)
(3) Interrelationships between the complementary nature of hardware and software	Developers; publishers; hardware manufacturers	Products (complementary); relationships; digital platforms	Bundling; exclusivity; up-selling; technological advances
(4) Product development process	Developers; publishers	Organizational units (capabilities of employees); regulations	Policy development

The identified themes were then analyzed for recurring actors, resources and activities present within them in an aim to form a context specific and holistic overall ARA model of the VGI (see Table 1) and the following subsections synthesize those findings into the key actors, resources and activities within the network. Although it is difficult to fully separate the different layers of the ARA model, we have used the actors section to identify various network participants, the resources one to show the different capabilities and tangible/intangible aspects of these resources and then the activities analysis to look at the interactions between actors and the resources they harness. We have also supported the thematic analysis with data and information from a variety of up-to-date market/industry reports.

ACTORS

Two main commercial actors emerge across the themes identified: *developers* and *publishers*. As Trowe (2018) claims, distinguishing between a developer and publisher can be confusing and unclear, as those positions often overlap. However, the developer is responsible for creating the game, and publisher for marketing, sales and PR (Trowe, 2018). Some developers are fully or partially owned by the publishers (known as “in-house developers”), whilst others are “independent developers”, acting on certain financial, creative and publishing independence (Garda & Grabarczyk, 2016). There is a split between different types of commercial publishers by the amount of games per year: with “major publishers” such as Capcom, Sega or Electronic Arts releasing 12 or more titles (Dietz, 2019) and mid-size publishers (e.g. Activision Blizzard, Paradox Interactive or Bethesda Softworks) who release more than five games per year. Furthermore, besides the publishers with in-house developers, there are independent game developers releasing their games on digital platforms only, such as 11 Bit Studios or Larian Studios. As a result of the shift to digital distribution, *physical retailers* are experiencing

difficulties, with the largest one, GameStop, suffering a major drop in stock value (Gilbert, 2020). The situation is similar for other, local game retailers.

No market would exist without *customers* as an actor and, according to market reports, there are more than 2.5 billion gamers across the world (Wijman, 2019). With China's efforts to reduce screen time among children, it is predicted that U.S. is the biggest market for VGI. However, the Asia-Pacific region is still the largest one in terms of revenues (Wijman, 2019). The Entertainment Software Association (ESA) claims that 54 % of gamers are men, average age is 33 and gaming correlates positively with having other hobbies such as playing a music instrument or meditating regularly (ESA, 2019). We have also identified the heightened role that consumers play in the VGI network, such as providing feedback and development activities, which are discussed in the more depth in the activities analysis.

Due to the limited scope of the paper, we have limited the description of the actors to the most important ones, omitting other actors such as *professional reviewers*, *hardware manufacturers*, or *policy makers*.

RESOURCES

According to our literature review, resources in the VGI attract much less academic focus than the actors. The resources in forms of *products* contain the games themselves, as well as additional content for the games, often in form of DLC (downloadable content). Other products include the hardware needed for gaming (PCs, consoles, smartphones and other devices such as controllers and other peripherals). Most highly anticipated games offer a "collector's edition" upon release, which might include special physical products related to the game (e.g. a map of the game world) or in-game benefits. The products tend to be complementary in nature (e.g. Kim et al., 2014) and this aspect is discussed more fully in the activities section.

Despite the IMP theory claiming the resources in form of *facilities* should be tangible (e.g. Baraldi et al., 2012), we are including the software needed in game development in this category. This includes a variety of software from relatively basic and free Role Playing Games (RPG) makers to serious game development platforms such as Unity. The facilities are closely related to the *organizational units*, where the capabilities of the employees play a significant role in interacting with other resources mainly in the product development. Here, the resources such as creativity of employees (Aoyama & Izushi, 2003), their inter-firm mobility (Storz et al., 2015) and various national country effects (Anderton, 2017) play significant roles. Sometimes, those efforts extend past the organization to the customers who might be used in the product development as well (Arakji & Lang, 2007).

In addition to, and indeed increasingly supplanting, the physical retailers, digital platforms provide the mechanisms to digitally distribute video games from the developers and publishers to consumers. In 2018, the market has been dominated by such *digital platforms*, with over 80 % of games sold in the U.S. (Coug, 2020), while their market share was just 20 % in 2009. The major consoles of today each have a digital platform (namely the Nintendo eShop, Xbox Live Marketplace and PlayStation Store) controlled by respective console manufacturer. The platforms serve as an exclusive way to buy digital games and other downloadable content for the consoles. The digital platforms market on the PCs has long been dominated by Steam with estimated market share of 75 % of all downloaded games in 2011 (Chiang, 2011). Since then, it has been rivalled by other platforms such as EA Access or GOG.com. The main competition, the Epic Game Store, came to market in 2018, created by the publisher Epic Games after the massive success of the Fortnite game (Statt, 2019).

