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# **PRINCIPLES OF ECOSYSTEM STRATEGY**

Pierric Appert

Adam Smith Business School, College of Social Sciences  
University of Glasgow

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Submitted in fulfilment of the requirements  
of the Degree of PhD in Management

## **AUTHOR'S DECLARATION**

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Printed Name: Pierric Appert

Signature:

Date: 04.01.2023

## **ABSTRACT**

Strategy scholars and business practitioners alike are increasingly using the ecosystem concept to describe networks of interdependent firms that collaborate and align to offer complementary products and services and collectively contribute to an overarching value proposition. Companies that operate in ecosystems are playing by a different set of strategy rules to navigate these complex, interconnected and dynamic business environments. Accordingly, a whole new stream of literature is emerging, specifically looking at strategic management in the context of ecosystems. Early research in that field has generally taken a static view and examined firm strategy from the perspective of ecosystem leaders, who often exert a disproportionate influence over the ecosystem structure and capture the lion's share of profits. Less is known about firm strategy from the perspective of ecosystem complementors, who are responsible for a significant share of the co-created value but are often dismissed as passive actors, subject to the whims of the more powerful ecosystem leader. This dissertation addresses this gap through three tightly linked studies. The first study reviews over 250 academic articles from the ecosystem literature and discusses the status quo of research on ecosystem strategy, identifying several blind spots and avenues for future research, among which the almost exclusive attention given to the ecosystem leader perspective at the cost of better understanding complementors' strategic options. The second study builds upon the first one by taking aim at the burgeoning research on complementor strategy. It analyses this subset of the literature in depth, synthesises our current understanding of complementor strategy, and identifies several theoretical gaps and avenues for further research in that stream. This includes, for example, the question of how complementors can navigate ecosystem change. Finally, the third study specifically addresses this gap by empirically studying how complementors respond to and navigate ecosystem change. To do so, over 40 mobile app developers were interviewed in the context of Apple's introduction of a new mobile operating system (iOS 14.5) for its iPhone. Together, these studies

offer several theoretical and managerial contributions. The central theoretical contribution of this dissertation is to examine the multiple facets of strategic management in ecosystems, both from an ecosystem leader and from a complementor perspective. Specifically, the dissertation highlights how ecosystem members can gain a competitive edge and capture value in hyper-competitive and interconnected value creation systems, thus contributing both to the ecosystem and strategic management literature. Furthermore, my dissertation also uncovers how changes initiated by the ecosystem leader can ripple through an ecosystem and affect complementor performance, thus expanding our current understanding of platform dynamics and highlighting the importance of the dynamic capabilities concept for ecosystem research. Also, by elucidating how complementors adapt to ecosystem change, my dissertation contributes to the literature on business models and business model innovation in the context of ecosystems and platforms. Finally, by comparing and discussing the differences between ecosystem strategy and more established views in the strategic management literature, my dissertation also draws a bridge between seminal strategy work and the new field of ecosystem strategy. The central managerial contribution of this dissertation is to offer strategic insights into how firms (both ecosystem leaders and complementors) can successfully navigate ecosystem change, based on the case study of Apple's introduction of the ATT framework. Concretely, my study suggests several ways in which ecosystem leaders could minimize disruption and successfully execute platform change, while also highlighting a wide range of strategies complementors have at their disposal to avoid the negative effects of ecosystem dynamics and seize potential opportunities arising in the context of ecosystem disruption.

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# TABLE OF CONTENTS

|   |            |
|---|------------|
| <b>Author’s declaration</b> .....   | <b>ii</b>  |
| <b>Abstract</b> .....   | <b>iii</b> |
| <b>Acknowledgments</b> .....  | <b>v</b>   |
| <b>List of tables and figures</b> .....   | <b>xii</b> |
| <b>1. Introduction</b> .....  | <b>1</b>   |
| 1.1. Summary of the individual chapters.....  | 6          |
| 1.2. Contributions of this dissertation .....                                       | 8          |
| 1.3. Conclusion.....  | 10         |
| <b>2. A review of the literature on ecosystem strategy</b> .....                    | <b>11</b>  |
| 2.1. Research design.....   | 12         |
| 2.2. Themes in ecosystem strategy research .....                                    | 13         |
| 2.2.1. Ecosystem thinking .....   | 14         |
| 2.2.2. Ecosystem choice and firm positioning .....                                  | 17         |
| 2.2.3. Value co-creation .....  | 19         |
| 2.2.4. Competition and value capture in ecosystems .....                            | 25         |
| 2.2.5. Ecosystem design and governance.....   | 29         |
| 2.2.6. Competition between ecosystems .....   | 31         |
| 2.2.7. Adapting to and influencing ecosystem dynamics.....                          | 33         |
| 2.3. How ecosystem strategy research extends traditional theories of strategy ..... | 37         |
| 2.4. Future research .....  | 40         |
| 2.5. Conclusion.....  | 43         |
| <b>3. Complementor strategy in platform ecosystems</b> .....                        | <b>44</b>  |



|           |   |           |
|-----------|---|-----------|
| 3.1.      | Method .....  | 45        |
| 3.2.      | Overview of the literature on complementor strategy.....            | 46        |
| 3.3.      | Themes in complementor strategy research .....                      | 47        |
| 3.3.1.    | Creating a platform-based business .....                            | 48        |
| 3.3.2.    | Choosing the right platform .....                                   | 50        |
| 3.3.3.    | Competing against peers .....                                       | 51        |
| 3.3.4.    | Maximizing value appropriation.....                                 | 53        |
| 3.3.5.    | Mitigating platform dependence and increasing bargaining power..... | 54        |
| 3.3.6.    | Adapting to platform dynamics.....                                  | 56        |
| 3.4.      | Discussion .....  | 58        |
| 3.5.      | Conclusion.....   | 61        |
| <b>4.</b> | <b>Complementor responses to ecosystem disruption .....</b>         | <b>62</b> |
| 4.1.      | Empirical context .....   | 64        |
| 4.2.      | Method .....  | 66        |
| 4.2.1.    | Data collection .....   | 66        |
| 4.2.2.    | Data analysis .....   | 68        |
| 4.3.      | Findings.....   | 70        |
| 4.3.1.    | Resisting platform change.....                                      | 71        |
| 4.3.2.    | Avoiding platform restrictions .....                                | 75        |
| 4.3.3.    | Adapting to new platform rules .....                                | 78        |
| 4.3.4.    | Divesting from Apple’s iOS platform.....                            | 86        |
| 4.4.      | Discussion .....  | 89        |
| 4.4.1.    | Theoretical Contributions .....                                     | 89        |
| 4.4.2.    | Managerial Implications .....                                       | 91        |
| 4.4.3.    | Limitations & future research .....                                 | 92        |
| <b>5.</b> | <b>Conclusion .....</b>   | <b>96</b> |

|   |                                  |            |
|---|----------------------------------|------------|
| 5.1.  | Summary of Chapter 2 .....       | 97         |
| 5.2.  | Summary of Chapter 3 .....       | 99         |
| 5.3.  | Summary of Chapter 4 .....       | 101        |
| 5.4.  | Theoretical contributions.....   | 103        |
| 5.5.  | Managerial contributions.....    | 106        |
| 5.6.  | Concluding remarks .....         | 108        |
| <b>Appendix A: Interview transcripts.....</b> |                                  | <b>109</b> |
|   | Transcript of Interview 1 .....  | 109        |
|   | Transcript of Interview 2.....   | 115        |
|   | Transcript of Interview 3 .....  | 120        |
|   | Transcript of Interview 4.....   | 127        |
|   | Transcript of Interview 5.....   | 131        |
|   | Transcript of Interview 6.....   | 139        |
|   | Transcript of Interview 7 .....  | 146        |
|   | Transcript of Interview 8.....   | 153        |
|   | Transcript of Interview 9.....   | 160        |
|   | Transcript of Interview 10.....  | 166        |
|   | Transcript of Interview 11 ..... | 169        |
|   | Transcript of Interview 12.....  | 172        |
|   | Transcript of Interview 13.....  | 175        |
|   | Transcript of Interview 14.....  | 178        |
|   | Transcript of Interview 15.....  | 181        |

|                                 |     |
|---------------------------------|-----|
| Transcript of Interview 16..... | 183 |
| Transcript of Interview 17..... | 187 |
| Transcript of Interview 18..... | 193 |
| Transcript of Interview 19..... | 198 |
| Transcript of Interview 20..... | 202 |
| Transcript of Interview 21..... | 208 |
| Transcript of Interview 22..... | 217 |
| Transcript of Interview 23..... | 221 |
| Transcript of Interview 24..... | 227 |
| Transcript of Interview 25..... | 231 |
| Transcript of Interview 26..... | 234 |
| Transcript of Interview 27..... | 239 |
| Transcript of Interview 28..... | 243 |
| Transcript of Interview 29..... | 246 |
| Transcript of Interview 30..... | 249 |
| Transcript of Interview 31..... | 270 |
| Transcript of Interview 32..... | 276 |
| Transcript of Interview 33..... | 279 |
| Transcript of Interview 34..... | 284 |
| Transcript of Interview 35..... | 287 |
| Transcript of Interview 36..... | 294 |
| Transcript of Interview 37..... | 295 |

|                                 |            |
|---------------------------------|------------|
| Transcript of Interview 38..... | 297        |
| Transcript of Interview 39..... | 302        |
| Transcript of Interview 40..... | 304        |
| <b>List of references .....</b> | <b>307</b> |

## **LIST OF TABLES AND FIGURES**

|   |    |
|---|----|
| Table 2-1 Strategy themes and sub-themes in the ecosystem literature .....                  | 14 |
| Table 2-2 Difference between ecosystem strategy and traditional theories of strategy .....  | 37 |
| Table 3-1 Complementor strategy themes in the platform ecosystem literature .....           | 48 |
| Table 4-1 Overview of data collection.....  | 67 |
| Table 4-2 Overview of complementor coping strategies.....                                   | 71 |
| <br>  |    |
| Figure 1-1 Contribution of the thesis and its constituting studies .....                    | 10 |
| Figure 3-1 Published articles on complementor strategy in leading management journals ....  | 47 |
| Figure 4-1 Coding structure of complementor strategies to cope with platform disruption.... | 69 |

# 1. INTRODUCTION

The past two decades have seen a rapid adoption of the ecosystem concept in both management research (e.g., Adner, 2017; Adner and Kapoor, 2010; Ganco et al., 2020; Jacobides et al., 2018; Rietveld et al., 2019; Shipilov and Gawer, 2020) and practice (e.g., BCG, 2019; Roland Berger, 2019; Kearney, 2019; McKinsey, 2020) because it offers a useful perspective that can help companies to comprehend and navigate increasingly complex, interconnected, and dynamic business environments (Iyer et al., 2006; Teece, 2018). For example, it allows researchers and practitioners to better understand how autonomous and co-specialized organizations jointly develop and commercialize innovations (Adner, 2006). Ecosystem thinking also helps to capture the multilateral technological interdependencies and economic complementarities between the different activities and actors contributing to an ecosystem's value proposition (Adner, 2017; Kapoor, 2018). Finally, ecosystem thinking also makes evident that today's innovations draw from a variety of resources, knowledge, and competencies that no individual firm could hold on its own, irrespective of the degree of integration (Chesbrough and Appleyard, 2007).

Moore (1993) introduced the ecosystem concept into the business literature as a useful (albeit very loose and somewhat inaccurate) analogy to biological ecosystems found in nature. Indeed, strategy and innovation ecosystem scholars acknowledge that innovation ecosystems differ from biological ecosystems in several important ways. Oh et al. (2016) and Ritala and Almpanopoulou (2017), for example, emphasise that innovation ecosystems are designed, engineered systems. They have a commercial purpose, or teleology, unlike their biological counterparts. Furthermore, innovation ecosystems, once designed, do evolve in a way that is very different from natural ecosystems (consider, for example, ecosystem actors expanding to take over adjacent value-adding activities). "In an a biological ecosystem, a leopard that ingests

a gazelle remains a leopard. In an innovation ecology, a company that acquires another company becomes a new entity, of a different nature” (Oh et al., 2016, p. 8). Finally, Aarikka-Stenroos and Ritala (2017) also remark that natural ecosystems are local whereas business ecosystems often reach across the world. Nevertheless, despite these differences, Ritala and Almpantopoulou (2017) and many other strategy scholars (e.g., Adner, 2012; Jacobides et al., 2018; Kapoor, 2018; Shipilov and Gawer, 2020) also recognise that the ecosystem concept offers a powerful analogy that supports our understanding of underlying business phenomena. Indeed, according to these scholars, the value of the ecosystem concept and its use in management research lies in that it (i) encourages helpful ‘systems thinking’ to look at innovation and strategy problems, (ii) reflects the ever-increasing connectivity of innovation activities and shows a greater appreciation of the connections among the many innovation actors, (iii) highlights the richness and diversity of firms needed to offer today’s complex, multi-technological products and services, (iv) recognises the interdependency of these various actors and their tendency to co-evolve, and therefore (v) helps strategy and innovation scholars embrace their research objects more holistically.

In the context of strategy and innovation research, ecosystems are commonly described as meta-organizations (Gulati et al., 2012) composed of a set of interacting firms that together produce goods and services, co-evolve their capabilities and roles, and align their investments. As opposed to other forms of organization, ecosystems are neither fully hierarchically controlled, nor solely based on market mechanisms (Fuller et al., 2019; Jacobides et al., 2018; Moore, 2006). Ecosystems reach beyond the boundaries of a single industry (Teece, 2018) and include all actors that contribute in a non-generic way (Jacobides et al., 2018) to an overarching value proposition (Adner, 2017). Examples include upstream component suppliers, downstream complementors, the ecosystem leader(s), consultancies, universities, public and private research organisations, and more (Adner and Kapoor, 2010). Interorganizational ties

between ecosystem actors evolve over time and can consist of both collaborative and competitive relationships (Hannah and Eisenhardt, 2018). These relationships may be formal/contractual, based on standards, open data exchange (e.g., through application programming interfaces (APIs)), joint-ventures, research collaborations, or simply influence (Phillips and Ritala, 2019).

Ecosystems tend to emerge where modularity is high, because modularity allows interdependent components of a system to be produced by different companies, with limited coordination required (Jacobides et al., 2018; Moore, 2006). With the advent of the internet and digital business models, ecosystems are also increasingly organised around a platform. In fact, platforms are encompassing an increasingly large share of economic activity and have become an integral part of everyday life, incl. social (e.g., Facebook), entertainment (e.g., YouTube), shopping (e.g., Amazon), transportation (e.g., Uber), hospitality (e.g., Airbnb), food (e.g., Grubhub), and more. In their simplest form, platforms mediate transactions between several distinct ecosystem participants (Cennamo and Santalo, 2013). In more complex forms, platforms also provide the foundation upon which outside firms develop complementary products, technologies, or services and gain access to the platform's customers (Gawer and Cusumano, 2014). Platform ecosystems are, in general, much more centralized than 'conventional' ecosystems and often take a 'hub and spoke' form (Furr and Shipilov, 2018; Kapoor, 2018). However, decentralized platform ecosystems (such as Mozilla Firefox, Wikipedia, or Ethereum) are also common and attracting an increasing amount of scholarly attention (e.g., Chen et al., 2020; O'Mahony and Karp, 2020; Pereira et al., 2019).

In general, companies that operate in ecosystems are playing by a different set of strategy rules (Birkinshaw, 2019) and display new forms of strategic behaviours and competitive interactions, including, for example, new (platform) business models (Hamel and Zanini, 2018; McIntyre et al., 2020; Zhao et al., 2020), novel approaches to market entry and



patterns of technology substitution (Adner and Kapoor, 2016; Snihur et al., 2018), and new forms of distributed innovation and value co-creation (Adner, 2006; Masucci et al., 2020). Ecosystems have also given rise to new ways of managing intellectual property (IP) (Alexy et al., 2013; Miller and Toh, 2020; Toh and Miller, 2017) and concurrent collaboration and competition (Hannah and Eisenhardt, 2018; Zhu, 2019; Zhu and Liu, 2018). This has led to the rise of a new stream of strategy research, dedicated to exploring the specificities of strategy in the context of ecosystems (e.g., Adner, 2017; Hannah and Eisenhardt, 2018; Moore, 2006; Talmar et al., 2018; Walrave et al., 2018).

But despite this emerging body of work, our understanding of the various facets of ecosystem strategy remains at best partial. For example, strategy scholars are only starting to elucidate what ecosystem strategy is, what it encompasses, and how it can be defined (Adner, 2017; Hannah and Eisenhardt, 2018). Furthermore, the link between established strategy theories and ecosystem strategy remains to be drawn. Also, the early ecosystem strategy literature has predominantly focused on centralised ecosystems, and taken the perspective of the ecosystem leader, who often controls and influences value co-creation mechanisms and generally takes home a sizable chunk of ecosystem profits (Furr and Shipilov, 2018). On the other hand, despite their critical role and their greater numbers, ecosystem complementors have gotten far less scholarly attention (Kapoor and Agarwal, 2017). Complementors contribute to an ecosystem by providing complementary products or services that improve the ecosystem's value proposition. Understanding the specific challenges and trade-offs they face will become increasingly relevant if we want to develop a thorough understanding of strategic management in the context of ecosystems.

Finally, early ecosystem literature tends to overlook ecosystem dynamics and its implications for ecosystem structures and firm performance. Although some researchers (e.g., Dattee et al., 2018; Dedehayir et al., 2018; Mäkinen and Dedehayir, 2013; Snihur et al., 2018;

Teece, 2017) have observed that ecosystems form, converge, and collapse, we still know little about the fundamental reasons of such dynamic processes (Meyer et al., 2005; Reeves et al., 2019). Understanding how and why ecosystems evolve is important for both theory and practice: For participating organizations to succeed in innovation ecosystems, it is essential to have a comprehensive understanding of how ecosystem dynamics will affect value distribution (Jacobides and Tae, 2015) in order to guide strategic decision-making and direct investments (Winter et al., 2018). Indeed, changes to the ecosystem and its underlying technologies can have severe ripple effects for complementors, who's products and services are built atop. Kapoor and Agarwal (2017), for example, show that platform transitions can negatively impact the performance of complementors, especially when ecosystem complexity is high. Similarly, Pierce (2009) finds that vertical integration by the ecosystem leader can generate financial losses and exit for complementary niche market firms. While these studies vividly highlight the cataclysmic consequences ecosystem evolution can have for complementors, they do not explore how complementors can navigate such changes and sustain their business.

This thesis aims to address these gaps by asking: *How do complementors navigate ecosystem change and succeed in centralised ecosystems?* I examine this question through three tightly linked studies. I begin with discussing the status quo of research on ecosystem strategy (Chapter 2), which reveals, among other things, that prior research has mainly focused on the ecosystem leader. Consequently, I then analyse the subset of prior research on complementor strategy in depth (Chapter 3), identifying several gaps and avenues for further research. Finally, I set out to address one of these gaps by empirically studying how complementors adapt to ecosystem change (Chapter 4). This thesis has been submitted in a cumulative as opposed to monographic format. Accordingly, the chapters 2-4 are written in a format suitable for submission for publication. Each of these studies is summarised in more detail in the following section.

## **1.1. SUMMARY OF THE INDIVIDUAL CHAPTERS**

In the first study (Chapter 2), I provide a review of the extensive yet diverse and fragmented literature on ecosystem strategy. The goal is to develop a better understanding of the multiple facets of strategy in ecosystems. To perform this review, adhere with state-of-the art methodological approaches within the field of management research, and make the study potentially publishable in a top management journal, I used three seminal systematic reviews published in the *Journal of Management* (i.e., Zott et al., 2011; Rietveld and Schilling, 2021) and the *Journal of Management Studies* (i.e., Hanelt et al., 2021) as methodological blueprints, following nearly identical processes for data collection and analysis. Reviewing 269 articles, I identify seven key themes that constitute the core of strategy discussions in the ecosystem literature, namely: ecosystem thinking, ecosystem choice and firm positioning, coordinating value co-creation, ensuring value capture, ecosystem design, inter-ecosystem competition, and ecosystem dynamics. Furthermore, I discuss how ecosystem strategy departs from traditional strategy theories by encompassing, among other things, technological interdependencies, economic complementarities, alignment among ecosystem actors' roles and intentions, and coopetition. I conclude with suggestions for future research.

In the second study (Chapter 3), I review research on complementor strategy and synthesize how complementors can increase value capture and bargaining power, while reducing the risks inherent to their business. Similar to my first review, I use Zott et al. (2011), Rietveld and Schilling (2021), and Hanelt et al. (2021) as methodological blueprints to perform my data collection and analysis. In terms of my findings, I identify various strategic options available to complementors to create competitive advantage and position themselves against ecosystem leaders, including multihoming, disintermediation, and off-platform diversification. Overall, I contribute to ecosystem strategy research by showing that complementors do not

necessarily have to be passive rule takers, and I shed light on various ways complementors can successfully compete in platform ecosystems.

Finally, I provide an empirical study (Chapter 4), where I use a recent update of Apple's iOS mobile operating system as a context to explore how complementors are affected by platform disruption, and how they navigate the ripple effects it generates across the ecosystem. I chose this empirical setting for several reasons: first, the data collection for my PhD started during the first wave of the COVID pandemic in March 2020, at a time where the mobile industry was one of the very few economic sectors to experience massive growth and record revenues. Secondly, contact restrictions made data collection via video call interviews mandatory, which, at the time, was still uncommon in many organizations, but already well established within the app developer community, whose workforce often works in geographically distributed teams. Furthermore, since my intention is to publish this study as a standalone academic article, and to ensure my methodological approach was on par with the high standards for qualitative studies set forth in top management journals, I used a seminal publication in the *Strategic Management Journal* (i.e., Khanagha et al., 2020) as a methodological blueprint for both my data collection and analysis. Through qualitative research based on more than 40 interviews with industry experts, I find that complementors deploy a wide array of strategies to cope with platform disruption. Complementors can, for example, oppose and attempt to delay platform changes perceived to threaten their ability to capture value. Complementors can also explore ways to circumvent restrictions imposed by the platform leader, for example by developing alternative technologies or by multihoming. Complementors in my sample also resorted to business model innovation to alleviate the negative effects of disruption. Those with well-developed dynamic capabilities were even able to leverage platform disruptions to improve their competitiveness and realize new opportunities in the ecosystem. Finally, some complementors defected or divested from the ecosystem as a

result of the changes brought about by the platform leader. I therefore complement existing literature on ecosystem disruption, generational transitions, and their effects on complementors, and use the concept of business model innovation to explain why some complementors successfully navigate such disruptions while others don't.

## **1.2. CONTRIBUTIONS OF THIS DISSERTATION**

My dissertation makes several contributions (see Figure 1-1). First, my survey of the ecosystem literature aids in putting together a comprehensive understanding of how ecosystem participants might obtain a competitive edge and capture value in constantly evolving, hypercompetitive, networked value creation systems. My dissertation also contributes to strategy research more generally by building a bridge between influential strategy theories and the developing field of ecosystem strategy, and by comparing and contrasting some of their core tenets. In the ecosystem strategy literature, I also find gaps and blind spots that could provide interesting avenues for further study.


Second, by expanding on this preliminary review, my dissertation also synthesizes and gathers early work on the topic of complementor strategy, which, as a subset of the larger ecosystem literature, focuses explicitly on the viewpoint of ecosystem complementors. I create a framework that encapsulates the various strategic factors complementors must take into account in order to successfully compete in ecosystems by concentrating on research that examines the strategic challenges and trade-offs they face. My research consequently takes a more inclusive and comprehensive approach than hitherto work, because it encompasses the strategic perspective of the ecosystem as a whole, expanding upon our existing leader-centric understanding of ecosystem strategy.

In addition, my dissertation advances our existing knowledge of ecosystem dynamics by clarifying how changes brought about by the ecosystem leader can have a significant impact

on complementors. More specifically, I demonstrate that ecosystem disruption directly affects complementors' strategy and business model, in addition to complement demand, costs, and financial performance. In light of this, I identify four unique and sequential strategies complementors use to navigate ecosystem disruption and capture opportunities brought about by ecosystem change. I also show how technological transitions, despite raising the platform's inherent quality, may instead cause complementor defection and reduce the ecosystem's overall value creation potential. Because of this, my dissertation directly adds to the growing literature on complementor strategies while also revealing some intriguing first- and second-order impacts of ecosystem dynamics, particularly in relation to the impact of ecosystem leader actions on ecosystem structures.

Additionally, this dissertation contributes to practice. In an increasingly centralized and intermediated world where ecosystem leaders like Apple, Google, and Amazon gatekeep access to large user bases, my study shows that ecosystem complementors do, in fact, have some leverage. They can, for example, challenge the ecosystem leader's decisions and minimize their impact on ecosystem structures by taking collective action, or by circumventing the ecosystem rules and regulations altogether (e.g., through multihoming or disintermediation). In my dissertation, I also highlight how business model innovation and adaptation can give complementors an advantage over rivals by allowing them to capitalize on ecosystem dynamics. My empirical work also hints to the enormous heterogeneity among complementors, with the implication that there is no one-size-fits-all when it comes to complementor strategy. Finally, a broad conclusion from this dissertation is that complementor performance is significantly influenced by unpredictable ecosystem dynamics and ecosystem leader choices. In light of this environment, complementors could benefit from embedding resilience in their businesses in order to enable quick realignment to evolving ecosystem structures, rising bottlenecks, and growth opportunities brought forth by ecosystem change.

**Figure 1-1 Contribution of the thesis and its constituting studies**

| Main contributions of the individual studies   |  |
|--|--|
| Study I<br>(Chapter 2)   | <ul style="list-style-type: none"> <li>• Contributes to ecosystem research by synthesizing current work from the perspective of strategic management, thereby assisting in structuring and clarifying the relatively young, yet sizable body of ecosystem strategy work.</li> <li>• Contributes to strategy research by drawing a bridge between seminal strategy work (e.g., Porter, Barney, stakeholder theory) and the new field of ecosystem strategy.</li> <li>• Contributes to ecosystem research by identifying gaps and emerging discussions in the ecosystem strategy literature, from which promising avenues for future research are derived, among which complementor strategy and ecosystem dynamics.</li> </ul>  |
| Study II<br>(Chapter 3)  | <ul style="list-style-type: none"> <li>• Contributes to ecosystem research by addressing some of the gaps identified in Chapter 2, specifically by expanding upon our existing leader-centric understanding of ecosystem strategy and encompassing the strategic perspective of other ecosystem members.</li> <li>• Contributes to ecosystem research by gathering and synthesizing early work on the topic of complementor strategy, and highlighting areas for further research.</li> <li>• Contributes to ecosystem and strategy research by developing a framework that encapsulates the various strategic factors complementors must consider in order to successfully compete in ecosystems.</li> </ul>  |
| Study III<br>(Chapter 4)   | <ul style="list-style-type: none"> <li>• Contributes to the literature on ecosystem dynamics and complementor strategy by uncovering how changes triggered by the ecosystem leader can have a significant impact on complementors.</li> <li>• Contributes to literature on complementor strategy by identifying various strategies complementors can use to navigate ecosystem disruption.</li> <li>• Contributes to ecosystem research by highlighting complementor heterogeneity and its implications for ecosystem strategizing.</li> <li>• Contributes to the literature on business models and business model innovation, by highlighting how business model innovation is key to ecosystem survival and the ability of complementors to seize business opportunities that emerge with ecosystem change.</li> </ul> |
|   |  |
| Main contribution of the thesis  |  |
| <ul style="list-style-type: none"> <li>• Contributes to the ecosystem literature by providing a comprehensive understanding of how ecosystem members (both leaders and complementors) might develop a competitive edge and capture value in constantly evolving, hypercompetitive, interconnected value creation systems.</li> </ul> |  |

### 1.3. CONCLUSION

Overall, this dissertation examines strategy in ecosystems from the perspective of ecosystem complementors, while taking into consideration ecosystem dynamics. It therefore extends a growing body of work on ecosystems and offers important and novel insights about contemporary strategy theory that is becoming ever more theoretically and managerially relevant.

## 2. A REVIEW OF THE LITERATURE ON ECOSYSTEM STRATEGY<sup>1,2</sup>

Despite some insightful early (e.g., Adner, 2006; Iansiti and Levien, 2004; Moore, 1993) and more recent work (e.g., Adner, 2017; Hannah and Eisenhardt, 2018), the burgeoning literature on ecosystem strategy remains dispersed and is still focused on foundational level issues, such as finding common agreement on what exactly ecosystem strategy is and what it encompasses. Developing a better understanding of the multiple facets of strategy in ecosystems has so far remained elusive, and our understanding of the peculiar strategic challenges and trade-offs faced in ecosystems is still siloed and incomplete. Simply put, the characteristics and peculiarities of ecosystem strategy remain to be clearly outlined and integrated. It also remains unclear how the ecosystem lens links to, extends, and possibly contradicts, previous strategy research. Established strategy theories such as the resource-based view (RBV) of the firm (e.g., Barney, 1991) or the positioning view (e.g., Porter, 1996) appear especially challenged, as they, for example, struggle to account for competitive advantage originating from complementary innovations or network effects (Massa et al., 2017).

In this article I consolidate previous work on ecosystem strategy by asking: *What are the characteristics of strategy in ecosystems?* and *What does the ecosystem lens add to traditional theories of strategy?* To answer these questions, I conducted a review of the ecosystem literature between 1990 and 2020, with the aim of elucidating the specifics of strategic management in the context of ecosystems. In doing so, I complement previous reviews of the ecosystem literature (e.g., Bogers et al., 2019; Gomes et al., 2018; Granstrand and

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<sup>1</sup> An earlier version of this chapter has been presented at the SMS Special Conference in March 2020 and at the AOM TIM Paper Development Workshop “Emerging Technologies and Ecosystems: Opportunities and Challenges” in May 2020.

<sup>2</sup> Authorship: Pierric Appert (PA) and Stephan von Delft (SvD). Contributions: PA conceived and conceptualized the study, analysed the data, and drafted the manuscript with input from SvD; SvD provided critical feedback, helped to shape the research and reviewed the manuscript.



Holgersson, 2020; Scaringella and Radziwon, 2018; Suominen et al., 2019; Tsujimoto et al., 2018), which have focused on more conceptual issues such as origins, definitions, and boundaries of ecosystems.

With this review I claim three core contributions. First, I present a comprehensive and state-of-the-art overview of the ecosystem literature from the perspective of strategic management, thereby assisting in structuring and clarifying the ecosystem strategy literature. Second, I propose linkages between strategy in ecosystems and established views in the strategic management literature such as the RBV, positioning view, and stakeholder theory. Third, I identify gaps and emerging discussions in the ecosystem strategy literature, from which I derive promising avenues for future research.

## **2.1. RESEARCH DESIGN**

I took several steps to conduct this review. First, I used the Web of Science Core Collection to search for relevant ecosystem articles published in academic and practitioner-oriented management journals during the period 1990 to 2020. Following other reviews (e.g., Rietveld and Schilling, 2021), I started with publication outlets listed in the Financial Times FT50 journal list, which provides a measure of internationally recognized high-quality journals (Burgess and Shaw, 2010). Then, based on a systematic review of the ecosystem literature by Gomes et al. (2018), I added journals that have been particularly prolific in publishing ecosystem articles, but which are not included in the Financial Times FT50 journal list (e.g., California Management Review, Long Range Planning). Focusing on articles that contain the term ‘ecosystem’ and ‘strategy’ (or any variants of those words, such as ‘eco-systems’, ‘ecosystemic’, or ‘strategic’) in the title, abstract, or keywords, my initial search revealed 324 articles.

I then filtered my results applying the following two criteria. First, a cursory analysis revealed that some of these articles were irrelevant (e.g., call for papers, case studies, commentary articles). Second, to be included in my review, an article must deal with the ecosystem concept in a non-marginal way. As a result, I eliminated 63 articles. Through reading the 261 remaining articles in depth, I became aware of further works on ecosystems (e.g., books) that appeared relevant and that I, therefore, included in my review (e.g., Adner, 2012; Gawer et al., 2019). The final sample therefore comprises 269 publications.

To reduce this large amount of textual data down to its essence, I followed prior literature reviews (e.g., Hanelt et al., 2021) and used Mayring's (2000, 2014) content analysis approach. Accordingly, I first read a sample of articles (about 10%) to obtain a sense of the whole and develop an emergent categorization system to capture key thoughts and concepts. Then, I coded the articles according to the emergent categorization system, while revising and refining it as new insights emerged. Finally, I interpreted and discussed the results. In the following section, I describe the findings of my review in detail.

## **2.2. THEMES IN ECOSYSTEM STRATEGY RESEARCH**

As presented in Table 2-1, strategy discussions in the burgeoning ecosystem literature have touched upon a broad range of topics, which I amalgamated into seven themes and over forty sub-themes.

**Table 2-1 Strategy themes and sub-themes in ecosystem strategy research**

| Strategy themes                                 | Sub-themes  | Selected studies   |
|---|---|--|
| Ecosystem thinking                              | <ul style="list-style-type: none"> <li>• Navigating complexity, uncertainty, and rapid changes</li> <li>• Ecosystems as a new level of strategic analysis</li> <li>• Identifying technological interdependencies and economic complementarities</li> </ul>  | Fuller et al. (2019); Adner and Feiler (2019); Zahra and Nambisan (2012)<br>Teece (2016); Straub (2019)<br><br>Kapoor (2018); Shipilov and Gawer (2020); Ganco et al. (2019); Jacobides et al. (2018)  |
| Ecosystem choice and firm positioning           | <ul style="list-style-type: none"> <li>• Ecosystem choice and multihoming</li> <li>• Role of the firm</li> <li>• Boundaries of the firm</li> </ul>  | Cennamo et al. (2018)<br>Adner (2017); Dedehayir et al. (2018)<br>Zhu and Liu (2018); Gawer (2020)   |
| Value co-creation                               | <ul style="list-style-type: none"> <li>• Attracting high quality complementors</li> <li>• Coordination of value co-creation</li> <li>• Ensuring alignment among ecosystem members</li> <li>• Synchronizing innovation strategies</li> <li>• Resolving technological bottlenecks</li> <li>• Ensuring downstream adoption</li> <li>• Coordination through standardization and platforms</li> <li>• Ecosystems and entrepreneurship</li> </ul> | Cennamo (2018)<br>Moore (2006); Boudreau (2017)<br>Adner (2017); West and Wood (2013)<br><br>Mäkinen and Dedehayir (2013)<br>Masucci et al. (2020); Ethiraj (2007)<br>Adner and Kapoor (2010); Adner (2006)<br>Miller and Toh (2020); Gawer (2014); McIntyre et al. (2020)<br>Eckhardt et al. (2018) |
| Competition and value capture within ecosystems | <ul style="list-style-type: none"> <li>• Managing cooperation</li> <li>• Ensuring bottleneck control</li> <li>• Ensuring control over complements</li> <li>• Leveraging standardization</li> <li>• Acting as an ecosystem leader</li> <li>• Management of IP</li> <li>• Ensuring fair value distribution</li> </ul>   | Hoffmann et al. (2018); Jones et al. (2021)<br>Hannah and Eisenhardt (2018)<br>Pisano and Teece (2007)<br>Moore (2006); Miller and Toh (2020)<br>Doz (2019); Cusumano and Gawer (2002)<br>Holgersson et al. (2018)<br>Iansiti and Levien (2004)  |
| Ecosystem design and governance                 | <ul style="list-style-type: none"> <li>• Openness</li> <li>• Modularity</li> <li>• APIs</li> <li>• Decision rights and control</li> <li>• Pricing</li> <li>• Governance</li> </ul>  | Parker and Van Alstyne (2018)<br>Baldwin (2018)<br>Iyer and Subramaniam (2015)<br>Tiwana et al. (2010); Chen et al. (2021)<br>Hagiu (2006); Eisenmann et al. (2006)<br>Wareham et al. (2014)   |
| Competition between ecosystems                  | <ul style="list-style-type: none"> <li>• Network effects and winner-take-most dynamics</li> <li>• Differentiation</li> <li>• Dethroning the ecosystem leader</li> <li>• Technology substitution</li> <li>• Platform envelopment</li> </ul>  | Rietveld and Schilling (2020); Cennamo and Santalo (2013); Cusumano et al. (2021)<br>Tauscher and Rothe (2021)<br>Snihur et al. (2018); Ansari et al. (2016)<br>Adner and Kapoor (2016)<br>Eisenmann et al., (2011)  |
| Adapting to and influencing ecosystem dynamics  | <ul style="list-style-type: none"> <li>• Ecosystem lifecycle</li> <li>• Solving the chicken-and-egg problem</li> <li>• Managing generational transitions and its effects on complementors</li> <li>• Changing roles in the ecosystem</li> <li>• Shifting value and bottlenecks</li> <li>• Changes in governance</li> <li>• Shaping ecosystem structures</li> <li>• Selective revealing of knowledge</li> </ul>                              | Reeves et al. (2019); Moore (1993)<br>Hagiu and Eisenmann (2007)<br>Kapoor and Agarwal (2017); Ozalp et al. (2018); Pierce (2009)<br>Dedehayir et al. (2018)<br>Jacobides and Tae (2015)<br>Rietveld et al. (2020)<br>Moore (2006); Teece (2007)<br>Alexy et al. (2013); Miller and Toh (2020)       |

### 2.2.1. Ecosystem thinking

To comprehend and act upon the complexity, interconnectedness, and dynamism of many of today’s business environments, Fuller et al. (2019, p. 5) note that organizations need to “apply

new ways of thinking about strategy from an ecosystems perspective”. Indeed, ecosystems offer a new perspective that can increase our understanding of value creation and value capture in complex interorganizational networks (Adner, 2012). Some scholars even argue that companies adopting this ecosystem perspective to strategize are especially well positioned to succeed (Zahra and Nambisan, 2012).

Ecosystem thinking rests on at least three principles. First, it recognizes that digital technologies have increasingly blurred industry boundaries, and therefore suggests that the industry is no longer the suitable unit for strategic analysis (Teece, 2016). Instead of drawing boundaries at the level of the industry, ecosystem thinking focusses on the overarching ecosystem value proposition and the firms that contribute to it (Adner, 2017). Second, ecosystem thinking moves beyond the relatively simplistic, linear, and mechanistic thinking of “industrial-age models of inputs, processes, and outputs” (Straub, 2019), and takes into account the non-linear behaviour of complex and dynamic business environments, such as network effects. Third, ecosystem thinking emphasizes that the interests of firms are better served through active collaboration with their immediate and peripheral business environment, therefore moving beyond a firm-centric approach to strategy making (Iansiti and Levien, 2004). According to Jacobides (2019, p. 11), this requires an “outward-facing culture and the ability to manage relationships with a host of complementors”. Adopting an ecosystem perspective may even lead to otherwise uncommon behaviours, such as allocating key resources and core value-creating activities to external partners (Adner, 2006).

In ecosystems, firms are embedded in a web of technological interdependencies and economic complementarities (Kapoor, 2018). As Talmar et al. (2018, p. 8) note: “the main challenges in developing ecosystem strategy arise from the context of the ecosystem, as represented by the interplay between its structural elements”, and firms should therefore explicitly consider the structural elements of the ecosystem in which they are embedded in

order to evaluate strategic decisions and its consequences for the ecosystem at large (Iansiti and Levien, 2004). Interdependencies can, for example, have important implications for risk assessment in multi-party innovation projects, and there is thus a need for ecosystem strategy to account for the potential delays or failures by component suppliers and complementors (Adner, 2006). Furthermore, having a clear understanding of how the web of interdependencies around which a firm evolves is considered critical for creating effective ecosystem strategies (Adner, 2006; Ozcan and Eisenhardt, 2009). This appears to be especially relevant for complementors, which are often highly dependent on ecosystem leaders, and thus vulnerable to changes in the governance, structure, or value proposition of the ecosystem (Kapoor and Agarwal, 2017; Rietveld et al., 2020). Indeed, the actions of particularly central and influential firms in an ecosystem can have widespread and severe ripple effects for the ecosystem as a whole (Pierce, 2009). Identifying the direct and indirect links to such firms, and monitoring and understanding their actions, therefore constitutes a key aspect of ecosystem thinking.

Moreover, several scholars in this stream have studied the nature of complementarities (e.g., Jacobides et al., 2018) and how to best analyse technological interdependencies between ecosystem partners. This includes work using network analytic tools to map existing technological relationships (e.g., Battistella et al., 2013), display the patterns of component interdependencies (e.g., Shipilov and Gawer, 2020), or visualize ecosystem dynamics (e.g., Basole, 2009). However, the literature suggests that identifying technological interdependencies and complementarities may not be sufficient, as decision makers also need to effectively evaluate and assess the implications these interorganizational links have for their firm's innovation processes. For example, studying decision making biases in ecosystems, Adner and Feiler (2019) find that executives often underestimate the level of risk interdependencies present in co-innovation projects, leading to inflated project valuations, excessive addition of partners, and misallocation of resources.

### ***2.2.2. Ecosystem choice and firm positioning***

Choosing the “right” ecosystem in which to participate is an important strategic decision for firms, as it is associated with high ecosystem-specific investments and switching costs (Aarikka-Stenroos and Ritala, 2017). Ecosystem choice has, therefore, been widely discussed in the ecosystem strategy literature, and is often based on criteria such as the size of the user base, intensity of rivalry, and governance rules (Boudreau, 2010; Gawer and Henderson, 2007; Zhu and Iansiti, 2012). Ecosystem choice is associated with high risks (Smith, 2013), especially when ecosystems are emerging and their trajectories and underlying technological pathways are still undetermined (Dattee et al., 2018). In such circumstances, the choice of which ecosystem to compete in often comes down to identifying future technology standards and investing in future dominant designs (Miller and Toh, 2020). For example, some hardware manufacturers such as Hitachi and Sharp accurately predicted VHS would become the standard for video cassette recorders and invested early in the technology, whereas others such as Sony only adapted lately to the standard (Granstrand and Holgersson, 2020).

#### *Multihoming*

To reduce the risks of “betting on the wrong horse”, producers of complementary components can design products and services for multiple ecosystems – a practice called multihoming (Cennamo et al., 2018). Paradigmatic of multihoming behaviour are app developers for mobile devices, which commonly develop their software for the two dominant mobile operating systems, Google’s Play Store and Apple’s App Store (Kapoor and Agarwal, 2017). Several studies suggest that multihoming is strategically important for complementors in at least two ways: first, it allows complementors to increase their user base and enjoy economies of scale (Tavalaei and Cennamo, 2020). Second, by diversifying their sales channels and revenue streams, complementors may preserve a certain independence and bargaining power vis-à-vis

ecosystem leaders (Wang and Miller, 2019). However, multihoming can be costly: it often requires ecosystem-specific adaptations, and may even negatively impact product performance because complements are usually optimized for a specific technology (Cennamo et al., 2018). Defining an appropriate multihoming strategy is, therefore, more complex than simply trying to maximize market reach (Tavalaei and Cennamo, 2020).

### *Role of the firm*

Besides ecosystem choice, one of the primary aspects of a firm's ecosystem strategy is to define its role in the ecosystem(s) in which it participates (Adner, 2017). The role of a firm in an ecosystem is determined by the set of activities it performs towards the ecosystem value proposition (Doz, 2019). As part of their strategy, firms may aim to become the leader of the ecosystem in which they participate. The ecosystem leader provides the core technologies underpinning an ecosystem, connects ecosystem members to one another, and supports and facilitates value co-creation (Iansiti and Levien, 2004). Being the ecosystem leader also offers several advantages. However, being the ecosystem leader requires unique resources and competencies, such as a strong brand, a broad user base, and a compelling vision to attract complementors (Jacobides, 2019). Furthermore, as Mantovani and Ruiz-Aliseda (2016) show, competition for ecosystem leadership, if it is widespread and continuous, can be detrimental for the formation of innovation ecosystems. This leads Jacobides (2019) to conclude that, since there can only be a limited number of ecosystem leaders (at the extreme only one), firms may be better off competing in the role of a complementor. But, complementor roles come with their own peculiar strategic challenges (Adner, 2012). As Adner (2006, p. 9) notes, "taking a less ambitious ecosystem role also requires new choices—which leadership candidates to follow, how aggressively to commit, how to defend turf". Choosing to be a complementor rather than a leader may be a difficult decision (e.g., because of reputation, culture, or firm

history), especially for large, established firms. However, as Khanagha et al. (2020) show in the case of Cisco and the cloud and fog computing ecosystems, it is not unusual for large firms to take on the role of a complementor in one ecosystem, and the role of an ecosystem leader in another. Similarly, Jacobides (2019) highlights that ecosystem leaders such as Microsoft or Google are also complementors in the Android or Apple mobile ecosystems.

### *Boundaries of the firm*

Ecosystem research also raises interesting questions pertaining to organizational boundaries (Gawer, 2020). Indeed, with the rise of ecosystems, decisions concerning which activities to perform internally, in collaboration, to subcontract via outsourcing, or to leave to complementors are becoming increasingly important (Cusumano and Gawer, 2002) and complex (Adner, 2006). For example, since a major share of the profits in ecosystems arise from complementary components, ecosystem leaders can derive great financial benefits from entering complementary markets (Miller and Toh, 2020). In certain cases, ecosystem leaders may also enter complementary markets in order to spur the availability of complementary products, generate network effects, and thus increase the overall value of the ecosystem (Gawer and Henderson, 2007). However, such a strategy comes at the risk of stifling innovation and discouraging complementors, who might leave for a more benevolent ecosystem (Zhu, 2019; Zhu and Liu, 2018).

### **2.2.3. Value co-creation**

#### *Attracting complementary innovation*

Ecosystems broaden the scope of strategy by considering the value complementary components can add to an ecosystem leader's products or services (Adner and Kapoor, 2010). Studies by Nagle (2019) and others have shown that complementary innovation can greatly improve the



performance of the firm at the center of the ecosystem. Indeed, attracting complementary innovation can generate network effects and lead to positive feedback loops, which in turn may attract even more complementors, and so forth (McIntyre and Subramaniam, 2009). Scholars suggest that triggering these network effects is especially critical in platform-based ecosystems as they are often characterized by winner-take-most (or all) outcomes (Schilling, 2002). Tauscher and Rothe (2021) also highlight how attracting high quality complementors is of strategic importance to ecosystem leaders to differentiate a given ecosystem. To do so, ecosystem leaders need to provide more incentives to complementors than competing ecosystems (Gawer and Cusumano, 2008), develop an ecosystem vision that is both credible and compelling (Williamson and De Meyer, 2020), and make the ecosystem accessible (Boudreau, 2010). The latter includes, for example, granting access to an ecosystem's core technology by providing application programming interfaces and boundary resources (such as software development kits) to facilitate product development (Eaton et al., 2015; Gawer and Cusumano, 2014; Iyer and Subramaniam, 2015).

#### *Securing alignment among ecosystem members*

Ecosystems are composed of a heterogeneous set of autonomous actors with peculiar interests and objectives (Cennamo and Santaló, 2019; Kretschmer et al., 2020; Ranganathan et al., 2018). Ecosystems, therefore, inevitably display conflicts of interest among actors, including disagreements about positions and roles in the ecosystem, or competing visions for how the ecosystem should develop (Vasudeva et al., 2020; Walrave et al., 2018). However, sometimes ecosystem members are unable to overcome these tensions, eventually risking the emergence and success of the ecosystem. For example, Ozcan and Santos (2015) describe the failed emergence of a mobile payments ecosystem, where powerful incumbents from the financial and telecommunications industries were unable to align investments towards a common

ecosystem vision and agree on a mutually beneficial ecosystem architecture. Indeed, since firms in ecosystems depend on each other for the ecosystem value proposition to emerge, Jacobides et al. (2018) suggest that some degree of coordination of actions and alignment of objectives is necessary to successfully co-create value. Similarly, West and Wood (2013, p. 58) note that “optimizing the performance of an ecosystem [...] requires aligning the interests of a heterogeneous population of ecosystem members and partitioning the technical and business responsibilities among those members”. An important aspect of ecosystem strategy has thus been attributed to “the way in which a focal firm approaches the alignment of partners” (Adner, 2017, p. 47). Studies show that firms can increase alignment with ecosystem members through conscious boundary choices (e.g., Gawer and Henderson, 2007; Hannah and Eisenhardt, 2018), complementary business models and co-evolution (e.g., Ansari et al., 2016; Snihur et al., 2018), disclosure of IP (e.g., Alexy et al., 2013), accepting trade-offs with respect to the ecosystem’s value proposition (e.g., Adner and Kapoor, 2010), or by influencing the actions of others in the ecosystem to achieve coherence (Yoffie and Kwak, 2006).

### *Coordinating value co-creation*

In ecosystems, innovation activity is distributed among a large number of firms (Boudreau, 2010, 2012). To make such distributed innovations work, presupposes a certain degree of coordination and information exchange between ecosystem members (Davis, 2016). Coordination between ecosystem members can increase the efficiency of ecosystems because it prevents the duplication of innovation efforts and reduces the number of alternative technological trajectories that are being explored (Moore, 2006). Coordination of value co-creation in ecosystems requires a deep system-level understanding of the complex web of interrelated activities, technological interdependencies, and economic complementarities between firms (Chesbrough and Appleyard, 2007). It is therefore usually performed by

ecosystem leaders, i.e., firms that wield particular influence within an ecosystem because of their size, superior resources, capabilities, and/or technologies (Boudreau, 2017). Coordination entails the management of risks associated with the eventual failure of innovation partners such as important complementors, and sometimes includes allocating resources to bottlenecks outside the company to accelerate technological developments and ecosystem health (Adner, 2006). Furthermore, rates of technological change might differ across the various components that make up an ecosystem (Ethiraj, 2007). For example, in a study of the PC gaming ecosystem, Mäkinen and Dedehayir (2013) describe the differences in innovation cycles that existed between the GPU, CPU, operating system software, DirectX software, and PC games, and the resulting coordination problems. Because of such potential differences in development times, ecosystem coordination may also require the synchronization of innovation processes across ecosystem members. Yoffie and Kwak (2006), for example, describe how for the Wintel standard to succeed, top managers at Microsoft and Intel held regular discussions to align investment in new features and synchronize their product development plans.

A potential way to organize value co-creation and facilitate coordination among ecosystem members are platforms, as they provide a common incentive structure, participation rules, and technological architecture on which complementors can build their products or services and transact (Gawer, 2014; McIntyre et al., 2020; Thomas et al., 2014). Alternatively, in ecosystems where no leader has yet emerged, or where leadership is divided among a larger number of firms, standards can be a very effective tool for coordination (Miller and Toh, 2020). Standards can be developed collectively to ensure the convergence of innovation efforts, define common rules for interoperability between compatible technologies, and align positions in the development of the ecosystem (Leiponen, 2008). Accordingly, standardization facilitates consensus building and lies at the core of coordinating value co-creation in decentralized ecosystems (Chesbrough and Appleyard, 2007).

### *Resolving technical bottlenecks*

Technical bottlenecks are modules or components that limit the performance of the ecosystem (Baldwin, 2018; Ethiraj, 2007). For example, the high cost of battery packs and the limited availability of charging stations have long impeded the emergence of commercially viable battery electric vehicles, and can be considered bottlenecks to the entire electric vehicle ecosystem (Kapoor, 2018). This is why Adner and Kapoor (2010) argue that in ecosystems, it is not enough for firms to focus on their internal innovation challenges. Removing technical bottlenecks is considered key to unlocking the value creation potential of ecosystems (Jacobides et al., 2018; Masucci et al. 2020). My review suggests that multiple strategies can be deployed to solve technical bottlenecks. First, ecosystem leaders can attract complementors and incentivize them to innovate in bottleneck components (Boudreau, 2012). For example, Masucci et al. (2020) show how a big oil and gas company used IP sharing, selective revealing of knowledge, licensing, and an open collaboration platform to mobilize upstream service suppliers, accelerate technological progress in oilfield services, and solve various technological bottlenecks in the ecosystem. Second, some firms may even want to allocate innovation budget externally (Adner, 2006). For example, Ethiraj (2007) finds that hardware manufacturers in the PC ecosystem were willing to invest in bottlenecks outside their firm boundaries in order to improve their component's performance. Hannah and Eisenhardt (2018) also show how firms in the US solar industry constantly shifted their R&D focus to systematically resolve the bottlenecks that limited the ecosystem's (and therefore their own) growth. Third, various studies (e.g., Gawer and Henderson, 2007; Hannah and Eisenhardt, 2018) have discussed the use of vertical integration and entry into complementary components as a strategy to solve innovation problems in the ecosystem, reduce the risks of being caught in asymmetric interdependencies, and gain control of technological bottlenecks. Adner and Kapoor (2010), for example, show that vertical integration is a viable strategy to reduce both technological

uncertainty (by controlling the innovation process to ensure bottlenecks are removed swiftly, instead of relying on others to do so) and behavioural uncertainty (by ensuring other ecosystem members will not be able to leverage control over bottlenecks and extract a disproportionate amount of value). They also find that the benefits of vertical integration increase over the lifecycle of the ecosystem, as the risks associated with internalizing technological uncertainty decrease, and the likelihood of opportunistic behaviour among ecosystem members increases.

### *Ensuring downstream adoption*

The literature also suggests that bottlenecks are not necessarily technical in nature. Sometimes, bottlenecks emerge because of a lack of adoption of the ecosystem value proposition by downstream complementors (Adner, 2006). For example, Adner (2017) describes how Michelin, when it introduced its new PAX run-flat tire, failed to involve garages and mechanics, which did not invest in the equipment necessary for performing repairs, and therefore made it difficult for customers to get their tires fixed or changed. Similarly, Adner and Kapoor (2010) show how the lack of availability of downstream complements can limit value creation because customers cannot derive the full benefits of the product or service. In another study, Adner and Kapoor (2016) highlight that in the absence of complementor adoption, new generation technologies cannot fully realize their performance advantage, and may lose out to older technologies with larger existing pools of complementors.

To solve these adoption issues, ecosystem research suggests several strategies firms may want to adopt. First, synchronizing the release of new products across the ecosystem can ensure that enough complements exist at launch for the focal offer to be attractive (Adner, 2006; Yoffie and Kwak, 2006). Second, ecosystem leaders can provide resources to help complementors adopt the innovation. This often includes boundary resources such as software development kits, expert advice, or training opportunities (Eaton et al., 2015; Gawer and

Cusumano, 2014; Iyer and Subramaniam, 2015). Third, as mentioned in previous sections, ecosystem leaders can develop missing complements on their own. For example, in a study of the Amazon Marketplace ecosystem, Zhu and Liu (2018) find that vertical integration can be an effective strategy to increase the quality of critical but underperforming complements, and therefore maximize consumer satisfaction. Similarly, Cennamo (2018) highlights the common practice of video game console manufacturers to produce the first game titles of new console generations internally, in order to bridge critical gaps in terms of the availability of high-quality games at launch. Finally, Adner and Kapoor (2010) propose that in case of sluggish adoption by downstream complementors, ecosystem leaders might be better off simply delaying innovation or reducing product development speeds to save resources and reallocate them to other projects.

#### ***2.2.4. Competition and value capture in ecosystems***

##### *Managing coopetition*

In ecosystems, firms need to strike a delicate balance between two opposing yet unavoidable strategic principles: collaboration for value co-creation and competition for value capture (Hoffmann et al., 2018). The relationship between Microsoft and Intel has been considered paradigmatic of this tension. Casadesus-Masanell and Yoffie (2007), for example, describe how, despite the intention to collaborate and make the PC ecosystem as valuable as possible, Microsoft and Intel also disagreed and competed ferociously over pricing and new product releases. In general, coopetition has been thoroughly documented in the ecosystem literature (e.g., Jones et al., 2021; Ranganathan et al., 2018; Vasudeva et al., 2020; Zhu, 2019; Zhu and Liu, 2018). For example, in a longitudinal study of TiVo's emergence in the U.S. television ecosystem, Ansari et al. (2016) describe how firms introducing disruptive innovations must gain the support of and collaborate with the incumbents they intend to displace. Furthermore,

in ecosystems, firms need to carefully assess and manage the cooperative nature of their ties to other ecosystem members, especially over time (Iansiti and Levien, 2004; Moore, 1993). Indeed, the tension between collaboration and competition can change: while initially collaborative, the cooperative balance might tip towards competition as ecosystems mature and value capture replaces value creation and ecosystem development as the prime concern (Appleyard and Chesbrough, 2017). This is echoed by Rietveld et al. (2020), who conclude that, as ecosystems mature, ecosystem leaders tend to become less supportive of complementors and instead focus on maximizing user satisfaction and value extraction.

#### *Ensuring bottleneck control*

In ecosystems, some firms are more difficult to replace than others due to their unique contribution to value creation. This often translates into higher bargaining power and the ability to capture a disproportionate share of the collectively created value (Doz, 2019; Jacobides and MacDuffie, 2013). Consequently, control over bottlenecks sits squarely at the center of value capture strategies in ecosystems (Baldwin, 2018; Pisano and Teece, 2007). For example, Teece (2018) describes how Apple and Google have both managed to establish their mobile operating system as the bottleneck asset in the mobile telecommunications ecosystem, capturing a disproportionate share of the value co-created with app developers, component suppliers, smartphone manufacturers, network providers, and accessories sellers. In their study of the emerging U.S. solar industry, Hannah and Eisenhardt (2018) also conclude that the most effective way to capture value in ecosystems is for firms to follow bottleneck components as they emerge in different parts of the ecosystem, adapting resources and capabilities along the way. Moreover, to maintain control over bottlenecks, Doz (2019) proposes that firms should encourage competition in other ecosystem components (e.g., by searching for substitutes and

incentivizing new complementors to join), thus reducing the bargaining power of other ecosystem members by making their contribution less unique and therefore more substitutable.

#### *Ensuring control over complementary innovation*

Developing complementary products and services and controlling complementary markets has been recognized as another important source of value capture in ecosystems (Pisano and Teece, 2007; Teece, 2018). For example, in a study of the telecommunications industry, Miller and Toh (2020) show that firms providing standard-essential patents to their ecosystem used complementary assets to generate returns from their IP. Moreover, Holgersson et al. (2018) show that firms with strong positions in complementary assets might actually be interested in weakening the appropriability of core ecosystem technologies in order to facilitate their adoption and make their own complementary assets more valuable. As a result of the importance of complementary innovation for value capture, Zhu (2019) observes that ecosystems leaders do not hesitate to enter complementary markets and directly compete with their complementors. Similarly, Zhu and Liu (2018) show how Amazon sometimes enters lucrative complementary markets to directly compete with third-party sellers transacting on its platform. Finally, Ritala et al. (2013) argue that besides financial incentives, control over unique complementary assets can be very important to ensure the exclusivity of certain complements, therefore differentiating the ecosystem from competitors and attracting customers with a unique value proposition.

#### *Leveraging standardization*

My review also showed that standardization can be a means to foster value co-creation and facilitate coordination among a wide array of ecosystem actors (e.g., Leiponen, 2008), and it can increase the value of complementary components (e.g., Miller and Toh, 2020). But



standardization can also be a tool to compete more effectively in the ecosystem context, and it may even alter the balance of power within ecosystems. This has been shown by Casadesu-Masanell and Yoffie (2007), Gawer (2014), and Jacobides and Tae (2015), who highlight how Microsoft and Intel overtook IBM as leaders of the PC ecosystem. Moore (2006) considers that firms skilled at ecosystem strategy-making can leverage standardization to undermine profitability and promote competition in certain parts of the ecosystem. Standardization can also lead to the modularization of previously integrated components, therefore increasing the degree of firm specialization and the decoupling of innovation (Toh and Miller, 2017; Ranganathan et al., 2018).