The resources and their interactions play key role in the VGI. Resources in the form of organizational units are also represented, for example in individuals or teams possessing key

skills such as creativity (Izushi & Aoyama, 2006). Products are also exchanged as resources, in forms of important building elements of the game such as the engine or even customer employment in the process (Arakji & Lang, 2007). Similarly, the *inter-organizational relationships* can be seen as a resource, that when focused on, can provide network benefits, such as the close relationships between hardware and software manufacturers and the triadic relationships between digital platforms, game developers and publishers, although the specifics of these are discussed more fully in the activities section.

ACTIVITIES

Due to the high interdependency of the field, the activities also tend to be interlinked. Out of the three elements of the ARA models, activities vary the most across the different themes discovered in our literature review, and the limited scope of this paper does not allow us to describe them all in detail.

Consumer actors in the network wield power over supplying ones in their interaction with the resources of the product, showing the effect of consumer reviews and word of mouth on pricing and consumer behaviour (Hervas-Drane, 2015). Product tying activities through the inter-organizational relationships (Baraldi et al., 2012) between the hardware and software providers, between software supply and console adoption (Gretz, 2010) and distributing videogames that can only be used on certain compatible hardware (Steiner et al., 2016) are particularly important and contribute to direct network effects (e.g. McIntyre & Srinivasan, 2017). Mai et al. (2011) illustrate the up-selling of products, by further sales of complementary products (e.g. through purchasing Xbox360 or Wii afterwards) after the initial ones of primary products (e.g. Microsoft or Sony products). They also make a choice of system for which they develop their games, each coming with certain difficulties and additional costs, including the potential to enter exclusive partnerships with certain system manufacturers (Cox, 2014). Indirect network effects seen in the intra-consumer interactions between gamers and within gaming communities, due to the socially driven nature of online videogames and the relationships forged with fellow players drive consumption behaviors (Badrinarayanan et al., 2015).

Due to the digitalization prevalent in the VGI, there were a number of papers that covered logistics and delivery aspects, such as the increase in digital distribution in comparison to physical models (Waterman & Wook Ji, 2012) and the ability for content producers to bypass traditional publishers (Broekhuizen et al., 2013). Arakji & Lang (2007) illustrate how organizations are effectively outsourcing some development activities to the consumers, but this outsourcing can also be seen to take place with additional third-party developers and freelancers.

The hardware manufacturers are seen as the main bearers of the technological advances in the field (e.g. with new console generations or new versions of graphical processing units and processors). The policy makers then make decisions which can influence the whole industry on a major levels, such as the efforts of the Chinese policy makers to reduce screen time among children resulting in lowering number of newly released games to the market, thus reducing the growth of the industry in the region (Wijman, 2019).

DISCUSSION & CONCLUSION

The aim of this paper is to use the ARA model to conceptualize the VGI network, which is fast changing, disrupted by both technology and changes in consumer buying behavior. Our contribution is to develop the IMP theoretical basis by analyzing a specific network in detail and, as far as we are aware, this is the first such research to use an IMP framework to investigate the VGI network. It is valuable in establishing future research areas and also has managerial

implications in developing an understanding of how the different parts of the network interact and provide a robust basis for future decision making.

In our systematic literature review, we found that most academic literature on VGI is in large parts focused on the consumer behavior. Other parts of the network are analyzed mostly in dyads (e.g. hardware and software manufacturers). Our thematic analysis revealed that the complexity of the VGI network means that the traditional “grand theories” used in SCM research, such as Transaction Cost Theory or Resource Based View, which are focused more on direct inter-organizational interaction, may not reflect the full picture. Future research related to networks should focus not just on network structures and corresponding relationship and interaction patterns, but also on the absence of interconnectedness, lack of particular network structure and negative or ambivalent network ties (as per Raskovic, 2015). The use of dedicated platforms that bring together individual (non-company affiliated) developers and VG producers are unique to the VGI and researchers and practice could focus on enhancing the efficiency and usage of these, demonstrating the advantages of efficient handling of distribution, negotiations and administration (Håkansson & Snehota 1995: 30). Also, while we found evidence of digital disruption mostly in the industry reports, the academic literature sparsely discusses this issue.

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