#### *Acting as an ecosystem leader*

There is consensus in the ecosystem literature that ecosystem leaders greatly benefit from their position, especially regarding value capture. For example, Iansiti and Lakhani (2017) observe that ecosystem leaders are increasingly acting as gatekeepers with quasi-monopolistic powers and the ability to capture the lion's share of value. They can exert architectural leverage, i.e., exercise an influence that is disproportionate to their size, relative to that of the overall ecosystem (Thomas et al., 2014). This might be because ecosystem leaders often mediate the relationship between complementors and customers (Hagiu, 2006). Furthermore, the system integration capabilities needed for that role are increasingly becoming bottleneck competencies (Pisano and Teece, 2007).

Responsibilities that fall in the precinct of ecosystem leadership include decisions around product technology and ecosystem scope (Cusumano and Gawer, 2002), ecosystem access (Boudreau, 2012), and price (Seamans and Zhu, 2013). Ecosystem leaders are also responsible for the provision of support and sponsorship for complementary innovation (Shapiro and Varian, 1998), the provision of boundary resources to facilitate cooperation

(Jeppesen, 2005), and creating trust among ecosystem members to facilitate exchange and collaboration (Perrons, 2009). Acting as an ecosystem leader also entails some peculiar organizational design decisions to favour trust and cooperation with complementors and component suppliers (Boudreau, 2017; Cusumano and Gawer, 2002).

### *Ensuring fair value distribution*

Increasing profits is a key reason for complementors to join an ecosystem (Helfat and Raubitschek, 2018; Holgersson et al., 2018). However, Chesbrough et al. (2018) highlight that in distributed co-innovation systems, those that create the most value are not necessarily those that are able to capture the most value. This can create tensions and incentive problems, and scholars argue that to guarantee the commitment of all members in highly co-specialized ecosystems, value should be distributed fairly (Williamson and De Meyer, 2012; Doz, 2019). For example, Iansiti and Levien (2004) point out that each member's success is ultimately tied to the success of their peers in the ecosystem. Otherwise, an ecosystem runs the risk of alienating the actors responsible for the development of complementary goods or services (Chesbrough and Appleyard, 2007). Gawer and Henderson (2017), therefore, argue that firms, especially ecosystem leaders, need to move beyond focusing on their own interests and consider what is best for the ecosystem as a whole. Ecosystem leaders have many levers to do so (Helfat and Raubitschek, 2018). For example, through an adequate governance and pricing structure, they can influence the incentives for complementors to join the ecosystem, and how profits are divided.

### **2.2.5. Ecosystem design and governance**

The architectural design of ecosystems constitutes a critical element of ecosystem strategy, as it determines performance outcomes and affects value capture, innovation, competition, and

complementor behaviour (Baldwin and Woodard, 2009). Architectural choices in ecosystems are usually made by the ecosystem leader (Tiwana et al., 2010; Gulati et al., 2012). For example, as Cusumano and Gawer (2002) note, ecosystem leaders “need to decide how much modularity they want” (p. 8). Determining the degree of modularity of an ecosystem constitutes a technological decision that bears important strategic implications, as it opens up opportunities for complementors to specialize on certain modules and provides customers with the flexibility to mix and match complements according to their needs (Boudreau, 2017; Ranganathan et al., 2018; Rietveld and Schilling, 2021). In platform ecosystems, another fundamental design question is how many sides the platform ecosystem should have (Hagiu, 2014). While most platform ecosystems are based on two sides (e.g., buyers and sellers on Amazon’s Marketplace), some, more complex ecosystems have multiple sides (e.g., LinkedIn, which brings together professionals, recruiters, corporate users, advertisers, and app developers).

The ecosystem literature has, in addition to discussions around the strategic implications of architectural features, also focused on the set of rules and decisions that regulate the behaviour of ecosystem members. This includes, for example, questions around ecosystem access and openness, i.e., who is allowed to join the ecosystem and under what conditions (Jacobides, 2019; Jacobides et al., 2018; Parker and Van Alstyne, 2018). Access to an ecosystem can be granted through application programming interfaces, which facilitate external information exchanges and allow complementors to get access to core technologies to build products and services (Baldwin and Woodard, 2009; Iyer and Subramaniam, 2015). While openness facilitates complementor participation and can favour innovation in ecosystems (Parker and Van Alstyne, 2018), it also has its downsides, such as reducing appropriability (West, 2003), or increasing complexity and creating frictions among ecosystem members (Chen et al., 2021). Restricting access to an ecosystem and its core technologies can limit the participation of “problematic” actors which provide low-quality (or undesirable)

complements (Tiwana, 2015a), thus enhancing the value proposition, and creating a “safe haven” that fosters more knowledge exchange and value creation activities among complementors (Zhang et al., 2020). Another critical aspect of ecosystem governance pertains to the ownership of the platform, whether it is in the sole hands of the ecosystem leader, or whether complementors have a share in the platform (Tiwana et al., 2010). Discussions around ownership must also be distinguished from the related, albeit distinct, issue of decision rights partitioning, i.e., determining who in the ecosystem is allowed to make what decisions and when (Nambisan and Sawhney, 2011; Tiwana et al., 2010). Most of the ecosystem literature has focused on centralized forms of ecosystem governance, but recently there is an increasing interest in theorizing about more distributed and decentralized governance structures (e.g., Chen et al., 2020; O’Mahony and Karp, 2020).

Finally, several scholars concerned with the design of ecosystems have focused on the question of pricing, specifically how to decide which of the multiple sides to charge, and how much (e.g., Boudreau, 2017; Hagiu, 2006; Rochet and Tirole, 2003). Eisenmann et al. (2006), for example, propose to subsidize users to attract what they call the “money-side” (i.e., complementors that are willing to pay to get access to the user base). This behaviour is especially common in the video game ecosystem, where video game players get access to subsidized video game consoles while platform leaders such as Microsoft and Sony charge video game developers high platform fees to get access to this audience.

#### ***2.2.6. Competition between ecosystems***

In the previous sections, I discussed insights gained into the peculiarities of competition within ecosystem, i.e., intra-ecosystem competition. In this section, I synthesize the literature on competition between rival ecosystems, i.e., inter-ecosystem competition. As Thomas and Autio (2020) note, competition nowadays occurs not at the level of products or services, but at the

level of ecosystems, and competition between ecosystems can be very fierce. Since ecosystems rely on network effects and switching costs to grow the user base and increase value, this often leads to winner-take-most (or all) competitive dynamics (Cennamo and Santalo, 2013; Eisenmann et al., 2006). To trigger these network effects and achieve quasi-monopolistic market positions, ecosystem leaders sometimes use very aggressive pricing strategies (Rietveld and Schilling, 2021). However, studies have also pointed to other factors that explain outcomes in competition between ecosystems. For example, Zhu and Iansiti (2012) find that the success of one ecosystem over another does not only depend on the intensity of network effects, but also on the intrinsic quality of the underlying technology, and on the expectations customers have in regards to the availability of future complementary innovation. Similarly, given demand heterogeneity (Rietveld and Eggers, 2018), ecosystems can outcompete rivals through differentiation, e.g., by addressing certain market niches (such as targeting more premium users) or attracting exclusive complementors (Cennamo, 2021; Cennamo and Santalo, 2013; Rietveld and Schilling, 2021; Taeuscher and Rothe, 2021). Finally, an ecosystem can compete against rival ecosystems by resorting to ‘envelopment’ (Eisenmann et al., 2011), i.e., where an ecosystem enters another ecosystem’s market and combines its own technology with that of the target to form a technology bundle that leverages shared user relationships (e.g., Apple’s expansion into music and video streaming).

The ecosystem literature has also provided rich insights into ecosystem disruption and the essential role complementors and the supplier ecosystem play in the process. For example, Adner and Kapoor (2016) show that the availability of complementors is a critical variable determining the adoption of new and superior technology, while mature technologies can leverage innovation in complementary markets to increase overall performance and extend their presence in the market. Furthermore, when technological transitions are too steep, complementors can have difficulties adapting to the new technology and might therefore defect

to rival, less challenging ecosystems (Ozalp et al., 2018). Finally, Ozcan and Hannah (2020), in a study of the global advertising industry, show that the adoption of new technologies by an incumbent firm can actually be hindered by its existing supplier ecosystem.

Despite these challenges, several studies have described how disruptors successfully developed new ecosystems and challenged incumbents' established ecosystems. Snihur et al. (2018), for example, highlight two mechanisms with which Salesforce was able to dethrone SAP and Siebel in the customer relations management software business: the continuous interplay of "framing" as a way to attract early adopters and complementors around a cogent vision and business model innovation based on feedback received from its growing ecosystem. Similarly, Ansari et al. (2016) conclude that successful ecosystem disruptors need to continually adapt their strategy, technology, and relationships with other firms in their ecosystem, while collaborating with, and gaining the support of, the incumbent they are trying to dislodge as the ecosystem leader. Finally, Khanagha et al. (2020) describe how complementors can improve their competitive position by developing and legitimizing an alternative platform without entering into conflict or encroaching on the incumbent ecosystem leader's turf. This contrasts with more aggressive forms of disruption through complementors, where the complementor gains power and control of the ecosystem by either commoditizing the core offering, providing the core offering itself, or substituting the core offering through "value inversion" (Adner and Lieberman, 2021, p. 98).

### ***2.2.7. Adapting to and influencing ecosystem dynamics***

Across the lifecycle of an ecosystem, both its structure and value proposition can be subject to change, as a result of both endogenous and exogenous factors (Moore, 1993; Thomas and Autio, 2020; Tiwana et al., 2010). Indeed, ecosystems rarely emerge fully formed, nor do they necessarily follow a linear development path (Dattée et al., 2018). In their initial phase,

ecosystems, their value propositions, and the underpinning activity systems are often not clearly defined and subject to change (Dedehayir et al., 2018). The literature suggests that navigating this uncertainty can be very challenging for companies: the ecosystem structure has not fully formed, turnover among ecosystem members is still high, technical and strategic bottlenecks are difficult to predict, crucial technologies are not fully developed, and regulatory frameworks remain incomplete (Ozcan and Eisenhardt, 2009; Walrave et al., 2018). As ecosystem members experiment, iterate, and gradually converge towards a dominant design, the ecosystem matures and gains legitimacy, while routines emerge and its structure begins to crystallize (Adner, 2017; Thomas and Ritala, 2021).

However, Schumpeter's idea of creative destruction also applies in the realm of ecosystems. Prior research shows how entire ecosystems can decline and be replaced by more innovative constellations of firms (e.g., West and Wood 2013; Adner and Kapoor, 2016; Ansari et al., 2016; Snihur et al., 2018; Reeves et al., 2019). Research in this stream suggests that one of the key strategic tasks of the ecosystem leader is to ensure the ecosystem's continuous renewal so that other ecosystems will not overpower them (Gawer and Cusumano, 2014).

Furthermore, changes during the ecosystem lifecycle can influence how value is distributed within an ecosystem, affecting the ability of ecosystem members to capture value as critical bottlenecks dissolve in certain parts only to re-emerge elsewhere (Jacobides and Tae, 2015). Companies might, therefore, decide to continuously shift their innovation efforts to new components that they do currently not produce (Ethiraj, 2007). In fact, Hannah and Eisenhardt (2018) argue that firms that continuously sense and follow the bottlenecks in their ecosystem are able to capture above-average rents. Besides shifts in value distribution, ecosystem evolution also impacts the roles of ecosystem members. For example, in a review of the literature on ecosystem emergence, Dedehayir et al. (2018) find that actors in ecosystems enact

different roles over time, depending on the needs of the ecosystem and the resources and capabilities of the firms at each given moment.

These dynamics are critical for crafting an adequate ecosystem strategy for at least three reasons. First, adapting to changes in the ecosystem is critical for the survival of complementors and other ecosystem members (Kapoor and Agarwal, 2017; Ozalp et al., 2018; Pierce, 2009). Firms that anticipate how an ecosystem evolves may identify changes in value distribution, assess the sustainability of their position, and guide investments accordingly (Hannah and Eisenhardt, 2018; Jacobides and Tae, 2015). Second, given the importance of alignment amongst ecosystem members for the ecosystem value proposition to materialize, ecosystem strategy becomes especially relevant when the ecosystem structure changes and the distribution of roles and value activities is revised (Iansiti and Levien, 2004; Adner, 2017). Third, each stage of the ecosystem lifecycle requires a different strategic approach. Successful measures in the early stages of an ecosystem typically differ from those required during later stages, reflecting a shift from exploration in the nascent stages to efficiency and value capture in more mature ecosystems (Appleyard and Chesbrough, 2017; Rietveld et al., 2020; Zhao et al., 2020), leading Reeves et al. (2019) to suggest a need for “temporal ambidexterity” (p. 5).

### *Shaping ecosystem structures*

Ecosystem evolution can affect the distribution of value within an ecosystem, the role of ecosystem members, the set of value activities they perform, and more. Being able to influence the direction in which an ecosystem evolves, as opposed to simply adapting to it, can therefore provide great strategic advantages (Teece, 2007). Accordingly, the ecosystem literature emphasizes that firms should exercise “smart power” (Yoffie and Kwak, 2006, p. 22) and “play an active role” (Williamson and De Meyer, 2012, p. 25) in shaping the ecosystem in order to improve their competitive advantage and ability to capture value.



Firms can shape ecosystem structures and governance by leveraging a wide array of strategic actions, or “ecosystem-influencing initiatives” (Moore, 2006, p. 35), ranging from indirect and subtle to more overt and aggressive. For example, complementors can use multihoming to reduce their dependence on a given ecosystem leader, create asymmetric interdependencies (Williamson and De Meyer, 2012; Adner, 2017), and extort preferential treatment (Edelman, 2014). Furthermore, as shown in previous sections, companies “sophisticated at ecosystem strategy-making” (Moore, 2006, p. 57) can attempt to favourably influence the direction of standardization efforts to align with their technology base, product roadmap, and sunk costs (Toh and Miller, 2017; Ranganathan et al., 2018). Ecosystem members can also bond together to wield more power and impose a new course of action to the ecosystem leader (Cutolo and Kenney, 2020; Wang and Miller, 2019). For example, Eaton et al. (2015) show how complementors in Apple’s iOS ecosystem managed to get concessions from Apple by engaging in collective action and public criticism over updates to boundary resources.

Among softer ecosystem-shaping initiatives, firms can use their influence and power to develop a compelling vision of the development path of an ecosystem to persuade potential stakeholders to join and influence their behaviour (Cusumano and Gawer, 2002; Moore, 2006). Snihur et al. (2018), for example, show that contenders for ecosystem leadership can use framing, i.e., constructing an engaging narrative around their ecosystem vision to gain credibility, attract the support of relevant ecosystem stakeholders, and dislodge powerful incumbents. Alternatively, they can use dynamic control, as described by Dattée et al. (2018), to guide the initial development phase of an ecosystem and ensure it meets their vision of value creation and capture. Furthermore, Alexy et al. (2013) suggest companies can selectively reveal knowledge in order to “shape the agenda” of collaborative relationships. Finally, disruptive ecosystems can conflict with peripheral actors (such as regulatory institutions, government

agencies, and policy-makers) who can have a less immediate, but just as powerful, effect on its development (Iansiti and Levien, 2004). To remedy these tensions, ecosystem strategy should also aim at influencing and changing this larger socio-technical environment, for example by framing the ecosystem in a positive way, engaging with regulators early on, and swaying regulatory decision-making (Hagiou and Rothman, 2016; Walrave et al., 2018).

### 2.3. HOW ECOSYSTEM STRATEGY RESEARCH EXTENDS TRADITIONAL THEORIES OF STRATEGY

As Rietveld and Schilling (2020) note, there is a need for the ecosystem strategy literature to connect to mainstream theories in order to determine where these theories do or do not explain ecosystem-related phenomena. Indeed, ecosystem strategy seems to make use of many insights gained from more traditional strategy views. For example, the strategically critical concept of bottlenecks appears to be a direct application of the RBV and its VRIN framework to the realm of ecosystems (Baldwin, 2018). However, ecosystem strategy also differs from (and complements) traditional theories of strategy, such as the positioning view (Porter, 1996), in several ways (see Table 2-2).

**Table 2-2 Difference between ecosystem strategy and traditional theories of strategy**

|                                   | Traditional theories of strategy  | Ecosystem strategy   |
|-----------------------------------|---|--|
| Lens of strategic analysis        | Firm and industry   | Ecosystem  |
| Assumption on the environment     | Mainly static   | Dynamic  |
| Resources                         | Ownership (or at least control)   | Access and complementarities   |
| Nature of interfirm relationships | Competitive, or hierarchical principal-agent relationship between firms | Non-hierarchical, cooperative relationship between autonomous and interdependent firms |
| Value creation                    | Supply-side centric   | Supply and demand-side   |
| Sources of competitive advantage  | Single (e.g., resources or positioning)                                 | Multiple   |

First, in contrast to the positioning view, ecosystem strategy goes well beyond the industry and value chain as a level of analysis and field of firm action (Teece, 2016). Accordingly, ecosystem strategy encompasses engagement and collaboration with a broader set of actors and supporting institutions that contribute in a non-generic way to a focal value proposition (Jacobides et al., 2018). Unlike the positioning view, ecosystem strategy also considers many important facets of the broader competitive environment, such as the role of complementarities, network effects, and the co-evolution of technologies and business models across a web of sometimes only indirectly connected firms (Teece, 2007).

Second, the positioning view has often been criticized because it assumes industry structures to be stable (Martin, 2015) and determined exogenously (Teece, 2007). McGrath (2010) considers the resource-based view to be similarly static, as it does not fully capture the challenges and costs associated with rapidly redeploying existing resources and developing new ones. Ecosystem strategy, on the other hand, takes into account the dynamic nature of many of today's business environments, explicitly acknowledging the importance of adaptability and proactiveness, and it highlights the role of innovation in endogenously shaping the structure of business environments. Accordingly, ecosystem strategy emphasizes the importance of monitoring and adapting to bottleneck components as they emerge and dissolve (Hannah and Eisenhardt, 2018), or to continuously adapt business models and technologies to the needs of the ecosystem (Snihur et al., 2018; Dattée et al., 2018; Zhao et al., 2020).

Third, research on ecosystems diverges from traditional theories of strategy regarding the nature of interfirm relationships. Porter's view on strategy, for example, focusses on finding positions in attractive industries, and implicitly assumes competition against suppliers, buyers, competitors, substitutes, and new entrants (e.g., Porter, 2008). Similarly, the RBV assumes competition among firms to capture rare and valuable resources. Furthermore, both views conceptualize interfirm relationships as being largely hierarchical and contract-based,

principal-agent relationships, such as between a firm and its suppliers or customers. In ecosystem strategy, on the other hand, relationships are largely non-hierarchical (Jacobides et al., 2018) and do not fit the classical principal-agent setting, e.g., ecosystem leaders do not hire complementors (Tiwana et al., 2010). Rather, value is jointly created in collaboration with interdependent, yet autonomous external actors. Ecosystem strategy, therefore, emphasizes the importance of concurrent collaboration (to co-create the value necessary for the ecosystem value proposition to emerge) and competition (to capture an adequate share of the collectively generated value), and helps “to understand the nature of competition in digital markets and explain the unique competitive dynamics that depart from mainstream competitive theory’s predictions” (Cennamo, 2019, p. 2).

Fourth, while the RBV considers the ownership (or at least control) of valuable, rare, inimitable, and non-substitutable resources as a key determinant of firm performance, ecosystem research considers it sufficient to have access to complementors that co-create value in a co-specialized ecosystem. Fifth, ecosystem research challenges traditional assumptions of value creation. According to traditional theories of strategy, value creation is a supply-side phenomenon in which value is created more or less exclusively by upstream component producers (Massa et al., 2017). Theories of ecosystem strategy, on the other hand, suggest that value is created by all members of the ecosystem, upstream but also downstream, therefore not only accounting for “supplier ecosystems” (Ozcan and Hannah, 2020) but complementary innovation, customer participation, and indirect network effects as well.

Finally, ecosystem strategy differs from more traditional strategy theories regarding sources of competitive advantage. Both the RBV and the positioning view are rather exclusive theories, which consider competitive advantage to be originating mainly from resources or distinct activities (Massa et al., 2017). Ecosystem strategy on the other hand embraces a more holistic approach, as it blends the resource and the positioning perspectives while adding an

outward-looking element to it, thus acknowledging that competitive advantage can be found in a blend of unique and inimitable resources (e.g., by controlling a bottleneck technology), differentiated activities (e.g., by assuming the role of coordination and ecosystem leadership), on the supply side and demand side, both at the firm and at the broader ecosystem level.

Ecosystem research is also distinct from but related to stakeholder theory. Both take a pragmatic approach to strategy that urges firms to be cognizant of organizations and individuals in their business environment to achieve superior performance (Freeman, 1994). Stakeholder theory aims to identify and take into account the needs and interests of various entities in a firm's environment that are impacted by its business decisions, such as employees or local communities (Hinings and Greenwood, 2002). Broadly speaking, stakeholder theory therefore focuses on business ethics and addresses the questions of how organizations affect society. It discusses morals and values in managing an organization, and questions shareholders' wealth maximization as a fundamental business objective (Freeman, 1994). On the other hand, ecosystem strategy primarily aims at the successful coordination of value creation among a group of autonomous yet interrelated organizations to maximize profits. It is similar to stakeholder theory in the sense that it encompasses discussions around what constitutes fair value distribution, but it does not so on ethical or moral grounds, but rather with the aim of retaining complementors and sustaining the ecosystem.

#### **2.4. FUTURE RESEARCH**

My review suggests several opportunities for future research. First, although the analogy to biological ecosystems emphasizes greater complexity and dynamism, ecosystem evolution has – along with its potential impact on ecosystem structure, alignment, and firm performance – been somewhat neglected in prior literature. Indeed, although scholars have acknowledged and observed how ecosystem emerge, converge, and collapse, they have rarely investigated the

underlying causes of such dynamic processes (Meyer et al., 2005). Given their highly dynamic nature, “management must continuously re-evaluate strategy and adapt it as an ecosystem evolves” (Reeves et al., 2019, p. 2). This provides a great opportunity for further research, with potentially wide-ranging implications for the dynamic capabilities and strategic renewal literatures. For example, how can firms sense and adapt to changes in their ecosystems? How can firms proactively steer these changes, or even trigger them, in order to reshape the ecosystem structure or value proposition to their advantage? Ecosystem dynamics also raise important questions for the business model literature: how can complementors, for example, leverage business model innovation in the context of platform disruption? Recent research (e.g., Ansari et al., 2016; Snihur et al., 2018; Zhao et al., 2020) has started to address this topic, but more work is needed.

Second, prior ecosystem research has primarily taken the perspective of the ecosystem leader, while somewhat overlooking the strategic interests of complementors (with the exception of Kapoor and Agarwal, 2017; Ozcan and Hannah, 2020; Pierce, 2009). Complementors greatly contribute towards the value proposition of an ecosystem by specializing on the production of products and services complementary to an ecosystem leader’s core technology or business model (Masucci et al., 2020). Achieving such complementarities constitutes an important source of value creation in ecosystems (Adner and Kapoor, 2010; Hannah and Eisenhardt, 2018; Jacobides et al., 2018). However, despite their important role, the overall assumption remains that complementors merely act as docile followers, subjected to the whims of larger and more resourceful ecosystem leaders who set and enforce the governance rules and reap the lion’s share of gains (Adner, 2017). Anecdotal evidence, such as recent tensions between mobile app developers (e.g., Epic Games) and ecosystem leaders such as Apple and Google, suggests this is not necessarily the case. What strategies, then, can complementors use to increase their bargaining power and maximize value

capture? By addressing such questions, future research could develop a more comprehensive understanding of ecosystem strategy.

Third, organizational implications of ecosystem participation still remain unclear. Anecdotal evidence suggests that firms participating in ecosystems need to make peculiar organizational design choices. Hamel and Zanini (2018), for example, highlight how Haier, in order to engage with its ecosystem of users, inventors, and partners, radically changed its organizational structure and divided the firm in 4,000 autonomous micro-enterprises. Reeves et al. (2019) and Cusumano and Gawer (2002) also reveal how Intel, in order to manage cooperation with its complementors, separated the departments that cooperated with PC hardware providers from those that competed with them. Future research on organizational design in ecosystems could, for example, set out to explore how the ecosystem context influences organizational structure and what structures support firms in identifying and developing ecosystems.

Furthermore, previous studies have rarely considered the peculiar capabilities needed to successfully participate in ecosystems. This includes, for example, the capabilities needed to cope and interact with a diverse set of ecosystem actors, or the managerial competencies and processes needed to navigate uncertain and complex business environments. One notable exception here is Teece (2007, p. 1319), who highlights the importance of dynamic capabilities “necessary to sustain superior enterprise performance in an open economy with rapid innovation and globally dispersed sources of invention, innovation, and manufacturing capability”. But more research on capabilities to orchestrate ecosystems for innovation is needed.

Finally, as Moore (2006, p. 36) observes, “ecosystem strategy-making is becoming more of a conscious, disciplined process: articulate, structured, and analytical”. However, my review has revealed that much of the literature focusses on the context and content of ecosystem

strategy, while not touching upon the process of ecosystem strategy-making. How can ecosystem strategies be developed? Is it a deliberate process? Or, on the contrary, necessarily emergent and adaptive, given the complexity and dynamism of ecosystems? What specific challenges are encountered (both internally and externally) when attempting to develop and implement an ecosystem strategy? While some of the studies I have reviewed address these issues (e.g., Adner and Feiler, 2019; Ansari et al., 2016; Talmar et al., 2018), more research is needed.

## **2.5. CONCLUSION**

Ecosystems have become a pervasive topic in strategy scholarship and practice over the last few decades. This has led to the rise of a new stream of strategy research, dedicated to exploring the specificities of strategy in the context of ecosystems. However, the burgeoning literature on ecosystem strategy remains dispersed and considerable uncertainties exist about the characteristics and peculiarities of ecosystem strategy. This is hampering cumulative knowledge building in ecosystem strategy research. Therefore, in this study, I set out to develop a better understanding of the multiple facets of strategy in ecosystems by conducting a review and synthesis of what is known about ecosystem strategy. My review reveals seven key themes that constitute the core of strategy discussions in the ecosystem literature: ecosystem thinking, ecosystem choice and firm positioning, coordinating value co-creation, ensuring value capture, ecosystem design, inter-ecosystem competition, and ecosystem dynamics. I also related these insights to established theories in strategic management, such as resource-based view, to derive where ecosystem strategy builds on and where and how it extends and challenges traditional strategy theories. From these findings an agenda for future research, especially on the topics of ecosystem evolution, complementor strategy, and ecosystem strategy process, arises.



### **3. COMPLEMENTOR STRATEGY IN PLATFORM ECOSYSTEMS<sup>3,4</sup>**

Platforms like the Microsoft Store or Amazon's Marketplace, and their ecosystem of complementors, now play a central role in the economy (Panico and Cennamo, 2020). Platform ecosystems mediate transactions between different market sides and provide the foundation upon which third parties can develop complementary products and services (Gawer and Cusumano, 2014). Most of today's platform ecosystems are dominated by a central firm, the platform leader (Furr and Shipilov, 2018), which typically captures the lion's share of profits (Adner, 2017). Prior research conveys a good many insights into strategies for platform leaders, such as pricing decisions to foster network effects, entry timing, and incumbent advantages such as installed user base (McIntyre and Srinivasan, 2017).

Complementors to platform ecosystems, on the other hand, have received far less attention (Kapoor and Agarwal, 2017). Prior research has, perhaps inadvertently, tended to treat complementors as homogeneous and passive actors, subject to the whims of a larger and more resourceful platform leader (Cutolo and Kenney, 2020). However, complementors are vital to the success of platforms: building on the platform's core technology, they co-create value by developing new applications that extend the platform's functionality and attract users. For example, in 2017, about 724,000 app developers offered more than 3.5 million apps on Google Play, the digital distribution service for Google's Android operating system. With the rise of the platform economy (Van Alstyne et al., 2016), companies from across various industries are increasingly reliant on platforms to access customers and sell their goods. This entails unique challenges. For example, while providing third-party sellers with access to hundreds of millions

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<sup>3</sup> An earlier version of this chapter has been presented at the 41st SMS Annual Conference in June 2021

<sup>4</sup> Authorship: Pierric Appert (PA) and Stephan von Delft (SvD). Contributions: PA conceived and conceptualized the study, analysed the data, and drafted the manuscript with input from SvD; SvD provided critical feedback, helped to shape the research and reviewed the manuscript.

of users, Amazon also leverages sales data it collects on its platform to identify lucrative complementary products, eventually competing directly with complementors (Zhu and Liu, 2018). Understanding in greater detail the implications of platform participation for strategic management, and the risks and complex strategic trade-offs complementors face, is thus becoming increasingly important.

In this article, I review the platform ecosystem literature to address this important topic. My objective is twofold: (1) to consolidate early work on the subject of complementor strategy and synthesize the multiple strategic aspects a complementor needs to consider in order to successfully compete in platform ecosystems, and (2) to delineate an agenda for future research on complementor strategy that will assist cumulative theorizing and subsequent empirical progress. I contribute to platform ecosystem research by moving beyond the current platform leader-centric understanding of platform strategy and develop a more inclusive and holistic approach that also considers the perspective of complementors.

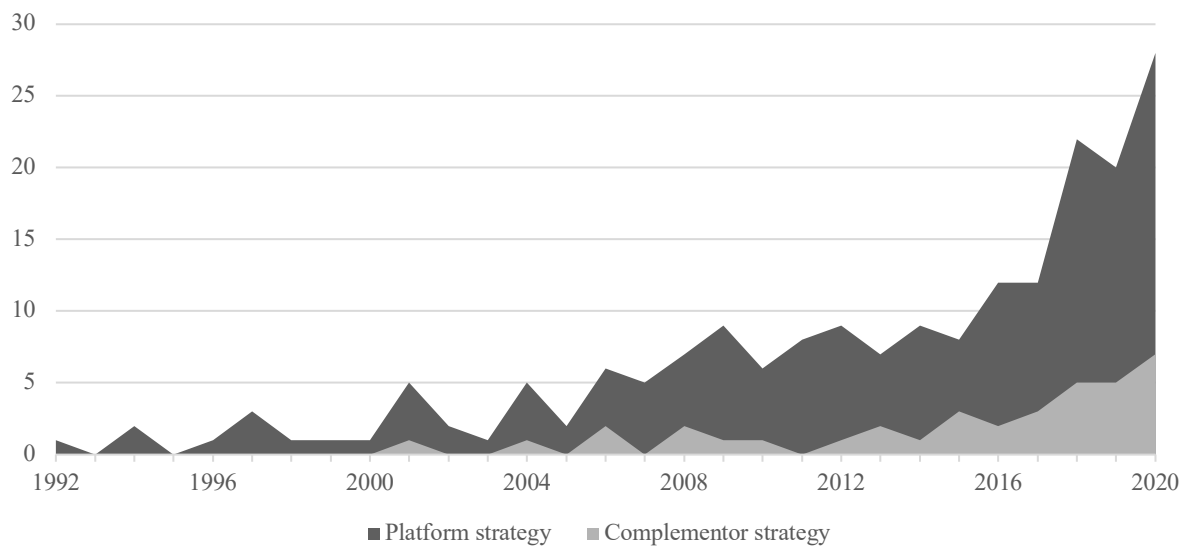
### **3.1. METHOD**

To conduct this literature review, I followed Zott, Amit, and Massa (2011) and applied a multistep process. First, using the Web of Science Core Collection, I searched for articles on platform strategy and complementors published in management journals. Focusing on articles that contain ‘platform’, ‘strategy’, and ‘complementor’, or any variants of these words (such as ‘platform-based’, ‘strategies’ or ‘complementary’), in the title, abstract, or keywords, I identified 46 articles. An initial cursory analysis revealed that some of these articles did not treat platform strategy and complementors as the main topic of discussion. As a result, I eliminated 7 articles. Through reading the 39 remaining articles in depth, I became aware of further works on platform strategy and complementors that appeared relevant (e.g., books) and that I therefore included in my review. The final sample comprises 59 publications.

### **3.2. OVERVIEW OF THE LITERATURE ON COMPLEMENTOR STRATEGY**

As shown in Figure 3-1, research on platform strategy has increased over the last two decades. Initially, work in this field focused on the economics of two-sided markets (e.g., Rochet and Tirole, 2003), platform design and modularity (e.g., West, 2003), and the strategic perspective of platform leaders and “wannabees” (e.g., Cusumano and Gawer, 2002). Recent work on platform strategy has described in more detail how companies can become platform leaders (e.g., Gawer and Cusumano, 2008), attract third-parties that provide complementary products and services (e.g., Eisenmann, Parker, and Alstyne, 2006), and manage and coordinate complementors (e.g., Yoffie and Kwak, 2006). Moreover, there has been progress on how platform leaders can set appropriate price incentives to foster network effects (e.g., Hagiu, 2014), compete against and dethrone rival platforms (e.g., Cennamo and Santalo, 2013), and maximise value extraction (e.g., Zhu and Liu, 2018). Complementor strategy, on the other hand, has only recently become a subject of debate. This is also echoed in a review of the platform literature by McIntyre and Srinivasan (2017: 155), who note that there has been inadequate focus on third-party complementors and that “an important avenue of future research in platform settings will be to adopt a complementor perspective” to better understand the influence of complementors’ attributes, structural positions, and actions on their performance and the performance of ecosystems.

**Figure 3-1 Published articles on complementor strategy in leading management journals**



My review dates the emergence of a discussion around the specific strategic challenges and trade-offs faced by complementors back to Boudreau (2012), Ceccagnoli et al. (2012), and Boudreau and Jeppesen (2015). Since then, research on the subject has gained traction (e.g., Cutolo and Kenney, 2020; Kapoor and Agarwal, 2017; Rietveld and Eggers, 2018; Tavalaei and Cennamo, 2020), culminating with the recent special issue on “Strategies for Platform Ecosystems” in the Strategic Management Journal (see for example Khanagha et al., 2020; O’Mahony and Karp, 2020; Zhang, Li, and Tong, 2020). I will explore the findings of these studies, and the work they inspired, in more detail in the following section.

### **3.3. THEMES IN COMPLEMENTOR STRATEGY RESEARCH**

As presented in Table 3-1, strategy discussions in the burgeoning complementor strategy literature have touched upon a broad range of topics, which I amalgamated into six themes and over twenty sub-themes.

**Table 3-1 Complementor strategy themes in the platform ecosystem literature**

| Complementor strategy themes       | Sub-themes   | Selected studies   |
|------------------------------------|--|--|
| Creating a platform-based business | <ul style="list-style-type: none"> <li>Finding product-market fit through information feedback</li> <li>Balancing requirements of platform leader vs venture goals</li> <li>Platform entrepreneurship contributes to ecosystem renewal</li> </ul>  | Eckhardt et al. (2018); Overholm (2015)<br>Nambisan & Baron (2013); Zahra & Nambisan (2011)<br>Zahra and Nambisan (2012); Srinivasan and Venkatraman (2018)                                    |
| Choosing the right platform        | <ul style="list-style-type: none"> <li>Incentives for complementors to join a platform</li> <li>Multihoming vs. exclusivity</li> <li>Platform desertion</li> </ul>   | Boudreau and Jeppesen (2015); Ceccagnoli et al. (2012)<br>Cennamo et al. (2018); Yoffie & Kwak (2006)<br>Tiwana (2015)   |
| Increasing bargaining power        | <ul style="list-style-type: none"> <li>Mitigate dependence on the platform owner</li> <li>Disintermediation</li> <li>Collective action</li> </ul>  | Cutolo and Kenney (2020); Wang and Miller (2019)<br>Gu & Zhu (2020)<br>Eaton et al. (2015); Edelman (2014)   |
| Maximizing value appropriation     | <ul style="list-style-type: none"> <li>Use of formal &amp; informal appropriability strategies</li> <li>Business model choice and innovation</li> <li>Increasing downstream capabilities</li> </ul>  | Miric et al. (2019); Miric and Jeppesen (2020)<br>Rietveld (2018); Landoni et al. (2020)<br>Huang et al. (2013); Miller & Toh (2017)   |
| Competing against peers            | <ul style="list-style-type: none"> <li>Imitation and copying</li> <li>Degree of specialization and maximizing performance</li> <li>Middle tail and long tail strategies</li> <li>Platform-complement synergy</li> <li>Rapid innovation cycles</li> <li>Leveraging user heterogeneity and niche markets</li> </ul>        | Miric and Jeppesen (2020)<br>Tavalaei and Cennamo (2020)<br>Benner and Waldfogel (2020)<br>Tiwana (2018)<br>Tiwana (2015)<br>Rietveld and Eggers (2018); Steiner et al. (2016)                 |
| Adapting to platform dynamics      | <ul style="list-style-type: none"> <li>Platform transition and complementor performance</li> <li>The importance of dynamic capabilities</li> <li>Coping with platform owner entry</li> <li>Consequences of changes in platform governance</li> <li>Creating a new platform and dethroning the platform leader</li> </ul> | Kapoor and Agarwal (2017); Ozalp et al. (2018)<br>Pierce (2009)<br>Wen and Zhu (2019); Foerderer et al. (2018)<br>Rietveld et al. (2020)<br>Khanagha et al. (2020); Adner and Lieberman (2021) |

### 3.3.1. *Creating a platform-based business*

According to the complementor strategy literature, platform participation can have many benefits for complementors. First and foremost, platforms give complementors access to a very broad market of users (Bresnahan et al., 2015; Ceccagnoli et al., 2012; Idu et al., 2011). Platforms also facilitate transactions between complementors and these users, e.g., through search functions, payment services, insurances, or user and seller verification (Eisenmann et al., 2006). Furthermore, platforms provide complementors with shared technological assets and boundary resources which they can use to build their products and services (Tavalaei and

Cennamo, 2020). Platforms also support complementors in finding a product-market fit, because platforms often include information feedback loops (such as customer reviews, top product ranking lists, numbers of views) that increase the speed at which companies gain intelligence about customer demand (Eckhardt et al., 2018). Platforms are therefore often considered to foster entrepreneurial activity (Overholm, 2015; Wareham et al., 2014). Conversely, platform entrepreneurship has also been recognized as a cornerstone of ecosystem renewal and sustainability (Zahra and Nambisan, 2012). Finally, platforms also help with coordination between ecosystem members and drive co-innovation efforts (Cusumano and Gawer, 2002).

However, while platform participation has many benefits for complementors, it also entails unique risks and challenges (Nambisan and Baron, 2013). For example, complementors can be at risk of platform owner entry into complementary markets, as is exemplified by Amazon's expanding Basics product line, which competes directly with third-party sellers (Zhu and Liu, 2018). Another of these challenges pertains to platform evolution and generational transitions. Platform leaders, in order to outcompete rival platforms and remain relevant in the eyes of customers, need to continuously develop their platform by adding additional features and technological capabilities (Cennamo, 2018). For complementors, whose products and services are built on top of the platforms, these changes might have devastating knock-on implications. For instance, Kapoor and Agarwal (2017) demonstrate how the transition from one platform generation to another can have a negative effect on complementors' performance, particularly in ecosystems with a high technological complexity. Pierce (2009) also finds that platform leaders' policy changes often cause financial loss for complementors, with some eventually having to shut down. Finally, it is often challenging for complementors to find an adequate balance between their own firm-level objectives and the requirements and objectives set forth by the platform owner (Zahra and Nambisan, 2011). Discrepancies and tensions can

occur in terms of performance goals, technology development goals, or cooperative relationships. Nambisan and Baron (2013) therefore note that in order to join and succeed in innovation ecosystems, complementors must accept to surrender part of their autonomy and independence.

### ***3.3.2. Choosing the right platform***

Choosing the “right” platform in which to participate is an important strategic decision for complementors, as it is associated with high platform-specific investments, switching costs, and revenue implications (Aarikka-Stenroos and Ritala, 2017). Prior research has found that complementors’ “homing” decision may be based on a combination of criteria, such as platform quality (Zhu and Iansiti, 2012), platform age or market share (Landsman and Stremersch, 2011), platform complexity (Cennamo et al., 2018; Chen et al., 2021), the size of the installed user base (Rochet and Tirole, 2003), intensity of rivalry (Tiwana, 2015a), strength of network effects (Corts and Lederman, 2009), governance rules (Boudreau, 2010; Gawer and Henderson, 2007), and the cost of porting a product from one to another platform (Hyrynsalmi et al., 2016).

Previous studies have also investigated the incentives of complementors (and consumers) for single-homing or multihoming. Multihoming refers to a strategy where complementors offer their products and services on multiple platforms simultaneously (Cennamo et al., 2018). Multihoming is strategically important for complementors in many ways: first, it allows complementors to increase their user base and enjoy economies of scale (Tavalaei and Cennamo, 2020). Second, by diversifying their sales channels and revenue streams, complementors can preserve independence vis-à-vis platform leaders (Srinivasan and Venkatraman, 2018; Wang and Miller, 2019). Finally, by reducing the distinctiveness of platforms, multihoming promotes competition among rival platform leaders and may increase

the bargaining power of complementors (Taeuscher and Rothe, 2021). However, multihoming can be costly: it often requires platform-specific adaptations to the complement (i.e., porting costs) (Hyrynsalmi et al., 2016), and may even damage product performance because complements are usually optimized for a specific platform (Cennamo et al., 2018). Defining an appropriate multihoming strategy is, therefore, more complex than simply trying to maximize market reach (Tavalaei and Cennamo, 2020).

### ***3.3.3. Competing against peers***

Continuous and rapid product innovation is considered critical for complementor performance and intra-platform competition (Tiwana, 2015a), for many reasons: First, low barriers to entry foster the emergence of new complementors (Eckhardt et al., 2018; Jacobides et al., 2018) and keep platforms ferociously competitive. Secondly, complementors constantly face the threat of platform owner entry into their market. As Foerderer et al. (2018) show, complementors exposed to such a risk tend to increase their innovation efforts in what resembles an arms race. Finally, the platforms on which complementors develop their products and services are constantly evolving, forcing complementors to adapt their offerings and redevelop their knowledge base and capabilities (Ozalp et al., 2018). As Zhu and Liu (2018) note, to satisfy this innovation race and continually bring innovative products to their platforms, complementors need to develop strong capabilities in new product discovery, category-specific expertise, and platform-specific skills and technologies.

Besides product innovation, the complementor literature has also looked at the choice of complementors' business models and the effects on performance (Benner and Waldfogel, 2020; Eckhardt et al., 2018; Landoni et al., 2020; Rietveld, 2018). Rietveld (2018), for example, studied the market for digital PC games and compared how freemium business models compete with premium business model. He finds that (a) freemium games are played



less and generate less revenues than premium games, and (b) that in order to be competitive, freemium games need to create more value (e.g., through improved product quality, income from advertisements, or unlocking network externalities) or operate at lower costs. In a similar context, Landoni et al. (2020) document how big mobile game developers continuously iterated their business models to outcompete their peers, maximize value capture, and seize upon new opportunities afforded by evolving platforms. This included the monetization of IP through gadgets and movies, the development of their own distribution platform, and the creation of an open software development environment supporting the development of new games.

Besides product and business model innovation, another strategy that complementors can follow to outcompete their peers is to leverage the heterogeneity of platform users (Rietveld and Eggers, 2018; Steiner et al., 2016). Indeed, platform users can have very different preferences. Rietveld and Eggers (2018), for example, find that early users of a platform will tend to buy a larger number of complements, and more novel complements, than later users. Similarly, Steiner et al. (2016) find that “core” users (such as hardcore or enthusiast gamers in a video game console) have very different preferences than “casual” users. Research has shown that firms can target specific user groups to achieve or sustain success within a market segment even when it is at the cost of a broader installed base (Suarez and Kirtley, 2012). Benner and Waldfogel (2020), for example, show how middle and long tail business models have slowly become dominant on digital distribution platforms such as Netflix and Amazon Prime Video. These business models, unlike blockbuster strategies, leverage the low costs of distribution and film production to focus on very narrow and specialised audiences while remaining commercially viable.

Finally, Tavalaei and Cennamo (2020) highlight that complementors need to find the right balance between product portfolio diversity and multihoming in order to maximise performance and outrank their peers. Analysing the two major mobile app ecosystems iOS and

Android, they show a trade-off between competing in multiple product categories and publishing apps on multiple platforms at the same time. They find that the better performing complementors either focussed on one app category across multiple platforms, or multiple app categories on one platform. Publishing on multiple platforms across multiple app categories, and publishing on one platform in a single app category, both led to subpar performance.

#### ***3.3.4. Maximizing value appropriation***

Value appropriation in platform ecosystems can be a thorny issue for complementors (Teece, 2018). For example, complementors are continuously at risk of platform-owner entry into complementary markets (Zhu and Liu, 2018). To adapt to competitive action from the platform leader, complementors often reduce innovation efforts and increase prices in affected markets, all the while increasing innovation efforts in unaffected markets (Wen and Zhu, 2019). Furthermore, in the context of digital platforms such as Apple's App Store, complementors are often exposed to the unauthorized copying and distribution of apps (Miric and Jeppesen, 2020). In this context, Miric et al. (2019) point out that rapid innovation and early-entry advantages offer effective counter-measures to protect intellectual property. In a follow-up study on the subject, Miric and Jeppesen (2020) also find that contrary to common beliefs, piracy and copying doesn't lead to a decrease in overall innovation. Complementors adapt to these competitive actions by decreasing the release of incremental innovations (such as bug fixes) while maintaining (and in some cases even accelerating) bigger system updates and new product development.

Besides platform owner entry threat and copying, free-riding and opportunistic behaviour is also common, especially in the context of open-source platforms (O'Mahony and Karp, 2020). Small and large complementors vary significantly in their response to such threats, using a combination of informal and formal mechanisms to protect their intellectual

property (Miric et al., 2019). Huang et al. (2013), for example, find that formal intellectual property rights (such as patents and copyrights), and stronger downstream capabilities (as measured by trademarks and consulting services) are effective in protecting complementors from the threat of expropriation. Similarly, in a study of the enterprise software industry, Ceccagnoli et al. (2012) show that both intellectual property rights and strong downstream capabilities determined the extent to which complementors were able to reap the rewards from ecosystem participation.

### ***3.3.5. Mitigating platform dependence and increasing bargaining power***

Fuelled by network effects and winner-takes-all dynamics, platform owners have become increasingly powerful (Eisenmann et al., 2006; Gawer, 2020). Among economists and legal scholars, this has led to a flurry of antitrust research on digital monopolies (e.g., Khan, 2017). Among strategy researchers, some work has started to emerge on the ways complementors can increase their bargaining power and mitigate their dependence from increasingly omnipotent platform owners (e.g., Cutolo and Kenney, 2020; Wang and Miller, 2019). One option pertains to disintermediation. Disintermediation occurs when complementors circumvent the platform to transact with users directly, thereby avoiding (often substantial) platform fees (Hagiu and Rothman, 2016; Zhu and Iansiti, 2019). Despite the importance of disintermediation for both platform leaders and complementors, research on the subject remains scarce, perhaps because disintermediated transactions are difficult to observe and measure. In a study of a major online outsourcing platform, Gu and Zhu (2020) provide rare empirical evidence on disintermediation, showing that attempts by the platform leader to enhance trust (e.g., through scoring and messaging systems) can backfire and actually increase the propensity of complementors and users to disintermediate. Moreover, platform leaders seem increasingly aware of the existential threat disintermediation entails for their business model and are stepping-up actions to hinder

any disintermediation attempt. Airbnb, for example, withholds host and guest data (e.g., property location, phone number, and email addresses) until payments are made, and provides various benefits (e.g., property damage protection, liability insurance, and escrow services for deposits) that entice both complementors and users to transact on the platform.

Another way for complementors to increase their bargaining power vis-à-vis the platform owner is to coalesce with other complementors to leverage the “power of the many”. According to Cutolo and Kenney (2020, p. 28), collective action is “a type of coalition formation aimed at increasing complementor’s power versus the platform owner”. In their study they describe how YouTubers in Germany partnered with Europe’s biggest trade union to improve transparency regarding the platform’s video review process and monetization decisions. Relatedly, Eaton et al. (2015) conclude that open communication and the mobilization of public opinion can be a very effective strategy for complementors to change the dynamics of power within digital platforms. Edelman (2014: 5) also notes that “public outcry [...] provide(s) an important bulwark against brazen instances of intermediaries’ favouring their own services. It’s certainly worth a company’s time to explore whether a suspected case of discrimination could become the focus of public concern”. Here, Edelman (2014) describes the case of Yelp and its row with Google over biased search results, which was widely featured in mainstream media. In such cases, platform leaders are often quick to backtrack in an effort to quell dissent (and defection) among complementors and avoid negative press coverage (Cutolo and Kenney, 2020).

Attracting high quality complementors is important for the success of platform ecosystems (Eisenmann et al., 2006; Tauscher and Rothe, 2021). A significant body of research has in fact emerged showing that “superstar” or “blockbuster” complements play a disproportionate role in ecosystem adoption (e.g., Binken and Stremersch, 2009; Hogendorn and Yuen, 2009). Absent monopolistic powers, and under the pressure of rival ecosystems,

complementors can “exploit the platform’s need for completeness” to negotiate better terms and get preferential treatment (Edelman, 2014: 35). Relatedly, in order to increase a platform’s differentiation, platform leaders might be willing to compensate complementors generously to “buy exclusivity” (Armstrong and Wright, 2007; Cennamo and Santalo, 2013; Yoffie and Kwak, 2006). This is, for instance, quite common in the video game industry where Sony and Microsoft are aggressively developing first-party games and signing exclusivity agreements with third-parties for their PlayStation and Xbox gaming systems (Corts and Lederman, 2009).

Finally, according to the emergent literature on complementor strategy (e.g., Cutolo and Kenney, 2020), one of the best ways to reduce dependence on any one platform is to nurture off-platform revenue sources. For example, in an effort to preserve bargaining power and increase value capture, some book publishers strategically withhold their most profitable books from Amazon Kindle, favouring physical retail stores instead (Wang and Miller, 2019). Moreover, Cutolo and Kenney (2020) describe how YouTube influencers are able to develop alternative sources of income, such as merchandise and book sales or Patreon donations, and how third-party sellers on Amazon Marketplace can establish their own website and physical stores to interact more directly with customers.

### ***3.3.6. Adapting to platform dynamics***

In order to keep up with competitors, leverage new technological opportunities, and align with changing customer needs, platforms are constantly evolving (Adner and Kapoor, 2016; Kapoor and Agarwal, 2017; Ozalp et al., 2018; Teece, 2017; Tiwana et al., 2010). Changes made to the platform reverberate through the ecosystem of complementors and have (sometimes dramatic) ripple effects. Pierce (2009), for example, shows that market turbulences generated by platform owners can generate financial losses and exit for complementary niche market firms in the ecosystem. Similarly, Kapoor and Agarwal (2017) show that platform transitions can make it

more difficult for complementors to sustain their performance superiority, and that this effect is exacerbated by the extent of ecosystem complexity. This is also confirmed by Ozalp et al. (2018), who study the U.S. videogame industry and demonstrate that the introduction of next-generation platform technologies often increases the challenges of developing complements for the platform technology, therefore disrupting the very same complementors that platform owners need to thrive in the next-generation competition. Because of these struggles, transitioning platforms often show a pattern of defection of complementors toward rival, less challenging platforms (Tiwana, 2015b).

In a study of Apple's iOS App Store, Kickstarter, Kiva, and Valve's Steam, Rietveld et al. (2020) found that as platforms become increasingly dominant, platform owners shift from supporting the ecosystem of complementors to focusing on value extraction. Specifically, they found that prices for complements decline while the costs complementors incur increase. Furthermore, the average demand for individual complements decreases and becomes progressively concentrated towards the most successful complements, and the biggest complementors. Li and Agarwal (2017) similarly observe that complementors are not equally affected by platform change. In the context of Facebook's acquisition and integration of Instagram, they find that the growth of Instagram's user base has had positive spill over effect on big third-party applications and a negative spill over effect on small third-party applications in Facebook's photo-sharing ecosystem. As a result, while small third-party applications faced reduced demand after integration, big third-party applications experienced a small increase in demand.

To navigate platform disruption and its ripple effects, Pierce (2009) highlights the importance of complementors to anticipate, exploit, and expeditiously react to the activities of the core firm – principles that sit squarely at the heart of the dynamic capabilities literature. Furthermore, stirring platform change is not exclusively the precinct of platform owners.

Besides macro-trends and events, platform disruption can, sometimes, be attributed to complementors themselves. Adner and Lieberman (2021), for example, use the automotive industry to demonstrate how complementors have used commoditization, adjacent entry, and value inversion to initiate platform change and amend the ecosystem structure to their benefit. Similarly, Khanagha et al. (2020) document how Cisco, feeling stuck in the role of a complementor in the cloud ecosystem, used its position and resources to develop a new technological architecture of distributed computing to support the emergence of an alternative ecosystem, of which it ultimately became the platform owner.

### **3.4. DISCUSSION**

My review shows that complementors, despite having been conceived of as passive followers of more powerful platform leaders, do have a wide array of strategic options at their disposal. However, platform leaders are likely to react aggressively to attempts by complementors to change the balance of power within platform ecosystems. For example, Apple has been quick to retaliate against app developers that threaten its ability to capture value on the App Store. Retaliatory measures included blocking app updates, shadow banning apps, removing apps and developers from the App Store, restricting API access, or updating the App Store's T&Cs. Similarly, Uber, Amazon and Facebook (among many others) have all been embroiled in vicious fights with their complementors around issues such as working conditions, revenue sharing, and anti-competitive practices. So far, platforms' aggressive suppression of complementor discontent appears counterproductive, as they stirred a flurry of bad press and earned the ire of regulators from across the world. In fact, platform leaders appear to be struggling to adequately calibrate their response to complementor challenges, a response that would ideally maintain their ability to extract value from the ecosystems they created, but which also recognizes (and rewards) complementors fairly and proportionally to their

contribution to value creation. This leaves plenty of room for future research, which could explore questions such as: how do platform leaders accommodate complementor criticism? And how do they respond to leadership challenges by complementors? Also, studying the strategic responses of platform leaders in the context of highly centralized platforms would further increase our understanding of the inherent risks associated with platform dependence, and would allow to expand our understanding of the complexities of complementor strategy.

Furthermore, although the literature has recently been enriched with studies on platform lifecycles (see Kapoor and Agarwal, 2017; Ozalp et al., 2018; Rietveld et al., 2020), our understanding of how the ripple effects they generate affect complementors is still incomplete and would warrant further investigation. As platform ecosystems change, complementors must adapt – a difficult task given the unpredictability that characterizes these complex multi-stakeholder environments. This raises several questions for future research: how do complementors go through this process of disruption? How can they exert agency and influence ecosystem change? What kind of resources and capabilities are needed to do so? Based on my assessment of the literature, at least part of the answer could lie in the literature on business model innovation, which has rarely been studied in the context of platforms. Indeed, creating and capturing value in the platform economy involves some unique challenges for complementors (Teece, 2018), for example, accommodating the goals and priorities of the platform leader with their own business objectives (Nambisan, 2017). Furthermore, complementors face the task of developing a business model that “leverages the resources and customers available from a platform [...], while also mitigating the platform’s control over that business” (Cutolo and Kenney, 2020, p. 32). How do complementors navigate such constraints? And how do complementors adapt their business model to the platform dynamics discussed above? Such questions are, of course, not only relevant for complementors but also for platform leaders: if complementors struggle to adapt to generational platform transitions



and to create sustainable business models, it could undermine the overall success of the ecosystem (Ozalp et al., 2018).

A further implication of the extant review is that complementors are becoming increasingly skilled at the platform game, and that complementor strategy is becoming increasingly sophisticated. One area in particular that, according to my review, has, despite its importance, been theoretically underserved pertains to platform disruption by complementors. Anecdotal evidence (e.g., Adner and Lieberman, 2021; Khanagha et al., 2020) suggests that today's complementors might well be tomorrow's platform leaders, and that complementors are uniquely positioned to develop and dethrone the platform leader they serve. However, the exact mechanisms by which complementors can do so are still poorly understood. How, for example, can complementors overcome network effects to develop an alternative platform? And how can complementors compete with the platform owner while avoiding retaliation? Tackling these questions and more would complement emergent literature on the subject of technological substitution in ecosystems (Adner and Kapoor, 2016) and new ecosystem formation (Dattee et al., 2018; Snihur et al., 2018).

Last but not least, my review makes the observation that in some contexts (such as monopolistic platforms) the range of strategic options complementors have at their disposal is limited. To foster innovation and social welfare, a more balanced playing field is needed. How, exactly, should hegemonic platforms be dealt with? And what regulatory frameworks should be put in place to guarantee a fair playing field for complementors? The emergence of (digital) platforms has opened some intense debates amongst economists and antitrust scholars regarding the adequacy of our existing regulatory frameworks. First regulations have been published in the US and Europe that should give more protection to complementors and help increase their ability to capture value. More laws are in the pipeline, with some politicians seriously considering the possibility of splitting up platforms that have spread too wide (e.g.,

Meta's bundling of Facebook, Instagram and WhatsApp). The conclusion of these discussions will shape our global economy, and the fate of complementors, for decades to come.

### **3.5. CONCLUSION**

Prior research has tended to focus on platform leaders and their role in the emergence and growth of platform ecosystems. Although previous work acknowledges the importance of complementors for the success of a platform, it has, perhaps inadvertently, treated complementors as a “strategic variable” that must be managed and harnessed. Only recently have scholars begun to treat complementors as autonomous and heterogeneous agents, having idiosyncratic strategic interests, and facing peculiar strategic challenges and trade-offs. Given the rapid progress made in this emergent stream of the platform literature, the diversity of topics discussed, and the breadth of empirical contexts considered, I provided a systematic review that synthesizes our current understanding of complementor strategy, highlights the existential and strategic conundrums faced by complementors in platform ecosystems, and discusses how complementors create value, mitigate their dependence on platform holders, and maximise value capture despite asymmetric bargaining power. I also recognise current theoretical and empirical ambiguities and limitations in the literature and suggest several avenues for future research.

## 4. COMPLEMENTOR RESPONSES TO ECOSYSTEM DISRUPTION<sup>5,6</sup>

As platform-based ecosystems have become ubiquitous (Bogers et al., 2019a; Cennamo, 2021), an increasing number of businesses are now dependent on platforms to reach their customers (Cutolo and Kenney, 2020). This includes, for example, Amazon sellers, iPhone app developers, and Independent Software Vendors (ISVs) on Salesforce's AppExchange. Platform participation can have many benefits for these complementors: platforms can give small firms access to a broad market of users and facilitate economic exchanges (Eisenmann et al., 2006). Platforms can also provide complementors with shared technological assets and boundary resources (Tavalaei and Cennamo, 2020), and therefore foster entrepreneurial activity (Eckhardt et al., 2018; Wareham et al., 2014; Zahra and Nambisan, 2012). Finally, platforms can guide co-innovation efforts and ensure coordination between ecosystem members (Cusumano and Gawer, 2002).

However, while platform participation offers many benefits for complementors, it also entails unique risks and challenges (Nambisan and Baron, 2013; Boudreau 2010, Ceccagnoli et al. 2012, Kapoor 2013, Kapoor and Lee 2013). For example, emerging platforms often attract complementors with incentives and benefits, but as the ecosystem grows and network effects take hold, complementors find themselves locked-in and their bargaining power nullified (Cutolo and Kenney, 2020). Another challenge complementors face pertains to platform disruption. In order to outcompete rival platforms and remain relevant in the eyes of customers, platform leaders need to continuously develop their platform by adding new features and update core platform technologies (Cennamo, 2018). For example, new video game console

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<sup>5</sup> An earlier version of this chapter has been presented at the JPIM Research Forum Developmental Paper Session in November 2019 and at the 27<sup>th</sup> IPDMC Doctoral Workshop in June 2020

<sup>6</sup> Authorship: Pierric Appert (PA) and Stephan von Delft (SvD). Contributions: PA conceived and conceptualized the study, collected and analysed the data, and drafted the manuscript with input from SvD; SvD provided critical feedback, helped to shape the research and reviewed the manuscript.

generations are introduced approximately every 4 to 5 years and leverage technological developments (such as a new microprocessor design or virtual reality gear), which can improve the gaming experience. Similarly, Apple and Google are continuously innovating their smartphone hardware and mobile operating systems to enable new features such as facial recognition or 5G connectivity.

Despite their importance regarding inter-platform competition, platform changes can have severe ripple effects for complementors, who's products and services are built on top of the platforms. Kapoor and Agarwal (2017), for example, show that platform transitions can negatively impact the performance of complementors, especially when ecosystem complexity is high. Similarly, Ozalp et al. (2018) show that introducing next-generation platform technologies with advanced capabilities increases the challenges of developing complements for the platform technology and can lead to complementors defecting toward rival, technologically less challenging platforms. Pierce (2009) also finds that the actions of platform leaders in ecosystems can have widespread and severe effects on complementors, from generating financial losses to causing complementors to leave the ecosystem. This is also demonstrated by Wen and Zhu (2019), who show that vertical integration by the ecosystem leader can force complementors to move into other complementary markets, even if they are less lucrative.

While these studies vividly highlight the consequences platform leader decisions and ecosystem change can have for complementors, they do not explore how complementors can navigate such changes to sustain their business. In this study, I therefore explore the strategies complementors deploy to cope with ecosystem disruption induced by platform leader decisions. I ask: *How do platform leader decisions affect disruption in platform ecosystems?* and *How do complementors navigate this process of disruption?*

#### **4.1. EMPIRICAL CONTEXT**

To address these questions, I studied mobile app developers on Apple's iOS smartphone operating system, which holds around 15.2 percent of the global smartphone market share. Apple's iOS mobile operating system has experienced significant changes since its initial release in 2007. For example, it has regularly been updated to account for safety issues or introduce new features (such as iMessage, FaceTime, iCloud or Apple Pay). Apple has also continuously adapted its guidelines for complementors, e.g., what apps are allowed on the App Store or what kind of user data complementors can collect. Furthermore, Apple regularly updates the App Store's governance mechanisms. Recently, this included the creation of an appeal process that allows complementors to contest app removals. Besides these software improvements and governance changes, Apple has also significantly increased the hardware capabilities of its smartphones, allowing mobile app developers to leverage increasingly powerful technologies such as better screens, cameras, and microprocessors (which in turn allow for ever more engaging and entertaining apps). Finally, general market conditions in the broader smartphone industry have also dramatically changed. First, the last decade has seen a significant uptick in smartphone use, with an increasing share of economic activity being conducted through mobile (Bock et al., 2015). Second, the smartphone market has become extremely concentrated. While Apple and Google have become much more powerful (combined, iOS and Android now operate on almost 99% of smartphones shipped worldwide), many competing ecosystems have gone (more or less) extinct (including, for example, Nokia's Symbian, Microsoft's Windows Phone, or Blackberry). This hegemony has led to a flurry of antitrust cases being currently examined by US and European regulators (Mckinnon, 2020). Third, as a result of this increased concentration of power and the importance of mobile for businesses, competition between app developers has drastically increased (e.g., Rietveld et al., 2020).

With my research, I set out to better understand how mobile app developers on Apple's iOS are affected by such changes, and how they manage to adapt to them (or not). To do so, I focused on a recent platform event, the introduction of Apple iOS 14 (its newest mobile OS version at the time) on the 16<sup>th</sup> of September 2020. Among cosmetic changes such as a new user interface for its podcast app, the update contained the launch of Apple's Application Tracking Transparency (ATT) framework. ATT is a privacy feature that gives iPhone users more control over personal data sharing practices. Before the update, app developers were able to use iPhones' unique identifier, the Identifier for Advertisers (IDFA), to track users across apps and websites, thereby displaying targeted advertising to users based on their online behaviour. This used to automatically happen in the background, unbeknownst to most iPhone users. However, with iOS 14, app developers and advertisers now need the explicit consent of the user first. According to research by mobile app analytics company Flurry (2021), 96% of users opted out of app tracking, therefore undermining one of app developers' main sources of revenues: in-app advertising (IAA). To illustrate the disruptive effect of the implementation of ATT on complementors' way of doing business, consider the mobile games segment, which account for around 71% of the US\$73bn generated on iOS in 2020 (Chan, 2021): in mobile games, IAA then accounted for approximately 53% of complementors' revenues (US\$28bn). Apple's iOS 14 update has accordingly been described as an "apocalyptic change" (VentureBeat, 2020) that is "rocking the mobile ecosystem" (CNBC, 2020) and "shaking up the app economy" (FT, 2021) because it seriously constrains the established way of how mobile app developers and advertisers monetize apps and attract users through personalized and targeted advertisement.

## **4.2. METHOD**

To understand how complementors were affected by and reacted to Apple's iOS 14 privacy update, I conducted an exploratory qualitative study. The qualitative approach is appropriate because theory on ecosystem disruption and complementor responses remains in its preliminary stages, and the objective of this study is to develop a better understanding of the existing phenomena (Saunders et al., 2019). Therefore, in the course of my research, I attempt to respond to questions such as "What is going on?" and "What is the main problem of the participants (in this case: complementors), and how are they trying to solve it?" (Glaser, 1992). I proceed inductively, using the grounded theory methodology, to generate concepts that explain the way complementors resolve the challenge of ecosystem disruption. These concepts organize the ground-level data and constitute the building blocks of new theory on complementor strategy in dynamic ecosystems (Glaser and Strauss, 1967).

### ***4.2.1. Data collection***

My findings are based on several data sources (see Table 4-1). First, I conducted semi-structured interviews with executives from app developers, who transact on Apple's App Store. These interviews were conducted over a period of 18 months from January 2020 to June 2021, lasted between 45 minutes and 2 hours, and were recorded and automatically transcribed using Otter.ai (see Appendix A). Where necessary to fill in gaps, I used follow-up interviews and emails. Second, I interviewed members of the broader Apple iOS mobile ecosystem. This included, inter alia, consultancies, service providers, industry experts, industry bodies, and regulators. Third, I participated in several industry events, where I observed and analysed current debates in the mobile industry to gain both a broader understanding of the sector and important subject-specific insights. In the course of these events, I also conducted 17 informal interviews with industry experts and executives of mobile app developers, which I documented through

field notes and memos. Finally, I collected in-depth archival data, including press articles, company press releases, technology blogs, books, conference presentations, and analyst reports.

**Table 4-1 Overview of data collection**

| Data type          | Description  |  | Sources  |
|--------------------|--|--|--|
| Primary data       | 40 semi-structured interviews conducted with C-level and top managers of application developers on iOS and Android, and members of the broader mobile ecosystem.             | 56 hours of interview, recorded and transcribed.   | Informants were CEOs, EVPs, Heads of Business Development, Heads of Marketing, and so forth at small and big mobile game developers from across the world. Informants also included consultants, AdTech companies, and scholars. |
| Observational data | Observations and 17 informal interviews at industry events and fairs, analysis of recorded presentations and CEO interviews on YouTube, Podcasts on the mobile economy, etc. | 55 hours of presentations and panel discussions<br>17 hours of YouTube videos<br>7 hours of Podcasts | Industry events covered: Indian Game Developer Conference (IGDC) 2021; App Growth Summit 2021; Pocket Gamer Connects #5, #6, #7; Israel Mobile Summit, Hamburg Mobile Summit Live!, etc.   |
| Archival data      | Newspaper articles and press releases from various business and industry-specific outlets  | 153 articles   | Newspapers included: Financial Times, Wall Street Journal, TechCrunch, Wired, GamesIndustry.biz, Venture Beat, and more.   |

Such varied data sources enabled triangulation and strengthened confidence in the robustness of the findings (Eisenhardt 1989). Specifically, each of the data types I collected allowed me to draw inferences from different levels of analysis. For example, archival and observational data allowed me to gain a broad contextual understanding of the mobile gaming ecosystem, its dynamics, key industry players, and the macroeconomic effects of Apple’s introduction of the

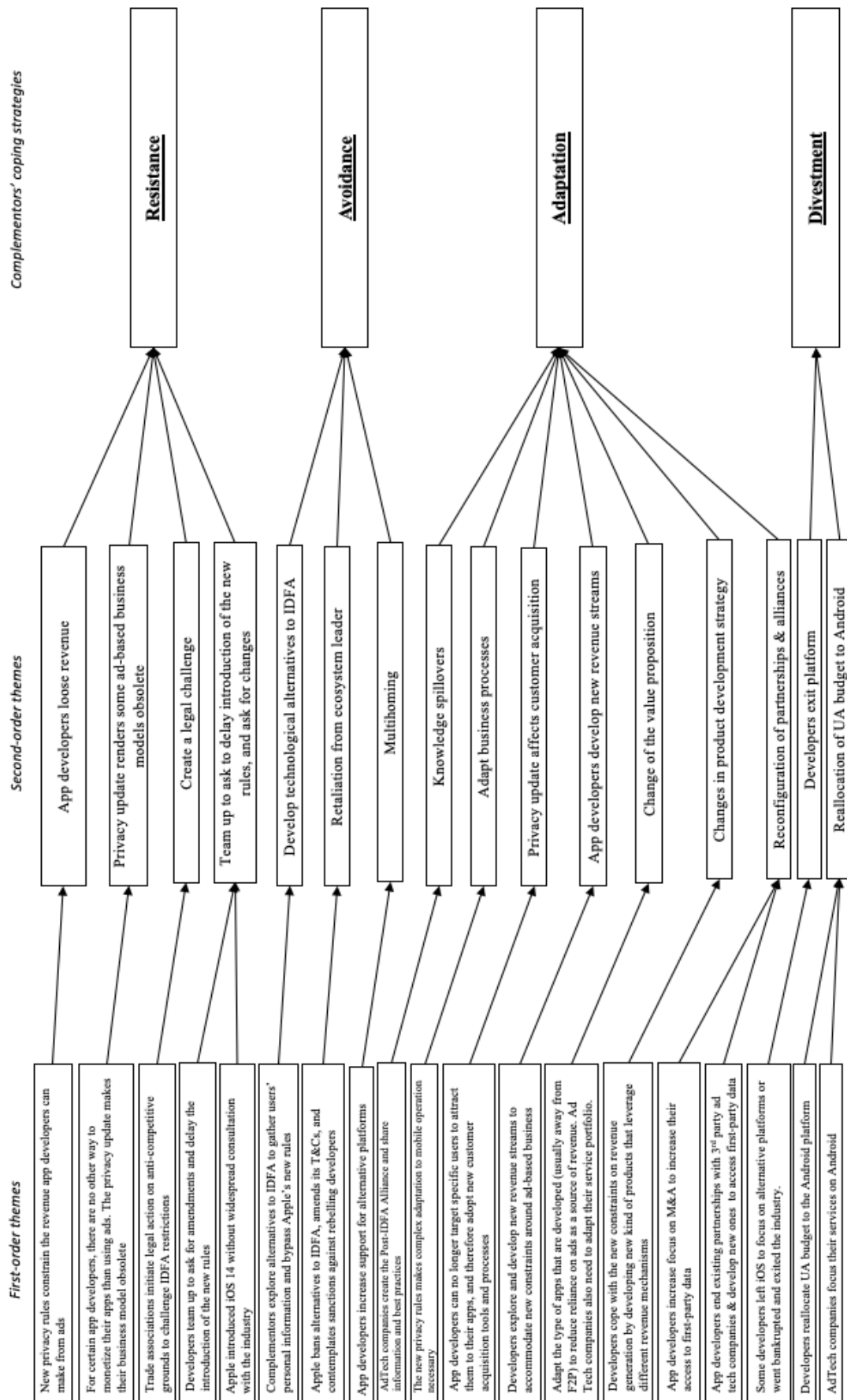


ATT. The data collected through these sources also enabled me to critically reflect on the statements made by informants during interviews, uncover potential inconsistencies, and address these through follow-up questions. Primary data, on the other hand, allowed me to take a more granular view, helping me to better understand the repercussion of Apple's introduction of the ATT on individual firms within Apple's ecosystem. As we will see in the upcoming sections, these varied data sources yielded complementary and partially overlapping insights, thus allowing me to develop coherent theory with strong internal validity.

#### ***4.2.2. Data analysis***

My analysis followed a systematic and iterative approach (Glaser and Strauss, 1967; Miles and Huberman, 1994), where I moved back and forth between data, emerging patterns, and existing literature, to understand how complementors cope with platform disruption. To structure the raw data I followed the technique suggested by Gioia et al. (2013). Following this technique, I categorized raw data as first-order concepts using in vivo codes (i.e., first-order codes composed of language used by informants or descriptive phrases). In my study, in vivo codes allowed me to get a first insight into how complementors were affected by platform disruption and how they responded to it. An important aspect of this inductive analysis was that codes emerged from the data rather than from pre-defined hypotheses (Strauss and Corbin, 1990). I hence started by searching for links between the first-order concepts. This enabled me to group the first-order concepts into second-order categories. Next, I searched for related second-order categories, which I aggregated into third order, overarching themes. These functioned as the building blocks of my emerging theoretical framework and captured complementor's strategies in response to Apple's iOS 14 ATT framework. To ensure data validity, I used informant and outsider feedback to increase the validity of my interpretations (Langley, 1999). The coding structure is presented in Figure 4-1.

Figure 4-1 Coding structure of complemator strategies to cope with platform disruption



### 4.3. FINDINGS

Four overarching and chronologically sequential coping strategies emerged from my data analysis (see Table 4-2). The first of these strategies concerns the pushback and *resistance* that mobile app developers and the broader ecosystem exerted when Apple initially announced its data privacy ambitions for future updates of its mobile OS in June 2020. In a second step, once it became clear in early 2021 that Apple was not going to concede, mobile app developers started to evaluate and explore alternative technologies to bypass the upcoming restrictions, all the while maintaining a certain continuity of operation. I label this second strategy *avoidance*. The third strategy pertains to the *adaptations* many mobile app developers made to their business model as a way to cope and navigate the platform disruption. Indeed, given the aggressiveness with which Apple was ready to enforce compliance, many mobile app developers started to align their operations with the new business reality created by the iOS 14 privacy update. Finally, as a consequence of the update, some complementors chose to *divest* or defect from Apple's mobile platform and reallocate resources to competing platforms, therefore constituting the fourth strategy. I next discuss each of these four strategies in more detail.

**Table 4-2 Overview of complementor coping strategies**

|                     | Resistance   | Avoidance  | Adaptation  | Divestment   |
|---------------------|--|--|---|--|
| Description         | Complementors use legal means, public pressure, and collective actions to delay, amend or otherwise repel the platform change  | Complementors ignore the new rules, develop alternative technology, or switch platform to avoid platform change  | Complementors share information, adapt their business processes and product, and create new alliances to leverage opportunities brought about by platform change  | Complementors divest from the platform and switch to competitors as a result of platform changes   |
| Examples            | <ul style="list-style-type: none"> <li>• Initiate legal action</li> <li>• Team up with other complementors to leverage the power of the collective</li> <li>• Use the media to pressurize the platform</li> </ul>  | <ul style="list-style-type: none"> <li>• Develop new tracking technology to bypass restrictions</li> <li>• Multihome to reduce dependence on platform</li> </ul>   | <ul style="list-style-type: none"> <li>• Recalibrating product portfolio</li> <li>• Design new type of games that rely less on advertisement for monetization</li> <li>• Find alternative, off-platform revenue sources</li> <li>• Develop alternative customer acquisition strategies</li> <li>• Create new partnerships with publishers for data sharing</li> </ul> | <ul style="list-style-type: none"> <li>• Reduction of UA budget</li> <li>• Greater focus on Google Android for marketing expenses</li> <li>• Bankruptcy, voluntary cessation of business</li> </ul>                  |
| Illustrative quotes | <p>“I have seen many app developers openly criticize Apple on Twitter, there was a huge backlash, they got a lot of bad press. And I think we all hoped Apple would refrain from implementing the measure”</p> <p>Director of Business Analysis at a leading Japanese game developer</p> | <p>“Even internally it’s a bit controversial, but we are looking actively into device fingerprinting as a way to bypass some of the restrictions and buy some time to find a more permanent solution”</p> <p>Head of Strategy &amp; Corporate Development at a global game publisher</p> | <p>“We are changing the design of our games to try to reduce our reliance on ads and focus more on IAPs and in-game economics”</p> <p>Head of Publishing (India and SEA) at a global game developer</p>   | <p>“We have told our clients to considerably reduce marketing spendings on iOS. Android offers a lot more certainty. There, it’s business as usual”</p> <p>Founder and CEO of a Malaysian app development studio</p> |

**4.3.1. Resisting platform change**

Apple’s privacy update was met with significant resistance from the broader app developer community, including the app developers in my sample. Several companies, such as Facebook and UK news site Mail Online, went so far as to threaten to delete their apps from the App Store over the issue. Reasons for this reticence were manifold: First and foremost, app developers and advertising technology (AdTech) companies perceived the upcoming change

as a threat because they would lose a major cornerstone of their way to generate revenue and their ability to run targeted user acquisition campaigns, a marketing approach that makes up the vast majority of traffic an app attracts at launch. Specifically, the new privacy rule reduced the value of ad inventory (i.e., ad space that app developers can sell to advertisers) and app developers' ability to accurately acquire so called "whales" (i.e., users that spend a lot of money in-game). Without the ability to target users, mobile advertising campaigns lose efficiency and work more like traditional TV spots addressed at poorly differentiated audiences. However, not all app developers felt equally threatened: Those that mainly monetized their apps through in-app purchases, subscriptions, or upfront payments, were primarily worried about efficiency losses in paid user acquisition campaigns. On the other hand, mobile game developers relying on free-to-play (F2P) business models and hyper-casual games (i.e., games that feature minimalistic user interfaces and are easy-to-play), where revenue almost exclusively comes from advertisements, started to question the sustainability of their business model: *"This new OS by Apple is really a challenge for us because I don't really see today how hyper-casual fits into that picture. We rely on targeted advertising for user acquisition, and on the ad revenue for monetization of course which is going down. [...] I am not sure hyper casual is the future anymore, I think only the very big companies will be able to make money in that space"* one executive at a small European mobile game developer told us in an interview.

Interviewees also emphasized the monopoly Apple's platform has in the mobile economy. The CEO of a leading global game developer told us: *"So I will take a back step and draw a sort of analogy of how we think about this digital ecosystem. It's like a government that you haven't elected, but it is there and you have to pay taxes to the government. And you are going to get some services back, maybe it is going to be an important service or maybe not. If you feel that the taxes are too high, you can't go to justice, you can't bring your own party, it's*

*very hard, you can't elect another government, you can't because there's only one or two major parties like Apple or Google”.*

With this background in mind, and besides the threat to their business model, what drew further criticism and resistance from the mobile game developers in my sample was a perceived lack of information and communication, not only concerning the exact content of the update, but also what practices would become banned on the App Store and how app developers could adapt to the change (e.g., what technological alternatives they could use). *“My personal criticism is that Apple could have played this in a very different way. [...] We know they don't like to talk to others. But if you have such a big change, and even your top-grossing app publishers don't know what's going on, how do you manage this?”* one executive at a mobile app monetization firm explained to VentureBeat (2019). Several interviewees suggested that holding an ad hoc summit, similar to the annual Apple Worldwide Developers Conference (WWDC), would have been valuable if not necessary to ensure a smoother transition to what some called “the post-IDFA world”. The app developers I interviewed had also hoped Apple would have opted for an open consultation with the industry since mobile ads represent a significant part of the iOS ecosystem and generate billions in revenues.

Another issue raised in the interviews was the fact that many perceived Apple's move towards more user privacy to be self-interested and opportunistic. As one executive from a global mobile game developer explained: *“Apple's strategy has always been to look at what is working well and then take it in-house. [...] My bet is that Apple will start fulfilling that function [of an ad network]. This was something that Apple did not have. They did have some ads and stuff like that. But it was not a business priority for them, right? [...] And now they realised: ‘Oh, why is Facebook making money from my users?’ [...] Their strategy boils down to the fact that they control the user, they are the gateway to my users. If they are not ring fencing the user, there is no platform, right? So, to further ring fence that user, they have used the ploy*

*of privacy. And they have already announced that they are going to introduce “recommended” ads. [...] They also suddenly said last week they are going to give developers more storefronts, more creatives, and the technology to run it, right? They're also increasing A/B testing capability, which they did not have earlier. [...] We will have to spend money somewhere, right? User discovery cannot go away, suddenly. [...] So now I will pay that ad money to Apple. We are already slowly seeing that.”* This was corroborated by many industry experts, who suggested that the only company to benefit financially would be Apple itself, because Apple apps (such as the Safari web browser) are excluded from data sharing restrictions set forth by the ATT framework. Congruent with what interviewees said, almost concurrently to the implementation of iOS 14, Apple strengthened its own advertising services and positioned itself as the only viable advertising network on iPhone in a post-IDFA world: *“Through these unilaterally imposed measures, Apple effectively excludes all competitors from processing commercially relevant data in the Apple ecosystem. [...] At the same time, however, the group excludes its own (advertising) services from the planned changes and collects significant amounts of user data itself”*, one executive at an industry body explained to CNBC (2021). This has led several major app publishers in Europe to file antitrust complaints to the Federal Cartel Office (Bundeskartellamt), Germany's competition regulator.

Besides the implications for app developers' business models, the lack of communication, and the lack of trust, my interviewees also noted the short time they were given to adapt to what was considered by most to be a momentous change: *“Usually, when they change policies, it hits you one day, you know, it's like, POW! Yeah, it caught us by surprise, just like with the Apple Login update. [...] And it feels like these guys have the power with such a change to just kill you. Like that, by the clap of a finger basically”*, one senior executive of an American game studio commented. In response, some app developers collaborated with industry bodies to lobby for a delay of the update. Executives from various app developers and

AdTech companies, including Facebook’s Mark Zuckerberg, publicly asked for amendments or a moratorium, warning that many popular apps would stop functioning if Apple persevered. In the end, the backlash generated by the app developer community seemed to have some effects, and Apple decided to delay the implementation of the ATT by almost 6 months. The result was well received by the developer community, because a delay would give app developers more time to implement profound changes to their motus operandi, and also because Apple is perceived as usually difficult to sway: *“Without these 6 months of delay we would have had to pull our main revenue-generating app from the store. This product is what pays my salary and that of this whole team. We wouldn’t have managed to pay for operating expenses, servers, etc. without a solution to the ad monetization problem”* a mobile game executive told us.

#### **4.3.2. Avoiding platform restrictions**

The vast majority of app developers I interviewed, especially those heavily reliant on ads for monetization, said they are exploring and actively seeking out technological alternatives to the IDFA in order to bypass Apple’s new ATT framework. According to one of my interviewees: *“We are in active discussion with several AdTech consultancies to evaluate which options we have to minimize the impact of Apple’s privacy update on our operations. [...] I’ve also hired a data scientist to explore which approaches are the most viable to continue operating our model. I am ready to consider any option”*. In fact, some developers I talked to already invested significant amounts of money to deploy these technologies in-house. This included one Chinese mobile game developer who, at the time of the interview, was in the process of implementing CAID (China Advertising Association Identifier), a device fingerprinting technology developed by the China Advertising Association (a state-backed advertising trade group in China) to circumvent Apple’s tracking restrictions. Device fingerprinting (also called



probabilistic attribution) identifies individual users by correlating the characteristics of their device, including the type of hardware and software used, the internet configuration and network, battery state, screen resolution, time zone and language settings. As one interviewee explained: *“If you have a gyroscopic sensor or you have some sensors and some device information, you can track those devices and you can identify that this user has iOS, an iCloud account, an Apple 11 Pro or whatever it is. So, although Apple's policy is not to track users, Apple has been very unclear and ambiguous about if you can use sensor data or not. [...] But yeah, I mean, people in the industry are experimenting with that. And there are some startups also that have emerged as a consequence of providing these solutions and identifying the user based on those sensors”*.

Another technology adopted by one of the firms in my sample pertains to ID hashing. ID hashing has been used to anonymise users' email addresses and phone numbers by running them through a standardised algorithm (such as MD5, SHA-1, or SHA-2) which transforms them into unrecognizable and unique hexadecimal strings. These hexadecimal strings are then shared among developers to follow a user's activities and behaviours across various mobile applications and enable them to tailor ads without compromising users' privacy and identity.

However, many of the firms in my sample were worried to technologically bypassing the ATT framework, mainly because of (i) the high costs involved in developing the capabilities needed to deploy and operate these alternative data collection technologies, (ii) the risks associated with going against Apple's new rules, (iii) Apple's provision of a privacy-friendly alternative to IDFA, and (iv) ethical concerns over, what some called, “abusing” user data. Indeed, utilizing device fingerprinting or ID hashing necessitates the adoption of a new tech stack, and hence requires mobile app developers to set up new processes regarding how they collect, verify, and process data from their mobile app campaigns on iOS devices. Since device fingerprinting involves complex statistical models and data analytics approaches, it also

forces smaller mobile app developers to develop new (and costly) capabilities, mostly by hiring AdTech consultancies to train staff or directly recruiting digital marketing specialists. Furthermore, these strategies are fraught with risks. Indeed, Apple has repeatedly made clear that any attempt to bypass its new ATT framework will have serious repercussions, including being banned from the App Store: *“Developers who fail to meet that [the ATT] standard can have their apps taken down from the App Store”*, Apple’s senior vice president of software engineering, Craig Federighi said during Apple’s WWDC (CNBC, 2020). In fact, since implementation of the ATT framework, Apple has already started rejecting new mobile apps and updates, according to Forbes (2021). Given that many firms in my sample rely on iOS as the main revenue source, an exclusion of the App Store would effectively result in bankruptcy. In addition, many European app developers were also wary of the legal and brand image implications bypassing Apple’s ATT could have for their company: *“We have taken a conscious decision not to go there. Because the development cost of that is too high. Also, in terms of Apple and potential consequences. Also let’s say it comes out. You know, at the end of it, the customer also wants its privacy. And they don’t want to be abused. So, we don’t want to do anything that can cause a customer to doubt us. So, we will work within the frame, we will maybe lose revenue, but let’s stick to it”*. Finally, concurrent to its release of the ATT, Apple also introduced the second version of its ad network called SKAdNetwork, providing a new approach to advertising campaign measurement on Apple devices. Unlike the IDFA, SKAdNetwork obfuscates data at the user and device level, and only provides aggregate information on ad attribution and conversion rates. Albeit inferior to the granular tracking provided by IDFA, SKAdNetwork provides mobile developers with a technological alternative within Apple’s walled garden and has deterred some firms in my sample to explore more controversial technologies. As the founder of a small mobile game developer explained: *“Of course we ask ourselves: is it worth the risk? Shouldn’t we simply accept an inferior*

*monetization and acquisition approach instead of shady practices? It would be like a sword of Damocles hanging over our heads”.*

### **4.3.3. Adapting to new platform rules**

#### *Revamping the product portfolio*

Among the mobile game developers in my sample, free-to-play (F2P) was by far the most common business model. Consumer demand for F2P games is reflected in the dominance of hyper-casual games (e.g., Angry Birds) at the top of the App Store Game ranking. These games are characterised by very basic game mechanics, simple graphics, and ease of play. They also rely on a high volume of free users to be monetized through ad impressions and cross-selling (e.g., customer acquisition campaigns for new games). A considerable share of their revenue also originates from in-app purchases, such as unlocking new levels or buying new “equipment” (e.g., weapons or avatars). From my data, the effects of Apple’s ATT on the F2P business model remains unclear. On the one hand, some of the F2P mobile game developers in my sample considered that Apple’s privacy update has fundamentally put their high-volume low margin approach into question. As the executive of an Indian mobile game developer aptly summarized: *“we have built our business on our ability to attract whales [i.e., high-value players] through targeted acquisition campaigns, and monetize the rest through ad inventory sales. [...] Both these revenue streams now seem compromised on iOS”*. Some game developers are therefore considering a change in the kind of games they are developing to be able to leverage revenue streams usually reserved to more engaging and higher quality “mid-core” and “hard-core” games, including upfront payments and subscriptions. One executive at an Asian game developer I interviewed explained: *“How do I move from getting, for example, 100 good users from \$100 to now 50 users? I have to make more money from those 50 users, right? Which means more features, more content, more engagement, more avenues for them to*

*burn money. These are different kinds of games*". On the other hand, some of the interviewees argued that the wide appeal of hyper-casual F2P games makes targeted ad campaigns unnecessary, and that Apple's ATT has lowered ad inventory value and therefore pushed user acquisition costs down. According to Rovio CEO Alexandre Pelletier-Normand: *"Our casual games are naturally less dependent on precise targeting given the wide appeal they have, and they will be affected less [by the privacy changes]. Hence we recalibrated our portfolio to do more of those games relative to mid-core titles"* (VideoWeek, 2021). Either way, each of these perspectives seem to suggest that mobile game developers are revising their value proposition and adapting their product portfolio to better fit the new platform environment created by Apple's introduction of the ATT.

#### *Developing alternative revenue streams*

By depreciating the value of ad inventories and increasing the costs for user acquisition, Apple's ATT framework has challenged many mobile app developers' business models. As one established Asian mobile gaming company commented: *"Our whole revenue model is basically based on how efficiently we can acquire users and the expected ad revenue I can get, right? [...] The math is very simple: what is my cost of acquisition? What is my lifetime value? If I'm able to have the value higher than cost per acquisition, it's a homerun. So obviously, it has impacted us a lot"*. Similarly, another interviewee explained: *"The cost of acquisition and the quality of acquisition, they are the two things that have been impacted negatively for us as a developer. Discovery [i.e., making the app visible to the user] is the primary thing. And that is something that has been impacted the most. Since Apple made the announcement, it kind of created all kinds of reactions, it's kind of a doomsday scenario"*. As a result, the privacy update seems to be pushing F2P mobile game developers to innovate and identify alternative revenue sources to complement the fading value of ad inventories. Indeed, options to monetize on the

App Store are relatively limited, and many of the companies I interviewed signified their intent to develop their off-platform income streams: *“We are definitely trying to find alternative revenue streams, but we didn't go as far as some others in the industry. What we do now, for example, is to push subscriptions instead of ads. And we do it not on mobile but on the web, where Apple can't take anything. Spotify does the same now. [...] That's one thing. Another thing is real cash for our betting apps. Again, this goes outside of the platform's control. And so real cash is a big thing for our betting apps now. [...] And blockchain is going to be a big thing. A it's a big question mark how Apple will be dealing with this. We have a game that is developing something in blockchain. Obviously, there are not going to be able to control payments that happen on the blockchain, right?”*, the executive of a leading American mobile game developer told me. Similarly, an executive of an Indian mobile developer noted: *“We are exploring certain online/offline collaborations, real world collaborations, which works for companies like ours in which we have games around food and stuff like that. For example, can I have a partnership with a coffee chain franchise where players get some [in-game] currency and can then go and redeem it at the coffee store? So, this is an excellent entry stage. We have done some PoCs [Proof of Concept] here and there, that's looking good. But that's again only an alternative source of revenue that could come in, it's a complimentary instrument.”*

Smaller developers in my sample, on the other hand, were more cautious in exploring such alternative revenue streams, as they were concerned about retaliation from Apple. According to the CEO and Founder of a small Danish video game developer: *“But then again, one of the considerations about trying to move our traffic to our own web page and then save the transaction cost is that we have no idea how Apple's ranking algorithm works. So, if we start to monetize worse on iOS because we divert payments, then we might fall on the ranking list. And so, we fear moving traffic to our own website, like Epic Games is doing now, even*

*though there could be a big advantage in regard to transaction fees. So, it's driven by fear that we are not doing more than we feel we should actually."*

Nevertheless, as a result of the iOS update, several of the bigger developers in my sample started licensing their IP for movies and TV shows or sold branded merchandise products. Others developed into event organisers and created e-sport contests around their games, generating ticket sales and fostering their player community. An established British game developer in my sample was also in the process of piloting in-game product placements in collaboration with a well-known Italian luxury brand, which would enable the app developer to create ad inventory sales outside of Apple's reach and payment processing fees. *"We're also looking at some brand partnerships, certain global brands that to do in-game branding like you see in movies or stuff like that, which could then generate both ad revenue but also attract more high-value users"*, another interviewee commented.

#### *Adapting customer acquisition and product development processes*

As a consequence of Apple's privacy update, changes made to product portfolios, and the development of new (off-platform) revenue streams, mobile game developers had to significantly revamp their customer acquisition processes. Indeed, in-game ad displays are not only valuable to generate revenue, but they are also a distribution tool that allows mobile game developers to market themselves within other apps and generate new downloads. To cope with the repercussions of the platform disruption, mobile app developers in my sample started to explore alternative customer acquisition strategies outside of traditional mobile ad networks. As one executive at an American publisher explained: *"There are a couple of things which we did internally. And this has been done by most of the major publishers as well. The first one was, we had to quickly adapt the [customer acquisition] infrastructure, which gives us the capability to identify users at a very early stages of user behaviour and spending patterns, and*

*multiple other aspects of how the user is interacting with the game. [...] The second thing that we did is we moved from our deterministic model to a more probabilistic model to track KPIs such as LTV [Lifetime Value]. [...] So, these are the two things that we have done”.* Another mobile gaming executive based in India also explained how his company completely shifted the marketing mix used to acquire customers: *“We had to move away from Facebook to other platforms and spend and try. So, if I look at the last two months alone, for example, of May and April, Facebook went from being 80%-90% to now maybe 40% of our marketing expenses. We have been forced to try other platforms, but we are still getting mixed results. That's the impact of the measure: austerity. Negative in all aspects”.* To adapt to the change, some of the developers in my sample reverted back to older acquisition techniques, which do not rely on IDFA. These app developers do so by running user acquisition campaigns on broad and untargeted audiences, not unlike traditional linear TV campaigns. According to the Head of Growth of a global Indian hyper-casual game developer: *“It’s funny, because we are kind of coming back to old marketing approaches, displaying ads to the masses without really having the possibility to precisely select our audience. [...] The cost for ads has fallen, but so will the quality of the users we acquire”.*

Besides changes to their customer acquisition processes, mobile game developers in my sample also made clear that Apple’s privacy update will also have consequences on their product development processes. Indeed, a higher focus on high quality games that enable app developers to charge users through subscriptions, in-app purchases, or upfront payments requires different development processes and competencies. To cope with these differences, app developers are planning major restructuring of their development teams to generate highly differentiated and creative content. As the founder of a small Indian game developer said: *“We are reorienting towards mid-core and hard-core games, that’s where we see our future. [...] That also means we have to bring in new creatives, people that understand how to*

*build narratives and storylines, you know. And I guess the quick and dirty development processes, with bringing out new games every quarter, that's something that won't be possible anymore”.*

#### *Increasing access to first-party data through partnerships and M&A*

Finally, Apple's new privacy rule has also highlighted the importance of access to first party user data, and some companies in my sample started to implement measures to better leverage that data. As the Chief Commercial Officer of a major British mobile game developer explained: *“And that's why consolidating makes a lot of sense, because at the end of the day, what is valuable is actually having access to a user and understanding who that user is and how they behave, at least in a certain game, right? So it makes a lot of sense also, to be able to use that information to either cross promote, or monetize that user a better. So I think that's why there's definitely a lot of consolidation happening in the space. That [the introduction of the ATT framework] has increased the appetite. And the most important thing, I think, why it has actually increased is that today, it's very clear that the risk of developing a game from scratch is higher, or the returns are definitely on average, at least much, much lower than, you know, basically buying something that is successful. So that's why I think mostly the thing of consolidation is happening and kind of the bigger studios, let's say Zynga, Tencent, whatever, they are consolidating and buying the revenues that they can get, and also the users ultimately, and even the ad networks are tapping into that, because they are obviously really especially interested in kind of having access to those users”.* Another example was the use of in-game currency, compatible across games of the portfolio of the developer: *“That has been in works for the last four months plus now. So, we, so we've been trying to get the control back on the user and know the customer better [...] We have also stopped looking at it from a single-game perspective. We are working on making our in-game currencies compatible across games, to*



*be portable. To retain the user in our world and cross-sell him our games”, a hyper-casual game developer from India told me. Other companies in the sample also focussed on increasing user’s brand awareness to ensure gamers remained engaged to the games produced by their studio. As the Chief Game Designer of an Asian game developer said: “The idea is to start maybe having our own login ID, so we can let the customer have a direct association [with our company]. Notice, we did a survey, and we found that most users didn't even know the developers behind the games. They know the game, but they don't know Kings, they don't know Blizzard, they don't know Jam City, even though their logo is coming in top of the game. [...] From a consumer perspective, what we found is that he sees something that is not interesting to him. We found that our users didn't know [company name]. However, they loved [game title]. The bond is with the game. So, we're trying to create that bond where they can appreciate it and then say: ‘Okay, next time it's coming from [company name] I am going to download, right?’”.*

Besides these measures, access to first-party data pushed many mobile developers to develop new partnerships. Indeed, especially the smaller companies I studied have started, for example, to collaborate with mobile measurement partners (MMPs), who provide data analytics advice and can enrich data sets with insights from their customer base. Others are in the process of establishing alliances with peers: *“We are talking to a couple of other studios in the region and stuff like that to create a small ecosystem, which gives us the network and the economies of scale, right? We have only three games, so we will talk to companies having games in a similar category to share insights and data. [...] So, it is basically a common user base sharing of some data between us, where we are not competing directly much with each other”,* the developer of one of India’s most popular apps told us.

Apple’s privacy update also appears to be increasing the competitive advantage of big app developers, therefore pushing for more industry consolidation. Indeed, many executives I

interviewed noted that big developers can leverage the first-party data they collect throughout their extensive portfolio of apps and use ad inventory to cross-promote their titles. Consequently, many big studios have been increasing their M&A activity to broaden their product portfolio and maximise their collection of first-party data. *“A lot more M&A activity has happened the last six months or nine months. They are all [big game studios] realising that [access to data is critical and Apple’s privacy update makes it impossible]. So, at our level, we are also in talks and maybe we’ll be forced to join one of them. Because that would give a better chance, so we are in discussion”*, one leading Swiss game developer told us. Other examples include Zynga, which has acquired Rollic with the stated intention to gain access to a large community of players for cross-promotion campaigns. Also, during the investigation period, many gaming studios have been acquired by ad tech companies to broaden their access to first-party data. For example, AppLovin (a leading mobile AdTech company traded on the Nasdaq) recently acquired Machine Zone, the maker of Game of War: Fire Age and Mobile Strike, and launched its own in-house gaming studio. Furthermore, many of the large app developers in my sample were considering ending their partnership with third party ad networks for the provision of targeted ads. Instead, they are increasingly focussing their efforts on selling ad inventory directly to advertisers, without the need of a third party: *“I think our current momentum and our direct sales momentum have given us confidence in the growth trajectory of our ad business overall, even with taking IDFA in context [...] So this year, what I see ahead of us is further product innovations that are already underway, and further ramping up of the direct sales resources, and both of which should enable us to reach more brands and provide more experiences”*, an executive of a leading mobile game developer said in an interview with VideoWeek (2021).

#### **4.3.4. Divesting from Apple's iOS platform**

As a direct consequence of Apple's introduction of iOS 14.5, some of the app developers I interviewed decided to considerably reduce (or completely halt) spending on Apple iOS, instead re-allocating their budgets to Apple's biggest rival, the Google Android platform: *"We have advised our clients to considerably reduce marketing spendings on iOS. We are still not entirely sure what the ATT means for their business, how it will affect their CACs and ad revenues. Android offers a lot more certainty in the sense that they can simply continue running their performance marketing model there, it's business as usual"*, the CEO of a Malaysian mobile app development company told us. This anecdotal evidence is corroborated by a study led by several mobile marketing companies, who found that ad spendings on iOS were down 14% while those on Google Android were up 21% in the first weeks after the ATT framework came into force (Takahashi, 2021). Besides Google, many of the app developers in my sample also increased their support of new emerging platforms, including, for example, Huawei's new operating system HarmonyOS, Reliance's Jio Platforms, or KaiOS, India's second mobile operating system after Google Android, with the hope that these platforms will one day bring more competition to the mobile OS market. For example, one of the interviewees confided: *"We always try on new platform. We have seen what Zynga did with Facebook, right? You have to ride new waves. You will never know which one is a good wave unless you're going to attack every wave. So, we want to be agile and nimble, able to realise low-cost quick turnarounds, try every wave we want. That Jio Platforms for example, it is going to be huge. And it will be on the phone, on the TV, everywhere. [...] Jio is a powerhouse. Jio has got their own phones, they've got their own cloud, they've got their own fibre optic cables, they've got everything from gaming systems to music systems and their own Netflix. They might become another walled garden of its own, but would you be interested in riding that wave? Yeah Sure. Why not?"*. However, as the founder of an Indian game developer told me, it will probably take

a while before these new mobile platforms make a significant dent in the mobile OS market: *“We have experimented with a lot of platforms. [...] But at the moment you just get bad installs, your installs just suck. It's not really worth it. But we did try out some of these platforms. We believe that there might be a future there, but right now it will not represent any meaningful size of our business”*. Another executive at a leading global game developer was even more pessimistic regarding the emergence of alternatives: *“We have to accept that there is no alternative, ok? And for me, I've tried out like so many different ways to navigate this, like going with a telco company for distribution, going with phone companies, promoting my app, going with big publishers. [...] The problem is that the alternative platforms are not mature enough. Anything you do there is basically just a side project”*.

Besides emerging mobile platform alternatives, some mobile game developers were also diversifying to other platforms such as PC and console and to in-app marketplaces such as Snap Games, which publishes social mini-games for Snapchat's 332 million daily active users. As the VP for Business Development of a global game publisher told us: *“One of the pushes we do is also to make sure that Apple does not represent 100% of our revenue. So, we started going out and exploring alternative platforms. [...] Amazon, Samsung, and Microsoft are now featuring and publishing free-to-play games from mobile that are being ported. Steam too now publishes free-to-play games from mobile. [...] We started to put more and more efforts in these platforms. I think right now they represent somewhere around 13 to 15% of our revenue, and we put a goal to reach 20%. We are trying to raise them all the time”*. However, these diversification attempts don't come without their challenges, as publishing on new platforms often implies high porting costs to adapt the game to the new audience and technological platform. As one interviewee commented: *“Obviously, you need to port it, it takes time. [...] Also, it's not easy, because you need to find the right games for each platform. You know, we tried, for example, on a Windows, we tried different games. Some of them worked great, some*

*of them did not, you know. So, we start to understand each platform as its own thing. And I also need to develop the relationship, we need to convince Microsoft that we are one of the biggest players, so they pay attention to us. You know, it's a game of relations".* These problems in exploring alternative platforms were corroborated by another interviewee: *"You have to understand that when you launch on any platform, you have to build or adapt the game for the platform. It is not just taking the SDK [Software Development Kit] and putting it right. Every platform says: 'we will have these 15 API's that will do specific things, and you will have to give us a build that works, and works on all the phones'. [...] You also have to tweak your in-game economy to reflect the new platform, right? And the third thing is also the fact that every time you have a small update, you have to do it all over again, for each game and for each platform. So, for us, as of now, we don't expect much value from working with third party app stores".*

Furthermore, despite considering and exploring alternative platforms to commercialize their content, all interviewees agreed that Apple's iOS, despite the privacy update, will remain an important (if not the most important) platform for their mobile operations. It also deserves to be noted that within my sample, one small app developer ceased its business after the ATT release, explaining that the changes implemented by Apple further affected its already fragile business. This was confirmed by some discussions I had with mobile gaming executives in my sample who thought the implementation of Apple's ATT framework would filter out poorly performing game developers: *"So it will definitely hamper some publishers, some developers. But I think these publishers are anyways already operating at the margins. There are multiple publishers who have poor unit economics, and yet, in this hyper-growth context, they were making some money. These are the publishers who basically took games from developers who have been rejected by say, Voodoo or Crazy Labs, Game Jam, or any other big publisher. And these are the ones who would take that those games, and they would publish it without putting*

*too much effort into balancing the game or improving its metrics or working on creatives to reduce the overall CPIs [Cost per Installs]. [...] It is also true that some anecdotal data points that I have, they have observed a 30% drop in ad revenue CPMs [Cost per Mille]. So, it's still very early. But yes, it will definitely impact their overall revenues and threaten their business”* the Head of Southeast Asia for a major global games publisher said.

#### **4.4. DISCUSSION**

This article opened with questions regarding the responses of complementors to platform change that disrupts the existing way of how complementors generate revenue. The core insight is that complementors use a wide array of strategies to navigate and cope with platform disruption, namely *resistance*, *avoidance*, *adaptation*, and *divestment*. In the following section, I discuss how my findings contribute to the ecosystem literature and how they can facilitate future theorizing and empirical research. I conclude with practical implications.

##### **4.4.1. Theoretical contributions**

First, I offer a more complete view of complementor strategies, a subset of the broader ecosystem literature. Hitherto, research on ecosystem strategy has focussed primarily on the ecosystem leader, at the expense of research on complementors, who play a very important role in value creation. By unveiling how complementors cope with platform disruption, I respond to recent calls for future research (McIntyre and Srinivasan, 2017). My findings also highlight a great disparity among complementors, at least in my sample, not only regarding the effects of Apple’s privacy update, but also in terms of what can constitute viable coping strategies. Accounting for this heterogeneity is, as my findings suggest, important to develop a more accurate understanding of strategic management from the perspective of complementors.

Second, I contribute by providing a better understanding of platform dynamics, especially how changes initiated by the platform leader can ripple through an ecosystem and profoundly affect complementors. Indeed, I show that besides affecting complement demand and costs (Rietveld et al., 2020) or financial performance (Kapoor and Agarwal, 2017; Pierce, 2009), platform disruption also has a direct influence on complementors' strategy, specifically their business model choices. Furthermore, my research also demonstrates why some platform changes, despite improving the intrinsic quality of the platform for end-users, can actually lead to complementor divestment or defection, therefore complementing similar findings on the subject (e.g., see Ozalp et al., 2018).

Third, I also contribute to the literature on inter-complementor competition by discussing how business model innovation can be a potential way for complementors to seize opportunities that emerge through platform change, eventually creating a strategic edge over peers. I therefore complement previous research on the topic which discussed specific technology, product, and market-related decisions associated with above-average complementor performance (e.g., Kapoor and Agarwal, 2017; Tavalaei and Cennamo, 2020; Tiwana, 2015).

Finally, I also extend the literature on platform competition and power asymmetries between complementors and platform holders (e.g., Cutolo and Kenney, 2020). Indeed, my results show that complementors can resist decisions taken by the platform leader (e.g., through collective action) and avoid negative effects by bypassing the new rules or circumventing the platform (e.g., through multihoming or disintermediation). I also show that complementors can use business model innovation to reduce their dependence on a powerful platform holder such as Apple and improve their ability to create and capture value in centralized platform ecosystems.

#### ***4.4.2. Managerial implications***

My study also offers managerial implications for both platform leaders and app developers alike. The findings suggest that the actions of ecosystem leaders can have widespread and severe effects on ecosystem members, and that monitoring and understanding the actions of these leaders must be of primary importance to managers of complementary firms. These results also suggest that the key to survival and performance in many ecosystems may be constant adaptation to platform leaders, and that the importance of dynamic capabilities is not limited to the sphere of technological innovation but also includes business model and process innovation.

Furthermore, by highlighting the effects platform leaders' decisions have on complementors' business models, I also contribute to the literature on platform leader strategy (e.g., Cusumano and Gawer, 2002; Gawer and Cusumano, 2008). In order to sustain their ecosystem and outcompete rivals, platform leaders must ensure to create a favourable business environment to attract and support high quality complementors (Taeuscher and Rothe, 2021). Platform developments can be risky for the platform leader because they may require complementors to adapt and invest in the platform (Ozalp et al., 2018; Tiwana, 2015). To maximise an ecosystem's "health", minimizing the negative impacts of platform evolution on complementors can therefore be seen as a key priority for ecosystem leaders. My study suggests several ways in which platform leaders could minimize disruption and successfully execute platform change. For example, platform leaders may engage early on with complementors and share information to create buy-in and reduce the risk of a backlash. Also, providing resources and transparency is important to ensure complementors can swiftly transition to the new platform generation. Finally, it might be risky for platform leaders to use platform updates to surreptitiously increase value capture, not only because complementors might divest or defect from the platform, but also because such practices might get noticed by anti-trust regulators.



Platform leaders that ignore these risks might face important delays in rolling out updates to their platform (as Apple did in my study).

#### **4.4.3. Limitations & future research**

Case study research must always confront the issue of generalizability, but also the possibility that its limitations may represent research opportunities. In the case of my findings, anecdotal evidence from various digital platforms seem to support their generalizability. For example, in July 2019, German content creators on YouTube partnered with IG Metall (Germany's biggest trade union) to resist changes in YouTube's monetization policy and to improve transparency regarding the platform's video review process. This sits well within the *resistance* strategy. In another context, communication platforms such as Twitter, Reddit, and Facebook often introduce new moderation rules and mechanics to account for evolving sensibilities around online content. Complementors like content-creators often find loopholes to avoid these new restrictions or switch to alternative platforms in what resembles a cat-and-mouse game (e.g., how former US president Donald Trump "sock puppeted" accounts of its political allies to communicate with followers after the attack on the Capitol on 6 January 2021 and the subsequent Twitter ban). This kind of behaviour is not unsimilar to mobile app developers using device fingerprinting to bypass privacy restrictions, and therefore fits the *avoidance* strategy. To illustrate an example of a complementor *adaptation* strategy, consider Amazon Marketplace: because of the increase in e-commerce shopping, Amazon restricted storage capacities for its sellers, which rely on Amazon's infrastructure to fulfil orders. To cope with this new policy and ensure continuity of operation, many sellers developed new capabilities to fulfil orders themselves, or developed new partnerships with third-party logistics providers to handle warehouse management, packaging, and shipment (Palmer, 2021). The last strategy I identified, *divestment*, has also been observed by other scholars. For example, in a study of 12

videogame platform technology transitions, Ozalp et al. (2018) find that as platform owners improve the technological performance of their platforms, some end up increasing the complexity of the development work for their complementors, leading to defection to rival platforms.

Furthermore, my study also highlights that (i) factors such as size, business model, and capabilities were important to explain the performance of complementors post platform disruption, and that (ii) adequate coping strategies can widely vary depending on complementors characteristics, suggesting that there is no one-size-fits-all approach to complementor strategy. For example, bigger mobile game developers that published their games on several platforms (including console and PC) and that generated a sizeable chunk of their income off-platform (e.g., through IP licensing or merchandise sales) were significantly more willing to clash with Apple over its iOS 14.5 update. This was not an option for smaller developers with less resources and bargaining power. Similarly, the complementors in my sample that mainly developed F2P games were disproportionately negatively affected by the privacy update, while those developing high-quality games experienced few downsides amid the platform change. Also, small independent mobile app developers with only a few apps in their portfolio were more severely affected than larger mobile game developers who could leverage their access to vast amounts of first-party data to run user acquisition campaigns and monetize their in-game ad inventory. Furthermore, geographical specificities also played a role in explaining the effects of Apple's privacy push on mobile app developers. Developers in India, for example, rely more heavily on in-app advertising to monetize users with small buying power and a tendency to avoid in-app purchases. However, since Apple's iOS penetration in India is only marginal, Indian developers in my sample remained disproportionately unaffected by Apple's privacy update. On the other hand, developers from the western world, who usually rely less on ads as a means for monetization, but where Apple's iOS is the leading mobile

operating system, where considerably more affected. Finally, mobile game developers that could foresee the effects of Apple's 14.5 privacy update, actively prepare for it, and swiftly execute business model changes, over-performed compared to laggards.

In terms of limitations, it is necessary to highlight that my study exclusively focusses on Apple's iOS operating system, which is currently under close examination for potentially monopolistic practices. In that sense, the concentration of power on Apple's iOS platform, although very similar to other highly centralized platforms such as Uber or Amazon, varies significantly from more decentralized platforms such as Wikipedia or Ethereum, where governance power is more equally distributed among complementors. Given the asymmetric power Uber, Amazon, or Apple have on their platform, this might affect the breadth of strategic coping options at the disposal of complementors. I therefore expect complementor strategy in more decentralized, open and egalitarian platforms to vary significantly and would recommend studying other settings.

Finally, my study also highlights the challenges faced by any platform research focussing on ecosystem dynamics and change (e.g., Ozalp et al., 2018; Rietveld et al., 2020), namely that it is difficult to disentangle and isolate the effects brought about by platform disruption as opposed to changes in the broader macro-environment. In my study, for example, COVID-19 had a very large impact on the mobile industry overall: in the context of lockdowns and stay-at-home orders, demand for mobile games increased drastically, as did the willingness to spend on in-app purchases. Spendings on mobile advertising, on the other hand, plummeted, as big advertisers were hit by the pandemic-induced economic slowdown. The price for ad inventories therefore sharply fell in the second and third quarter of 2020. As one Indian mobile executive explained, this had ambivalent effects on his business model: *"Because the sessions were longer, a person usually playing for five minutes suddenly was playing 10 minutes, 15 minutes, right? These 15-20 minutes allowed us to maybe serve them more ads, so actually*

*[despite the drop in ad value] the percentage of ad revenue for us actually went up because of COVID, which increased the average session time by about three to four times”*. In such a context, analysing quantitative data on ad prices before and after Apple’s iOS privacy update as a proxy for the disruption faced by complementors would not reveal the entire story. To study platform disruption and its effects, mixed methods or qualitative research therefore offer an important complementary perspective.

## 5. CONCLUSION

As ecosystems of interdependent firms become more common, and as technological and competitive changes render them ever more dynamic and uncertain, understanding how firms can compete and succeed in these settings is increasingly critical. Hitherto, scholars have explored ecosystem strategy by taking the perspective of the ecosystem leader. For example, colleagues have examined questions such as how to solve the chicken-and-egg problem (Caillaud and Jullien, 2003), how to foster network effects (Zhu and Iansiti, 2019), how to manage upstream suppliers and downstream complementors (Adner, 2006), how to establish incentive structures (Casadesus-Masanell and Yoffie, 2007), and how to adjust innovation cycles to those of the broader ecosystem (Mäkinen and Dedehayir, 2013). In this dissertation, I extend this prior research by examining strategy from the perspective of ecosystem complementors, which have often been ignored in strategy discussion but play a major role in ecosystem value creation.

Indeed, as our economy is becoming increasingly mediated by platforms ecosystems, businesses across industries and sizes are becoming increasingly dependent on the decisions of a central ecosystem leader for their subsistence. Furthermore, ecosystems constantly change and evolve in response to both exogenous and endogenous pressures. These changes can have profound implications for complementors, who constantly have to revise the way they operate to align with the ecosystem in which they are embedded. In fact, how exactly complementors navigate and adapt to ecosystem change often remains unclear. With this gap in mind, this dissertation asks: *How do complementors navigate ecosystem disruption?* I examine this question through three tightly linked and complementary studies.

The first study (Chapter 2) is a literature review of the growing body of research that explores strategy within the realm of ecosystems. The purpose of this study is to synthesize existing literature on the subject, identify the multiple aspects of strategy in ecosystems, draw

a comparison to existing theories of strategy (such as the RBV or the positioning view), and identify blind spots and avenues for future research, which specifically includes extending our understanding of the complementor perspective (as opposed to leader-centric research) and ecosystem dynamics. The second study (Chapter 3) directly extends the first one (Chapter 2) as it specifically addresses the lack of complementor research and looks in more details at this subset of the broader ecosystem strategy literature. It does so by synthesizing and structuring the current state of research on complementor strategy, identifying the various ways in which complementors can, for example, increase value capture and bargaining power, while reducing the risks inherent to ecosystem-dependent businesses. The final study (Chapter 4) is an empirical study that looks at complementor strategy in the context of ecosystem disruption. It directly extends the first two studies by addressing the remaining gaps in the ecosystem literature identified in the systematic literature reviews, taking into consideration ecosystem dynamics and exploring how complementors can navigate ecosystem change and shape ecosystem structures to their advantage. Collectively, the studies offer contributions to strategy theory and practice by shedding new light on how complementors can succeed in dynamic and ever-changing ecosystems.

## **5.1. SUMMARY OF CHAPTER 2**

The first study (Chapter 2) asks *what are the characteristics of strategy in ecosystems?* and *what does the ecosystem lens add to traditional theories of strategy?* I address these questions through a review of the extensive yet diverse and fragmented ecosystem literature. Meticulously analysing 269 articles, I find that strategy discussions in the ecosystem literature revolve around seven key themes, namely: ecosystem thinking, ecosystem choice and firm positioning, coordinating value co-creation, ensuring value capture, ecosystem design, inter-ecosystem competition, and ecosystem dynamics. Within these themes, I find that there are

multiple, distinct strategies with which firms can navigate ecosystems, each driven by a unique logic and each carrying unique advantages and disadvantages. Finally, I discuss how ecosystem strategy departs from traditional strategy theories by encompassing, among other things, technological interdependencies, economic complementarities, alignment among ecosystem actors' roles and intentions, and coopetition.

A central theoretical contribution of this study is to present a comprehensive and state-of-the-art overview of the ecosystem literature from the perspective of strategic management, thereby assisting in structuring, clarifying, and linking together prior research. My study also highlights the many different facets of ecosystem strategy, helping to further define a concept that has remained elusive. To my knowledge, this is the first study to do so, with previous reviews focussing on more conceptual issues such as origins, definitions, and boundaries of ecosystems (e.g., Bogers et al., 2019; Gomes et al., 2018; Granstrand and Holgersson, 2020; Scaringella and Radziwon, 2018; Suominen et al., 2019; Tsujimoto et al., 2018). A second contribution is to highlight the commonalities and differences between strategy in ecosystems and more established views in the strategic management literature. For example, I highlight how ecosystem strategy, unlike the positioning view, goes well beyond the industry and value chain as a level of analysis and field of firm action, because it encompasses engagement and collaboration with a broad set of actors and supporting institutions. Unlike the positioning view, ecosystem strategy also considers many important facets of the broader competitive environment, such as the role of complementarities, network effects, and the co-evolution of technologies and business models across a web of sometimes only indirectly connected firms. Finally, a third contribution pertains to the many gaps and emerging discussions identified in the ecosystem strategy literature, from which I derive promising avenues for future research. This includes, for example, complementor strategy and ecosystem dynamics, which I address in Chapter 3 and 4 and have both been somewhat neglected in prior literature despite their

potential impact on ecosystem structure, alignment, and firm performance. Other areas that would warrant further work include the organizational implications of ecosystem participation, especially as they pertain to business model innovation and dynamic capabilities.

In terms of managerial implications, this study offers insight into how managers can succeed over time in the highly interdependent and uncertain context of ecosystems. In addition to reviewing and organising the multiple strategies by which firms can navigate ecosystems, I also discuss the benefits and specific risks associated with each. Furthermore, I highlight the delicate balance firms need to strike between two opposing ecosystem forces, i.e., the requirement for collaboration and information sharing on the one hand, and the existential need for value capture on the other. These opposing forces are best reflected in strategic conundrums such as allocating budgets to internal innovations or external bottlenecks, maintaining bargaining power over partners versus collaboration for value (co-)creation, focussing on changing ecosystem dynamics rather than execution within a firm's own components. Finally, my review also makes apparent that ecosystem strategies are contingent on the ecosystem lifecycle and require constant adaptation to ensure the firm's value creation and capture aligns with shifting bottleneck components.

## **5.2. SUMMARY OF CHAPTER 3**

The second study (Chapter 3) directly builds upon the blind spots and avenues for future research identified in the first one (Chapter 2), and asks *how do complementors compete in ecosystems?* I address this question by reviewing a (rapidly growing) subset of the ecosystem literature, taking the perspective of ecosystem complementors. In particular, I examine what strategies complementors deploy to capture value, compete against their peers, and reduce their dependence on the ecosystem leader. I find that, contrary to the assumption of many strategy and economics scholars, complementors can, and in fact do exercise a certain power of agency,



despite the asymmetric power often held by ecosystem leaders. This includes, for example, the practice of disintermediation, wherein complementors bypass the ecosystem leader's hegemonic access to the user base to contract directly with customers. Moreover, I find that complementor strategies can broadly be amalgamated into six overarching themes, which include entrepreneurship within ecosystems, choosing the right ecosystem, competing against peers, maximizing value appropriation, mitigating platform dependence and increasing bargaining power, and adapting to ecosystem dynamics. I also observe that in some contexts (such as monopolistic platforms) the range of strategic options complementors have at their disposal might be limited. To foster innovation and social welfare, a more balanced playing field might be needed. This opens interesting avenues for discussion among economics and antitrust scholars. A final implication of the study is that as ecosystems become all-encompassing, complementors are becoming increasingly skilled at the ecosystem game, and complementor strategy is becoming increasingly sophisticated.

A central contribution of this study, therefore, is to extend our current definition of ecosystem strategy to consider the perspective of complementors, who play a major role in value creation but are often neglected at the expense of research on ecosystem leaders. By integrating that view, ecosystem strategy becomes more holistic and describes *the set of strategic actions and behaviours adopted by ecosystem members to improve their bargaining power, increase value creation and capture, and modify ecosystem structures to their advantage*. Furthermore, this review highlights several remaining blind spots and potential areas for future research on complementor strategy, which, among other things, include how complementors can navigate ecosystem dynamics and changes triggered by the ecosystem leader. The third study of this thesis (Chapter 4) specifically takes aim at this issue. In terms of managerial contributions, this study highlights the existential and strategic conundrums faced by complementors in ecosystems. One key insight is that while ecosystem participation

provides many benefits to complementors, it also creates new types of business risks (e.g., over-reliance on the ecosystem leader). Thus, this study suggests that complementors would benefit from proactively exploring paths to reduce ecosystem dependence (e.g., through multihoming) and developing dynamic capabilities to foresee and act upon ecosystem change. Otherwise, they might get exposed to the whims of ecosystem leaders and run the risk of abruptly losing their preferential position for value capture.

### 5.3. SUMMARY OF CHAPTER 4

The previous two studies (Chapter 2 and 3) highlighted gaps and potential avenues for further research within the sub-stream of complementor strategy research, specifically when it comes to ecosystem dynamics, platform changes triggered by ecosystem leaders, and its consequences for complementors. The final study of this dissertation (Chapter 4) aims to directly address these issues and asks *how platform leader decisions affect disruption in ecosystems?* and *How do complementors navigate this process of disruption?* It therefore extends the first two studies by taking into consideration ecosystem dynamics and exploring how complementors can navigate ecosystem change and shape ecosystem structures to their advantage. To answer these questions, I explore how complementors within Apple's iOS mobile operating systems are affected by platform disruption (specifically, the introduction of a new iOS version restraining mobile developers' ability to collect user data), and how they navigate the ripple effects it generates across the ecosystem. I therefore interviewed over 40 mobile app developer executives from around the globe to look at the strategy they deployed in response to this disruption.

I find that mobile developers on Apple's iOS platform leveraged several strategies to cope with platform disruption. When Apple first announced its intentions to implement new data privacy standards, complementors from across the ecosystem resorted to *resistance*

*strategies*, include lobbying, negative PR campaigns, collaboration among peers to establish industry associations, and more. All these approaches led to Apple delaying and amending its original plans to accommodate its complementor community. Complementors also resorted to *avoidance strategies*, which mainly aimed at developing alternative user tracking technologies that would allow complementors to proceed “business-as-usual”. These technological alternatives have allowed some complementors to ignore new restrictions and avoid the negative financial consequences Apple’s privacy update would have otherwise had on their business. Complementors also used *adaptation strategies* to minimize the negative impact of the platform disruption and embrace the new business opportunities it opened. This mainly included adaptations to their value proposition, profit formula, processes and resources. Finally, I also found that several complementors made use of *divestment strategies* to reduce their reliance on Apple’s ecosystem and diversify to rival ecosystems.

A central theoretical contribution of this study is to provide a better understanding of platform dynamics, especially how changes initiated by the platform leader can ripple through an ecosystem and profoundly affect complementors. Indeed, I show that besides affecting complement demand and costs (Rietveld *et al.*, 2020) or financial performance (Kapoor and Agarwal, 2017; Pierce, 2009), platform disruption also has a direct influence on complementors’ strategy, specifically their business model choices. My study also offers managerial implications for both platform leaders and app developers alike. The findings suggest that the actions of ecosystem leaders can have widespread and severe effects on ecosystem members, and that monitoring and understanding the actions of these leaders should be of primary importance to managers of complementary firms. These results also suggest that the key to survival and performance in many ecosystems may be constant adaptation to platform leaders, and that the importance of dynamic capabilities is not limited to the sphere of technological innovation but also includes business model and process innovation.

#### **5.4. THEORETICAL CONTRIBUTIONS**

The central theoretical contribution of this dissertation is to examine the multiple facets of strategic management in ecosystems, both from an ecosystem leader and from a complementor perspective. Specifically, I explore how ecosystem members can gain a competitive edge and capture value in constantly changing, hyper-competitive, interconnected value creation systems. Moreover, by pairing extensive reviews of the literature with empirical work, this dissertation develops theory that is rich and empirically grounded.

One specific contribution is to offer a comprehensive and state-of-the-art overview of the ecosystem literature from the perspective of strategic management, thereby assisting in structuring and clarifying the relatively young, yet sizable body of ecosystem strategy work. I also draw comparisons and discuss differences between ecosystem strategy and more established views in the strategic management literature such as the RBV, positioning view, and stakeholder theory. My dissertation therefore contributes to strategy research by drawing a bridge between seminal strategy work (e.g., Porter, Barney, stakeholder theory) and the new field of ecosystem strategy. Finally, I also identify gaps and emerging discussions in the ecosystem strategy literature from which I derive promising avenues for future research, among which complementor strategy and ecosystem dynamics.

Secondly, by building on this initial review, my dissertation also synthesizes and consolidates early work about complementor strategy, which constitutes a subset of the broader ecosystem literature and focusses specifically on the perspective of ecosystem complementors. By focussing on research that discusses strategic challenges and trade-offs faced by complementors, I derive a framework that captures the multiple strategic aspects complementors need to consider to successfully compete in platform ecosystems. My dissertation therefore extends our current leader-centric understanding of ecosystem strategy

and develops a more inclusive and holistic approach that also considers the strategic perspective of the ecosystem at large.

Furthermore, my dissertation expands our current understanding of platform dynamics, especially when it comes to explaining how changes initiated by the platform leader can ripple through an ecosystem and profoundly affect complementors. Using Apple's recent introduction of new data privacy policies on its mobile operating system iOS, I empirically study how complementors cope with platform change and disruption and show that besides affecting complement demand and costs (Rietveld et al., 2020) or financial performance (Kapoor and Agarwal, 2017; Pierce, 2009), platform disruption also has a direct influence on complementors' strategy. Accordingly, based on interviews with app developers, I identify four distinct and sequential strategies complementors deploy to navigate ecosystem disruption and seize opportunities emerging from ecosystem change. I also demonstrate why some platform changes, despite improving the intrinsic quality of the platform, can actually lead to complementor defection (see Ozalp et al., 2018) and therefore lower the overall value created by the ecosystem. My dissertation therefore directly contributes to the emerging complementor strategy literature while also unveiling some interesting first- and second-order effects of platform dynamics, especially regarding the effect of ecosystem leader decisions on ecosystem structures.

Finally, my dissertation also contributes to the literature on business models and business model innovation in the context of ecosystems and platforms. Research on that subject has so far been scarce and limited to the ecosystem leader (e.g., Snihur et al., 2018; Zhao et al., 2019). In my dissertation, I show that business model innovation is also an important topic for complementors, and involves its own, peculiar challenges. In fact, ecosystem dynamics raise important questions for the business model literature, e.g., "when would be the right time to adapt one's business model, given the possibility that further change might happen in the

ecosystem?” (Zott and Amit, 2013, p. 12), or how does the business model innovation process for complementors look like in ecosystems, when it is contingent on environmental changes and changes specific to the ecosystem?

Overall, this thesis therefore extends previous reviews of the ecosystem literature (e.g., Bogers et al., 2019; Gomes et al., 2018; Granstrand and Holgersson, 2020; Scaringella and Radziwon, 2018; Suominen et al., 2019; Tsujimoto et al., 2018), which have focused on synthesizing and clarifying more conceptual issues such as origins, definitions, and boundaries of ecosystems. More specifically, by deriving a new framework that attempts to capture the multiple facets of ecosystem strategy, the study presented in Chapter 2 sits squarely at the center of an emerging body of work being spearheaded by seminal articles such as Hannah and Eisenhardt (2018) and Adner (2017) and bringing together ecosystem and strategic management research. With the study in Chapter 3, this thesis also directly complements recent work from Cutolo and Kenney (2020) and McIntyre and Srinivasan (2017), who highlighted the important avenue of future research that the complementor perspective represents for the ecosystem literature, and took the first steps in exploring that area. Finally, with my empirical study in Chapter 4, my thesis uncovers the unique risks and challenges complementors face in the ecosystem context, therefore complementing early work in that field (Nambisan and Baron, 2013; Boudreau 2010, Ceccagnoli et al. 2012, Kapoor 2013, Kapoor and Lee 2013). The thesis also extends Kapoor and Agarwal (2017), Ozalp et al. (2018), Pierce (2009), and Wen and Zhu (2019) by moving beyond the mere observation of the ripple effects stemming from ecosystem leader decisions to uncover how complementors navigate these changes and use them to their advantage.

My thesis therefore lays the foundation for more work to come on the topic of complementor strategy and raises several follow-on questions that could be addressed through a variety of studies. For example, a comparative case study of the Google Android mobile

ecosystem could reveal if ecosystems that are more open and decentralized are able to better cope with disruption triggered by the ecosystem leader. Also, a quantitative analysis of the consequence of Apple's ATT on the mobile ecosystem (e.g., via CPM, download numbers, spendings, count of new apps) could complement qualitative data and give a more detailed picture of the intricacies of ecosystem change. Finally, new empirical contexts, such as studies in more decentralized ecosystems (e.g., Wikipedia) or in other industries (e.g., Uber) could further highlight the variability in effective complementor strategies and refine our emerging understanding of the subject.

## **5.5. MANAGERIAL CONTRIBUTIONS**

This dissertation also contributes to practice. The global economy today is becoming increasingly connected. The boundaries between industries are falling, and the rate of technological progress is growing ever more rapidly. In this new reality, executives find themselves and their firms increasingly embedded in business ecosystems – and the structure of those ecosystems are ever more uncertain and dynamic. Furthermore, ecosystems are usually dominated by a powerful ecosystem leader who holds asymmetric power over ecosystem members. This dissertation offers insight into how firms can succeed in these challenging environments.

For example, my dissertation reveals that complementors have agency, i.e., they can resist decisions taken by the platform leader (e.g., through collective action) and avoid negative effects of these decisions by bypassing or circumventing the platform (e.g., through multihoming or disintermediation). My dissertation also highlights how adaptation and business model innovation can allow complementors to seize upon platform change and create a competitive advantage to outcompete their peers. Furthermore, my empirical study also highlights the great heterogeneity among complementors, not only regarding their size,

capabilities, or market niche, but also by how they can be affected by ecosystem leader decisions, and what constitutes viable coping strategies. The implication for executives is that there is no one-size-fits-all approach to complementor strategy, and that every complementor will have to develop its own approach. The literature review presented in Chapter 3 should give executives a good overview of the most common options complementors have, and could provide the basis for ecosystem strategizing. I also show that complementors can use business model innovation to reduce their dependence on a powerful platform holder such as Apple and improve their ability to create and capture value in centralized platform ecosystems.

Another contribution of my dissertation is to highlight the challenges associated with managing technological transitions as an ecosystem leader. Indeed, ecosystem developments are risky for the ecosystem leader because it requires complementors to adapt and invest in the ecosystem (Ozalp et al., 2018; Tiwana, 2015). To maximise an ecosystem's health, minimizing the negative impacts of platform evolution on complementors therefore constitutes a key priority for ecosystem leaders. My study suggests several ways in which platform leaders could minimize disruption and successfully execute platform change. For example, platform leaders should engage early on with complementors and share information to have them on-board and reduce the chances of a backlash. Also, providing resources and transparency is key to guarantee complementors can swiftly transition to the new platform generation. Finally, platform updates shouldn't be used by the platform leader to surreptitiously increase value capture. Ignoring these steps can force platform leader to delay important updates to their platform (as Apple did in my study) or put them at risk of losing the support of important complementors defecting to rivals.

Finally, one general insight from this dissertation is that complementor performance is largely affected by ecosystem dynamics and ecosystem leader decisions, which are both difficult to predict. Complementors must be aware of this context and set-up their organizations



in a way that allows for swift realignment to shifting ecosystem structures, emerging bottlenecks, and growth opportunities afforded by ecosystem change.

## **5.6. CONCLUDING REMARKS**

This dissertation examines strategy in ecosystems, particularly from the perspective of complementors and in the context of ecosystem disruption. As ecosystems become more common, and as technological and competitive changes render them ever more dynamic and uncertain, understanding how firms can compete and succeed in these settings is critical. This dissertation offers concrete insights into how firms can do so, and thus provides important contributions to strategy theory and practice.

# APPENDIX A: INTERVIEW TRANSCRIPTS<sup>7,8,9</sup>

## TRANSCRIPT OF INTERVIEW 1

Date of the recording: 08.06.2020

Duration: 50 minutes 18 seconds

Format: Zoom Meeting

Interviewee description: Vice President Business Development at a global free-to-play (F2P) mobile games publisher based in New York, USA

Start of the interview

[...]

Interviewee 1:

Yes, so good question. I think in the case of [game] look that by any means it's exceptional. Okay, it's not. It's not something we did before we got so high. And the and I think it's a combination of a few thing, by the way, in today's market to get to the top downloads, which top grossing is very different, right. been to the top downloads on the store. It's dominated these days by the hyper casual type. And the reason is, because they only carries his eyeballs because they're mainly advertising. So they go very, very strongly on getting those eyeballs and then they with the scale, they make money on advertising. Mm hmm. I think feel to your question

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<sup>7</sup> Please note that all interview transcripts have been automatically generated using the software Otter.ai. (<https://otter.ai/>). Transcripts might contain typos and grammatical errors due to recording quality and/or errors by the software.

<sup>8</sup> The name of the interviewees has been anonymized and interviewees have been numbered in chronological order, starting in June 2020 until July 2021.

<sup>9</sup> To reduce wordcount, some transcripts have been shortened to only include an interview's most relevant sections. A full transcript of the interviews can be obtained from the author on request.

with [game], that the three things we did are one is the it, there's no doubt around it, the IP in its own. At the very, very wide appearance, it's probably one of the top tier IPs in the world in terms of the time that it's out there the generational, you know, bread. And to make it put it in context, you know, we had on Google alone. They have a very good pre-registration programme. We had 17 million by launch, one 17 million pre-registered. Yeah. So we knew we're going to get a lot of use now. Is it as a result, it's a it's again, it's a bit of things that fit each other, with a very good case to the platform's right. And so when I talked to Apple and Google, I basically presented it for many, many reasons, including our investment, that that's our big thing that this is, like, because I pitch them all the time. We pitch them all the time, but this one was like, Guys, this is this is the one, okay. And I got with both of them. In COVID, you know, in in a in a different period, I would go to the west coast, we would actually fly out there with my team to pitch. But in this case, I got with each one of them a virtual session, where they brought their editorial team now that's Very rare, they don't do it anymore they did in the past. So to get this opportunity, it's already unique. And again, it's because we positioned it as this is the thing. And as a result of that of the registration, we got amazing support, like the featuring on Apple and Google was the best we ever got a Google was great. But I would argue that Apple did way and beyond like, it was crazy. Every day, there was something else, you know. And they really liked it. Okay, they really liked the game. And then the third part was UA. So we're very good at user acquisition, though, once we got the featuring we could give it so for example, the featuring got us to the top three. If we wanted to get to the top one, we could put a push, you know, and we didn't spend too much. I mean, we spent nicely but not crazy. And we still got the game, you know where we want it? No, we want it to eat the number one on both platforms. Indeed. And so that's the combination. Now, there were other things like PR like via call mail ping on their side. But I would argue that the three first one or a week of launch, UAE featuring and the IP were the most effective.

[...]

Interviewee 1:

So look we are definitely We're definitely trying to be much stronger on ads. Absolutely. Because those are not as impacted or taxed by Apple as, as the they don't take revenue. They don't like it so much, but they don't take revenue. The so we definitely do much more with ads. But already, traditionally, our games are or not ad based [game]. In that sense, we did a big effort to change it because of the nature of the audience. But Traditionally, our games are very in app purchases heavy. And definitely we tried to go to ads, definitely we're trying to find additional revenue streams. But we didn't go as far as some others in the market do. Which by the way, I would love to work with them, you know, had some cases that we evaluated. And a, for example, I have an app that I'm funding called [game]. So we're funding their user acquisition, what they do is they don't have it's either they don't have subscription on mobile, maybe they do have subscription on mobile. But the bottom line is that you can do it on the web. And if you do it on the web, Apple doesn't take anything from I heard that from Spotify, Spotify, apparently a Spotify doesn't have kid, killed the mobile subscription. I think [game] does have mobile subscription. But again, they work on the on the idea that most of it comes from the web. Let's one thing is another thing is so is real cash. Mm hmm. You know, people that do real cash Solitaire real cash betting, or, I mean, obviously, they need to make sure that it's legal in states in the US, etc. But the idea is that people put cash into like, a pot, like, you know, eh, deposit, and they and they can win, and they can withdraw it, they can they can win they can lose. And again, this this goes outside of the platform's control. Okay. And the platform, let it let it go. And so this is it's a, it's regarded the skills based, you know, not eh not gambling, because it's, it's based on how well you play. Mm hmm. And so the real cash is a big thing. And blockchain is going to be a big thing, which I don't know how their platforms are

going to deal with. A it's a big, it's a big question, Mark, as people are looking at this. We have a game that is developing something in blockchain and will be I don't know if there is a policy right now. We're going to deal with it. But obviously, there are not going to be able to control an item that is a blockchain value, right. Uh huh. Okay. So my point is, there are big, there are big things that I'm seeing that are going out. I think in some of the cases, the platform will, platforms will have to react after the fact. Because I don't think that they do it now. And they and I think that we need to watch those trends. Obviously, there was a big fight. I'm sure that you saw it with Epic, you know, was fighting the, the Android a lot trying to dare to kind of prove them wrong in many ways and told them and even did Epic Games, but they she's winning the fight. Mm hmm. And just, it might sound very naive. But did you guys as publishers, the is there like some kind of an industry syndicate that kind of where you collaborate with other game publishers to have more leverage against those platforms? Or something like that? No. Okay. Never heard of something of that sort? Or do you think it's not realistic at all? . Mm hmm. And do you have in mind like one company that in your opinion sticks out in terms of how successful they are? In maximising their own benefits, let's say or being very smart about the way this [company] is very good. [company]. Okay. [company] it's one of the biggest game publishers. They're also doing IPs. They doing very big games that are top 25 grossing 50. A and those guys are very good at featuring. But again, they also have the numbers to show for it, you know, so it's a bit but they get tones are featuring all the time, all the time. And I think [company] is pretty good at it, even though they don't have very good games. But look, at one point, for example, I ended as a consultant, the former VP of [company]. Now she works at [company] as an account manager, but they choose VP of platforms at [company]. And she worked with me and look at suddenly, it was very hard for me to get what you got at [company]. Because it's not the same games, you know, it's not the same result. though. It's not it, suddenly, she was like fighting. But scope a [company] gets a

lot. A Look, there are also people that that do things with the platforms that we never did. So even though we got for [game], a lot of love, you know, there's something called takeover, Google is doing it. On rare occasions, there was a very big brand like [game], they did take over of the store, suddenly, the whole store is painted [game], this is this is something that shows you that those, the IP is so valuable, and the people that launched the game, in that case, it was [game] guys really got something that is, you know, very, very rare. Yeah, sorry, I didn't want to interrupt you were going. I just, I thought this thing was blockchain, for example, is a very interesting for me also, in terms of how those platforms are kind of evolving technologically, let's say from version to version, how much does these changes affect you? And how much is our Google and Apple transparent in regards to the Technology Roadmap for the platform for you guys to be able to adapt constantly to new API's new technology that they're putting on their phones, etc? How, how well, does that work? Let's say this. Not very, not very transparent. You know, usually, when they change policies, it hits you one day, you know, it's like, POW! yeah, caught us from out of the dam, they say, yeah, I mean, some of it is based on feedback that they got over time, but just like the Apple login, you know, the reverse it. But, but it comes as a surprise, you know, there was this thing that they did give you a crazy example. So Google did this whole thing about age rating, which, you know, is a high level thing it's think about, it's good, you know, they decide to purge, or monitor much closer the age rating on the games. They went for every developer, they said, Look, if you're not going to do by me, they gave it two months or one month, if you don't do it by a certain date. You're not fixing your ageing, great, you're going to be in trouble. You need to go over all the games in your portfolio. These are the categories blah, blah, blah. So they explain it well, but again, came as a surprise. Mm hmm. Do we have one game in our portfolio? That we don't fit? We don't, it's not in our seller account. We are funding user acquisition, but we're not dealing with the platforms on their behalf so they didn't do it, right. You know, they, they messed up the

process, they forgot to do it, and then they did it wrong. And they kick them out of the store. The one day that those guys scream, and tell us Oh my god. So it took them four days to go back. Mm hmm. So basically, the game lost revenue for four days, we couldn't run up, it was a mess. And I could I couldn't control it because it's not my relation. It's theirs. But I try to help once they were to also the responses, you know, they're getting kicked out and then they send an email they sent a should take seven days. You kicked me out of the store does? Uh huh. Good. Ah, I had one a story once that I think it was Apple actually. One morning we wake up two years ago, photos, our portfolio is not on iOS. So basically, the credit card that was supposed to pay the developer subscription, which is like 100 bucks. was not a was not updated the messages went to the wrong person. They kicked out all of our games. So it took us half a day to get it back. But it feels like these guys have the power to With such a change, just kill you. Like that by the clap of a finger basically. Yeah, yeah. Yeah. And nobody, you know, there was no mechanism. I mean, again, I understand it, we didn't, we didn't have the right credit card, but there's no mechanism that alerts my champion there, say, hey, those guys are not coming to talk to them, you know, it's like automatic or like, like, some of the things are very robotic. Some of the things are, it's, it's tough. And definitely tough. And there's the idea of the value that they get, which is very high.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 2

Date of the recording: 16.06.2020

Duration: 28 minutes 25 seconds

Format: Zoom Meeting

Interviewee description: Co-founder and COO at a global free-to-play (F2P) mobile games publisher based in Copenhagen, DK

Start of the interview

[...]

Interviewee 2:

Obviously, we love them. Since we've been there before, there were any platforms. And we know that organic traffic from a webpage is not something you can really live off unless you are doing some crazy organic growth or use a lot of money on marketing. So what the platform has brought to us is a huge uplift for our company because of all the users we have access to. And we are lucky enough that our games are doing so well that they are presented rather goods on the rankings when people search. So we always had the great day organic growth and getting I would say, from the old days two to 5000 users organic without any marketing So, in that sense, we are really happy having the platforms. where that is said, then that comes all the things where you annoyed by them. You also talked about the reliable and something you can control, they can close our games, without us being able to do anything, they just 30% on all our sales, which is ridiculous, when you know how much or how less lead how little it costs, if you run your, your own payment system on your webpage, I know that we are paying around 5% for our webpage payments. But then again, one of the considerations about trying to move



our traffic to our own web page and then save the transaction cost, again, is that we have no idea how the algorithm works for the for the keywords when people search. So we also fear that if they start to monetize worse, or have less traffic, then we will fall on the ranking list. And so we also fear moving on traffic to our own platform, like epic store is trying to do now even though there is could be a big advantage in transaction fees to get. Okay, so it's driven by fear that we are not doing more than we feel we should actually

Interviewer:

So you mentioned the risk of being shut down. Did that ever happen for you for any reason?

Like?

Interviewee 2:

Yes, it did happen. Because there's a game called [game] who has taken copyright on the name [game]. And then, just recently, they reported our game [game] to the app stores. And we talked to a lawyer and he claimed that well, [game] is just a descriptive term, they can't take a copyright on a term like this. We also seen other games use it and an old game called the [game], which has been around for 20 years use it. But the issue was that each platform handled it differently. We didn't hear from Google. Apple wrote us. Please respond to this. And then we responded and they kind of left it to between Sacramento and us to find a solution where we won't agree so ever won't do any more. They did the same in 18, where they tried the same thing and nothing will happen. But Facebook shut down instantly without our us having a chance to react. Luckily, they were quick to reopen. And when they read our complaint about copyright infringement steam has closed our not our gaming account. But the single app [game] down and you can app can be downloaded right now on Steam, but it can be played by those. Those who had it installed already, but we have we are still waiting for an answer for them. It's

been 13 days. Now Microsoft, for the Windows Store did the exact same forced us to shut down for downloads of [game]. The app store was and it's now been 13 days where they haven't responded we got a response actually this morning about it's under review. So but basically it means that our one of our apps is not a downloadable on Steam and Windows right now so that we can do it. And that's how we disagree. It's 13 days since they reported us to all the app stores.

Interviewer:

And of course that's unexpected cut in the in the revenue or in the in the business model Do you think it will affect you much with the also was the launch of the of that game?

Interviewee 2:

Let's say the game it's been launched three years ago. They tried to do the same two years ago. Only on Apple though. So now they got a new employee hunting for this and she reported on every platform now we have to spend time on this thing again, even though we think it's ridiculous. A ridiculous claim so but it's frustrating in that All the power is at the platforms. And our worst nightmare is that the Google says, Well, we got this complaint, we are closing your full account down. And then we will lose the whole company. But luckily, the [game] is just a very small game. So it's not really affecting us. But it could be much worse, potentially.

Interviewer:

Just a quick, because you mentioned all those platforms, do you consider them equal as in terms of the terms and conditions with which you can publish on those?

Interviewee 2:

I think they are pretty much equal. They have somehow the same transaction fee. I wonder how that happened. And they're not competing about that. So yeah, I would say it's pretty much the same, even though they have the differences.

Interviewer:

And also, you mentioned something interesting. So could you maybe expand on bit on the motivations, you had to, for example, drive users, kind of not away from the App Store but to download and play on the browser? What was the rationale behind it for you to proceed that way,

Interviewee 2:

as it's very simple, it's transaction costs, that we can go from 30% to 5% transaction cost, and maybe we would just lower, lower the what the users pay with 10% and then have the 15%. Cut extra to us. So we can actually promote our own games to our users save 10% by going here to play instead of App Store

Interviewer:

Okay. And, I mean, you said you're, you're worried about the fact that it might impact how you are ranked on those app stores because of maybe less traffic, etc. Do you think there might be and also that algorithm behind the search function is quite, let's say obscure? Do you also fear that is there is some kind of retaliation like active retaliation on part of those platforms to punish the guys that are not playing by the rules? Or would you assume something like that, or?

Interviewee 2:

Well, I can't say but I can assume that they have built it in? Because I think the I'm pretty sure the algorithm is based on things like retention and monetization? Because that would make sense, because that's what are making the platform's money

Interviewer:

do you have in your industry or in mind, any company that you especially admire, because of the way they're dealing with those issues, maybe they found a way to kind of gain bargaining power vis a vis does platform owners, we have like, a complementor that would come to mind that you see as an example,

Interviewee 2:

obviously, I'm a big fan of the epic store, and I hope they have will have a huge success and kill all the other app stores. So that would be the perfect solution. But well, then again, they will be the sole owner of a platform. So I don't know what the right solution and what I hope also is coming in bargaining power from the big App Store, game developers, we always have a theory that if you sell four times of millions, you will get a very high level account manager might get discounts on the transaction fees. But we have never heard anyone mentioned it probably because there's an NDA and stuff like that, if there was any. And we haven't hit that level ourselves. If we knew there was something, it could be something to strive towards. It could be something built into our strategy, buying other games to get to that level. But so far, we're just guessing, because we don't know anything.

[...]

End of the interview

### **TRANSCRIPT OF INTERVIEW 3**

Date of the recording: 20.07.2020

Duration: 50 minutes 07 seconds

Format: Zoom Meeting

Interviewee description: COO at a global games publisher based in London, UK

Start of the interview

[...]

Interviewee 3:

well yes and no i mean i pick so let me start again Valve are a very unusual partner so they have certain values and behaviours that i would call non commercial but obviously they make tonnes of money from us so their margin is typically 30% when we start and we claw back some of that percentages we perform great we actually lose out with an annualised rate of product compared to something like [game] which has DLC and is a live product that's life for many years we keep release valve treat us as a reset product every year so we are not just [game] the [game] next year we restart the clock and they have quite rigid terms now we pushed very hard to try and have those terms changed and even though we are a top 10 partner for them and we have some of the highest play patterns for them and when we originally came to that platform in 2012 we demonstrated to them that we brought them a new audience so we were complimentary valve have for the purposes of fairness not been willing to change terms for us misspoke and that is a that sort of most favoured terms kind of a clause that prevents these guys from saying well if i do it for you I've got to do it from everyone else gives them a very strong and consistent negotiation position and they change them very rarely all of the

platforms change and very rarely because they perceive that giving into one partner is likely to cause them to give in to others and they come up with very arbitrary protectable positions such as you can only get a discount when you've hit \$10 million and you can only get the next discount when you get to \$50 million because they are essentially only rewarding those people that really are troublesome for them and steam for example have lost publishers electronic arts left their platform subsequently come back i think Ubisoft have left their platform and certain titles leave their platform as well and each time a publisher does that they're trying to say to steam you're screwing us we should have more of margin you don't earn it give us some and steams again behaviour means that they can't they just won't it will be a big decision for them so we win and lose by that we win because if we stick around we can more important for steam they do more for us they do stuff for us we tend to choose when we want to do our promotional cycles and they will work with us to maximise those and they will develop some features that we request but it's very hit and miss and i would hardly argue that we had much influence on it but theoretically they listen to us in reality though you know they look after the number one and we're only interesting for them at various times when they want you know particularly promotions when they offering a discount they like their partners to help with that because that does make their consumers happy and they like to treat consumer happiness as one of their metrics sometimes it seats or sometimes it doesn't and you know we can choose to be in or out overall unbalanced team have been supportive and are probably helpful in our business growth but only to a point so to give you an idea on our pc sales steam has roughly 50% of the business physical retail is still about 20% although i suspect a lot of key stripping that sold digitally with price advantage and other ESD which doesn't include epic at the moment but there's no reason why it wouldn't in the future about 30% and they tend to compete with steam on two fronts one on price advantage or price advantage on other products and to through better CRM so valves big weaknesses their CRM is shockingly poor doesn't work there's no real personal relationship

with their customers they don't modify their position for each of their players and other vendors who have focused on that relationship can significantly improve the happiness of their customers and so it's not just money it's often the way that they stores build community is an environment which people want to be part of yeah so as i say valve are an unusual platform amongst all the platforms that i work with but you know their irrational behaviour let's call it that is pretty common to platform holders most platform holders are irrational so they tend to fixate on a few i don't know key points that they believe make them special and then they build features and functionality and they demand their partners to join in on that functionality whether it actually has any commercial worth or not and steam in particular are not as dry as driven by commercials as the other platforms so i would argue any platform at its heart is more interested in you know pursuing its platform objectives for some narrative irrespective of how people might interpret whether that's good or not i give you a live example away with a platform google who this had to do more with their movies store but it is typical of their behaviours they have engineers who like working on projects they wanted to work on a particular project involved licencing some IP from us and us agreeing to it we also had to make available certain files localization assets and so on they launch it doesn't do very well they close it down they move on nobody says a word about it again you know that's not an inconsistent behaviour from that particular platform sometimes it's a big issue sometimes it's a small issue but the platforms themselves can be you know not clear apple got very fixated on subscription services we're very much interested in trying to persuade publishers to adopt that business model in a more deeper level we look at it we decide whether we do or we don't apple can gently influence or any platform can gently influenced by saying hey if you join our programme we make sure you get those exposure we market you we do loads of stuff and if you ignore us and don't join our programme well don't expect that much support you've got to feed yourself but fundamentally platforms have been what i would say when i started working with them about a decade ago

platforms were much more editorially conscious and wanted to control how the messages got out there which products got promoted but over time they've let the algorithms take over and they don't take such an active thing also the tools have got weaker in the olden days a listing on the apple store with promotion almost guaranteed you x volume and y performance as they've diluted that control and those tools getting a featuring with those platforms no longer give you the bump that they used to do so publishers are now much more responsible for their own performance and the platform holders are doing a better job of saying hey we're just the platform we're just a market it's up to you to use the market and take advantage of it someone like Facebook who control the advertising very tightly and integrate that into the performance of the platform you're obliged to spend money in that environment and competition on the platform the marketplace itself drives up prices which means that you need to have different types of business models to make it worthwhile for the investments so they've evolved to much more sophisticated bigger enterprises and what that does is it raises the barriers of entry you need to have big marketing budgets you need to take risk and again i would argue that forces you to adopt middleware development solutions because it's quicker cheaper to do that and you can spend more money in marketing so it's changing maybe how games are made in order to run that business model so yes there's a sort of circle of activity that follows this stuff and the platform's are evolutionary they don't stand still and how we respond to that changes over time as well i would argue so we're the number one selling [game] because other games have got IAP in a much bigger way or are free to play and even with that status being in the top 10 most of the time the platform holders will promote us a lot when we ask them to and they have rules we can only do it once a quarter BlaBlaBla they will always support us and launch we're an important partner for them. It does help, and I'm grateful for it. But it doesn't make the difference. If that makes sense. It's not I wouldn't move to my house and only have it that way. So they are helpful. You asked right at the beginning about IAP and what proportion was say,



depends by market by an average. So we have one in game editor for the PC, which is the only in app purchase. It's purchased by approximately 20% players, although that varies massively by market. And it's a incremental contribution of maybe four or 5% revenues. It's not huge. on mobile, we have more IAPs. But we have a lower conversion rate. So again, we're talking no more than maybe 15% 10% contribution. And the reason why we offer the AAP is to enhance the gameplay. So for those people who like to cheat, or who would like to have more challenges, we offer that as a added choice. So it tends to be bought by our most hardcore players who want more from the product. And again, we're a little bit old fashioned, those business models were established decades ago, or a decade ago. If we were to reimagine [game] from day one, today, and launch of competitive products, we probably would have more more options to buy. I would say on our user base, there's some mis assumptions about that as well, we don't publish this information, I wouldn't want it out there. But our core user who is someone who buys every year is about a third of the business. And our brand new user never played before, is about a third of the business. And then a third of the business is made up of people who have played a previous version once at some point. And I've come back. So two thirds are experienced players 1/3 are brand new, and our growth is coming from to two avenues. One is the returning players coming more regularly. So we're growing that pie, and we're growing the new players. So, you know, core is derivative out of that. So yeah, so in other words, a big part of our business model is serving existing players, but new players are important to it, that also determines our behaviour.

Interviewer:

Maybe I can touch it to finish on because we're already nearly 14 minutes into into this interview. I wanted to know if you so I mean, multi homing is obviously a big part of your strategy to kind of diversify your revenue streams. Do you have consciously exerted other kinds

of approaches to attempt to reduce your dependence on any single platform? Is that something that you consciously in the executive team, try to look at? And and what's basically your your approach to this? This, this issue?

Interviewee 3:

Yeah, so we're owned by [company], very conservative mindset. Everything needs to be de-risked in the course of our business. Whenever we present a crazy idea, they might go for it. They're not. It's not that they don't take risk. They just want us to tell them what we thought about it, and what options do we have? I think that that sort of guidance from corporate inevitably means that we're always looking at balancing risks. And yes, I think we're very overt risk balancers. So we will take a very large mg if, let's say, epic, were to walk forward and say we want exclusive next year, we would consider it. And we would also consider what that meant for our players and the risk and so on and so forth. If it makes sense, we take it so we're not. We're not against it at all. However, having said that, what we prefer to do is to be as on many platforms as we possibly can, because we believe that gives us flexibility and versatility and bigger reach and ultimately reaches is one of our strategies so it would have to be a bigger mg than maybe normal. We have tinkered with our own store. We've used a third party called [company]. We're investigating another third party at the moment we've worked with [company] for them to [company] as an example if you go to their website today you will see that we have a white label store for them doesn't really work. So we try these things don't work we we might keep them but they're not priority. I think there are advantages again with steam. So by the way, when we Sell on either ESD or a physical copy, we're giving a steam code, so you still have to redeem for Steam. That's because steam have allowed us to do that. So we don't pay steam a royalty or a margin on those codes. And the win for them is that they get the players on their sites, the win for us is that we've got uniform data. So we can see where they came from, whether they bought didn't buy previously, and what their their playing behaviours. And that allows us to forecast more accurately, and to predict pricing models and things like that. So there are tremendous advantages of having uniform data collection. Obviously, if we go multi platform, we then have to aggregate that and hope that we can collect the same information. But forecasting is very important for us and has been an important reason why we've stayed with steam and prioritise them. So the short answer is yes. And because we're a product that's been around for, you know, for [game], it's 17 additions. But for [game] prior to

that 25 years, I want to be in business in 25 years. And I can promise you that platforms will work with and what products look like and what we do, will be completely and utterly different. And therefore a very flexible approach to businesses is very important for us. For other publishers who don't do annually iterated or SQL products, they can afford to launch new titles and new platforms in a very different way. But I would argue that they're still employing a portfolio approach. So they might risk a title on a platform, see how it goes that they're doing the same thing as us they're kind of ballot counts, balancing it with other businesses and other areas. For emerging businesses who who are specialised, they sometimes can benefit by focusing on one platform exclusively, and getting the benefit of that relationship. But as they get more and more mature, they should be moving to a more diversified strategy in general. And I would argue we're just a more mature business and hence in the lifecycle of studios that you're going to talk to, you would see us probably further along in our in our sophistication.

[...]

End of the interview

## **TRANSCRIPT OF INTERVIEW 4**

Date of the recording: 14.09.2020

Duration: 28 minutes 31 seconds

Format: Zoom Meeting

Interviewee description: Head of Global Marketing at a global mobile games developer based in London, UK

Start of the interview

[...]

Interviewee 4:

That's my personal feeling is that there's quite a lot that if you look at Google Play, for example, your a lot of your traffic is going to come from browse. And it's going to come from apps where your recommended. A lot of that is quite hidden algorithmically, like how that how that happens. So obviously, a lot of it must be based on keywords, and visibility. But aside from putting the keywords in, and then being able to monitor them, and there are tools where you can see that they go up and down, and the ranking and the instal numbers, and you can see on Google console, the buyers that come through those keywords in the conversion. Aside from that, you know, in a way that sounds like you have a lot of power, but actually you don't really have, you don't really have that much power. And when you and obviously that takes quite a long time to go through drip through the process. So I think that I mean, I definitely wouldn't want to be quoted officially as saying, we don't have any power. But personally, I feel like it's funny the way we're you know, we're competing sideways all the time. And yeah, I think it's it's definitely it's definitely a competitive market now.

Interviewer:

And what about competition with the platform owners like Apple? How do I extract more value from those platforms than then before?

Interviewee 4:

Well, I guess, I mean, I suppose they're kind of the same thing for us. Because the only Well, certainly in my role, the only leverage I have really, is to do better than somebody else. So for example, with my [game] in the US, which is obviously a tier one country, it's like, how is my [game] gonna do better than other people's [game]? Because there are only going to be a certain percentage of people who are interested in playing a [game]. Yeah. So it's, the platform is basically just the platform to me. And then it's just like, of the pool of people who are there. Yeah. And the people who would type in [game] or the people who would be interested in that sort of IO game and then looking around, how can I get them rather than so it's a bit like a I always think of it a bit like a street. And it's a lot of it's about how do you get the footfall with your shop? Going somewhere else?

Interviewer:

Makes sense. No, it makes sense. Totally. Did you at [company]? Have you ever been threatened by the platform owner in terms of so so we had stories, for example of game developers that had their game pulled for a week or so because of some infringement of the App Store guidelines in terms of, for example, the in app payments or etc. Did you? Were you ever confronted to such a situation where one of your games has been put offline? because of some issues with the platform guidelines or whatever? new technical requirements?

Interviewee 4:

Yeah, I don't know. Actually, you know, if you want to know that, certainly, I could arrange a conversation with [employee]. I think that is something we take seriously though, when we take seriously all of their rules. So, you know, for example, on Google, you can't have any, anything that even looks like alcohol in the screenshot. So obviously, it's not alcohol, because, you know, we wouldn't do something like put champagne on a bottle. But they said to me the other day that they felt like a bottle look like an alcohol bottle. So I just take the screenshot down. I don't know you don't go, oh, let's talk about this. Which is, there's not that I don't meet on those small points. There's not really that kind of an issue. But I'm not aware whether we've had a big a big problem, but the way as a small develop, I think what we do is we're reactive to their requests. Because my MC. Yeah, the best strategy is to accommodate and, and be flexible and, and be a good pupil, let's say and try to please them in terms of also improving your ranking on the app store or in terms of the race. Yeah, and all of its about and that's the business model is clever, because I think partly, you know, the algorithm is there often based on like retention, and spend, and so they boost you if you're making them more money. So it's all kind of it's an interesting ecosystem, I think, from that point of view, where it's hidden exactly how it works. But you know, it's like, supposedly a kind of mutually beneficial thing. Low if you're growing for them.

Interviewer:

Yeah. Okay. Yeah. Well, I think maybe a last question, I could ask you in terms of that maybe fall into the marketing category, or the other things where you, you had a thought on it, when I asked you about the revenue streams of your how you generate basically your your income, and that you are kind of you started to implement ad based, monetizing, could you maybe tell me just a little bit of what's the reasoning behind it. And also, if there was ever talk in your

company about finding ways to circumvent the in app payment system or divert to your own website, or etc, to kind of increase your margins in terms of the revenue you're making?

Interviewee 4:

I don't understand that. There's been discussion about that. I think probably because of the percentage, I mean, over 70% of our income would come from IPS. So I don't think they would take the risk at the present to do anything dramatic. But I guess the reason to start ads is a few things, probably diversification of income stream. But also, I think, because we started to move into games that were slightly higher volume, lower spend, you know, with something like [game] in less engagement. And so therefore, it just makes sense to be able to introduce ads. And also, there's a viable business model of people wanting to, I guess, either remove ads, or to be rewarded for ads. So it's in the ads ecosystem, I think is interesting too, because a lot of people say that they hate them, but people do like them in certain contexts, okay. So it's because it allows people to accumulate quite a lot of rewards without having to spend any money which was Some people who really want things but don't want to spend, it's, it's kind of a nice a nice thing for them.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 5

Date of the recording: 22.09.2020

Duration: 54 minutes 10 seconds

Format: Zoom Meeting

Interviewee description: Head of Games at a global mobile games developer based in Glasgow, UK

Start of the interview

[...]

Interviewee 5:

So definitely. In terms of I guess, to go through our internal discussions, we realised we were far too dependent upon steam. We had previously benefited greatly from steams algorithms. But as the platform got busier and busier, and publishers got smarter and smarter, we were essentially out competed by other people. brushers when we self published our PC game in 2018. And so we knew that at that point that we needed to diversify, we needed to make sure that we were simultaneously launching on consoles as well as steam and also, you know, exploring regional publishing contracts. You know, steam issues now awash with titles. And if you're, if you don't do well, in the first 24 hours, you're sunk to the bottom. And we've had heard a lot of stories of publishers launching in China to get onto the top of the rankings essentially, like launching, I guess, depending on on the timezone, but like, you know, very early in the morning, and GMT when everyone's asleep, but what it means is that when people are starting to be active in the West, and they're purchasing, they're following the purchase trends, which have started in China. So those kinds of things that we suffered from not being



competitive in, because we were only reliant on on Steam. The the other aspects is Aquila cake, as and I, you know, I suppose in the same, the same baskets, the new publisher that we're working with, but you know, Apple arcade, as a platform holder is specifically being apple. There's a risk that they changed direction that they were, I mean, that's the biggest risk, because our contract had nothing to stop them just saying we're going to stop paying you now. And, you know, as, as some CD developers have seen, new platforms often kind of undergo a strategic review a year later, and Apple arcade did the same. We've kind of been lucky coming out at the end of that, but they have definitely pivoted. And our projects that we're pitching to them next are substantially different because they've essentially positioned themselves away from PC console type games towards more appstore casual games just without monetization. So there's a huge amount of risk when such a large amount of our revenue is coming from a single a single funder who doesn't need us. And that is more risk than our current publisher, who, you know, they need to get another game out, they've they've spent some money, and they they need to recoup that Apple doesn't need to recoup what they've invested in us. Just because they've got so much money, it's, it's better for them, the way that their finances work, is, if we can cut down our costs this year, then we'll have shown we'll have something to report to the board. Versus like, it doesn't matter if it hits our kind of our profit next year or the year after, because that's an that's efficient, you know, the way that a lot of these large corporates work. So, yeah, you know, definitely, definitely a lot of risk involved. And that's why we have internally had such a focus on diversification, diversification away from PC into console diversification onto mobile, we further plan to get more exposure to mobile. And that's also what sparked the the licencing of our game to [company]. And then diversification of regions, which were kind of at the start of, and I think, because just given where we are without any power, we need to just cover as many bases as possible. Rather than focusing on one or two markets or ecosystems.

Interviewer:

There is one important question that I forgot right at the beginning and you keyword monetization, how does it actually work with your games? Is it free to play and ads and in game purchases, or

Interviewee 5:

we're premium, we're traditionally a premium developer, Apple arcade, you pay subscription. But still, there's no in app purchases. We have yet none of our games have in app purchases. That being said, the licencing deal with net is is for a free to play game within app purchases. And that was our kind of our step into that and we plan to further explore free to play. It's a very it's a very different market, but also, you know, in line with our diversification strategy, it's one that we want to get exposure to. It's not one where there is a lot of Publisher funds behind it until you can show that you can successfully monetize it. And then the funding is, is more focused on user acquisition funding. So it's more of a long term plan for us to set up a free to play team, just given the upfront cost involved for us at this stage, given that we have a sizeable team that we need to kind of pay rent for. If we were three people and in a bedroom, then it would actually be much easier for us to be working on free to play games. It's also interesting [game] on it. It's a company that we spoke to as interesting halfway house where they can fund hyper casual games. And we did work on a couple of prototypes for them, although we got busy on other projects, but so it's been something that we have explored to certain extent.

Interviewer:

Okay, and are you tied in any way to the site? I don't know how the contract is set up wasn't Netflix for the mobile game? Are you? Are you tied in any way to the success of the game in

terms of your financial rewards, let's say? Or is it basically only a development contract and independent of how successful it will be on the platform?

Interviewee 5:

That's a royalty only deal. Okay, we, okay, we receive a roll to we don't receive any minimum guarantee or anything out there team over there is developing the game based on the code from PC game that we sent over. So it's interesting. I've got a friend who actually just did a due diligence exercise on [game] and they decided not to invest. But you know, I think yeah, the free to play in app purchases. Legislation will be interesting how it affects that I do think fortnight has paved the way a little bit in terms of battle passes and purchasing skins and have shown that you can take the gambling out of free to play and still be very successful. And that's something that that our the game by net is that has it still does have some loot boxes, but it is more focused on selling specific cosmetics in [game].

Interviewer:

Now being conscious of of your time, I wanted to ask you, if you see among fellow app developers and your industries, examples of companies that you think are basically handling the relationship, they have the platform owner quite well or that have been quite aggressive in defending their position and or examples that you would see of yeah, maybe companies also your size, what have kind of the best practices you would seen in that field in terms of dealing Yeah, dealing with, with platform owners.

Interviewee 5:

That's a good question. I mean, outside of just companies, which are just success, I mean, like [company] it's just they're very successful. They don't necessarily have influence. You know,

we've seen I guess, in the PC console landscape. Publishers doing quite well, as I mentioned with platform deals where the builds kind of sell there. They're kind of what the words end of life games into the subscription services and get To get reward, I wouldn't. There's no company that I, I think I would point to as a good example of, you know, outside of just good publishers, you know, because you've got, you've got we, internally, you know, respects companies like [company], and to a certain extent companies like [company], but they're just good publishers, it's been able to work quite well. And both of them have worked on Apple arcade have worked on PC console, have kind of been able to diversify. I think another one is [company], as well. A publisher and they, they've been able to focus on a global approach. And so, but none, I would none that I can think of that have been that we would like to anyway, I'd say in terms of like, yeah, their approach the platform holders, it's very much listen in our kind of line of work, you know, you go to conferences, and you just like, everyone's trying to get these deals for the platform holders, if they can, and you know, some people get lucky some people get a good pitch. And and you have people with good relations like [company], and, you know, [company] with their fall guys, I think it's an it's an interesting example, where they apparently didn't get very much money at all on the deal with PlayStation Plus. But giving it out for free, he made them like 130 million on on Steam and Xbox launched it. So and that was, they felt the [game] model. So you know, both fall guys on [game], they didn't have any power enabled in which enabled them to, you know, influence the platform holders in any way. But they did take advantage of kind of going with a bad deal with PlayStation. And but with that kind of the their sights set on, on revenue from other platforms. So I suppose you know, that's, that's kind of taking advantage of the fragmented market, because if you can, only if you're locked into an ecosystem, you make it free on that ecosystem. And it works both ways because other people are locked out, and they'll need to pay to get in. So it's quite smart. From that perspective, yeah.

Interviewer:

Okay, cool. And in terms of also the funding: Do you have alternatives sources of funding to publish on those platforms?

Interviewee 5:

applicating it's a bit of unique and unique case. But there are a lot of options for us, like when we come up with a game, Apple Arcade is one option for funding. And I think we aren't focused on platform holders, it's a kind of lucky thing. If they if they accept it, we're more focused on traditional publishers, who might themselves be able to then take the game to Apple arcade and have some sort of deal not necessarily as large a deal. But a smaller deal that would help them recruit faster. And that's kind of in a similar way to epic as well, where [company] went to them with [game] and gave out for free for 24 hours. And it was a way for for [company] to recoup at least a portion of their investment. I'm not sure how much but a portion while getting some more fun. So for [game], I mean, they're owned by [company], but the developers, you know, it was it was via a publisher, so we aren't from a general ongoing business sense standpoint, we're not reliant upon platform holder funding and there's not much barrier I'd say to to if a publisher does find us to be getting on to those those platforms. I think you know, we do want want to make sure that any publisher that we go to has a good relationship with with people like Apple and PlayStation This is getting a little bit more difficult in recent years, but generally a lot of these guys will just phone up their friend at Playstation and make sure that it gets to get through okay.

[...]

Interviewee 5:

so from these I mean, I've already mentioned about considering alternative to platforms, which are something definitely focused on. You know, bypassing from owner is something that we've done and that actually steam enables you to do for PC games, through secondary key resellers. [company]. And [company] was that start reseller But [company] is another one. And fanatical so that's something that we have have kind of dip their toe into, although, and also you know, net is that they have looked at bypassing and also, they have their own platform in China. So you are for mergers, pursuits, able to download the app from a separate website that bypasses Google Play. So yeah, for them, so you know, we've done a little bit of bypassing but it's mostly on looking at alternative platforms to to make sure that there's no single platform which is takes too much revenue for us. bayonet is is an interesting one, but I suppose they weren't Well, yeah, no, as in they are just interesting when they're kind of like the epic, but epic, you know, 510 years in the future, and where they've developed their own little ecosystem in China, and where people can go to instead of Google Play, and I don't know, to what extent they, they work on on Apple, but they have got like, you know, they're on Twitter thing and single Tencent and WeChat. You know, you've got, you've got games on WeChat that you can download, like, I was playing like a League of Legends style game through WeChat. A year ago, which then obviously bypasses Google's payment system. Yeah, yeah. Yeah. So yeah, that's it. I mean, I guess there's a small guy are able to do as much as he's larger, I guess. And to finish, I think the only thing I would add is in terms of taking advantage of the competition and walled gardens. And that the fact that users I mean, it's kind of like the the, the the first one in terms of the the app stores need for completeness. And but with with regards to exclusive exclusivity, rather than completeness. So should we are relying on initiatives like Apple arcade, or Google stadia, or epic epic exclusives, that these guys need to compete against each other? And because I guess the second kind of part is, that's more funding. The second part is the kind of [game] for guys who take advantage of the walled garden by giving you free on one platform

and paid on another to get interest in that that wouldn't be possible unless you did have a walled garden. So they can have some benefits to the system as it stands.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 6

Date of the recording: 06.10.2020

Duration: 61 minutes 00 seconds

Format: Zoom Meeting

Interviewee description: Director at a mid-sized (20 employees) mobile games developer based in London, UK

Start of the interview

[...]

Interviewee 6:

Yeah, we couldn't make this work. If it was just normal advertising, if the CPMs wouldn't be high enough. So yeah, that's that's basically how we've done it. Kind of, as I mentioned, we're currently 99% ad funded. And the reality is, in the last few years, more and more people have started to look at what we are doing in the space that we're in, and more and more copycats are coming in. And it's getting harder and harder for us to scale. There's a lot of copycats, who are we pride myself on paying people and making winners, you know, you look across Facebook pages and you know, we create winners, we send people money. So it's a great thing, a nice feeling. But there are other people that just don't do that and just want to rip people off. So the space is becoming more competitive from a platform perspective, because it's new, what we're doing. Apple and Google, predominantly quite ask a lot of questions about the mechanics. And, and, you know, there's a lot of Vegas around the App Store review policies and terms of what we can and can't do, and we occupy a grey space. So you know, some of the topics that we're going to talk about, you know, fit in really nicely here. So one of the reasons that we're moving



into more skill based is that it's very clear, in terms of platform policy, what you can and can't do, there's an element of skill into it. And it also means that we can start to use in app purchases in a more meaningful way. At the moment, all we can really do is offer remove ads as our main IEP. But, you know, we have to charge a lot of money for that, because lifeblood is his ads. So we don't actually really want people to do that. The problem we have with our games is that if they're completely free to play, there's nothing in it for the for Apple or Google. So it makes that conversation about platform policy, really difficult, because we're not giving them anything. We're like the guy like [company], you know, hey, watch very closely what those guys are going through. Because, you know, there's no in app purchases, there's nothing in it for Apple or Google to have this on the platform.

Interviewer:

That would be my next question, because one of the assumptions behind the IRS guidelines change, is that Apple through banning in app advertisement or making it useless, basically, will force developers to use in app purchases, for example, and we'll help. That's kind of the Yeah, the expected reasons why behind Apple's move. So how are you planning to react to that? And how, what was, for example, the who was gonna be a millionaire? Was that a response to those changes? Or was it planned before and

Interviewee 6:

you're already working on on moving into that space? Prior to the announcement, WWE, DC, whatever it's called these days, we want to develop confidence. And so we had already, as a business identified that going skill based was the right thing for us to do as a strategy. It gave us more defensibility. You know, one of the one of the impacts of COVID that we saw in April, was that globally at eCPMs started to fall. You know, we are relying on a good proportion of

our revenue comes from real money gambling, sportsbook and Casino. And then in April across the world, all the casinos were shut, there was no live sport. And so our eCPM started to tumble, and our revenue started to tumble. So at that point, we said, you know, what we need to, we need to have a more defensible business model. And defensibility for us, means leveraging globally trusted intellectual property, which [game] is 20 years old, it's in the US, it's in the UK, it's in India, it's global. And there's a, there's a very, in the eyes of Apple and Google, it's a great brand to be working with, it's a brand they want to be associated with. And it means that we can, we can start using Iaps. And the ambition is that our revenue from that those games will be more like 50/50 in terms of advertising revenue, and in app purchases. So anticipate that there will always be advertising inside our games. And I'm sure the other guys that you spoke to, you know, that some of the conversion rates from free to page is is minuscule. And our view is that we want to try and monetize everybody that comes into our game. And to do that, there has to be some some adverts in there because not everybody will buy LifePak or energy pack or or what have you. So yeah, that's argued.

Interviewer:

Okay. And there has been also some heat in regards to loot boxes, for example. And that's, I mean, that's also the debate ate about basically more practices on those. Is that affecting you? Or making you change your orientation as well? Or is that?

Interviewee 6:

No, we don't use loot boxes. We're not likely to [name], my co founders. I've got two kids who are four and two. He's got kids 15, 13 and 11. And believe it or not, but morally and ethically, I have a real issue with loot boxes. And I know, some of our games are kind of in that kind of gambling sphere and look like slot machines and what have you, but we don't put money in.

We don't ask anyone's putting in money to increase their chances or odds and loot boxes. I just find them. I mean, it's is is it's, it's a raffle. If gambling it's, I'm surprised it's taken this long for there to be action. Because, you know, I've worked in mobile for years and years and years. And I remember the text messaging and the premium rate scandals in the 1010 10 years ago, when people were winning competitions on TV. Throat, you know, because people were picking their mates. And this whole industry came crashing down. And I'm just surprised that loot boxes have lasted this long, and people like EA, and these are big players doing. So, ya know, they're not part of our strategy. And they never will.

Interviewer:

Okay, and. Okay. And so you you mentioned you consider yourself a bit of a grey zone in terms of how your your place, did you ever felt the heat from Apple or Google to change your business or your?

Interviewee 6:

Yeah, our first game is no longer available on iOS. Okay. So basically, scratch state was our first game, it's on Google Play. It's done a couple of million downloads on Google Play. And when it was on Apple, it was extremely popular. It was doing, you know, north of \$15,000 a day. And it was, I mean, in the UK were in the top 10. It was doing really, really well. And then I think we went through about six reviews in the space of about four weeks. On the seventh review, we got a note back through the apple console, which said business practices unacceptable. And overnight, they removed the game. Because they basically said that our game was a vehicle to watch at. And overnight, that revenue disappeared, because you can you know, then you cannot monetize it, you have to be live on the App Store with Facebook to use Audience Network. You can't put new new downloads into it, because there's only one place

you can download an iPhone app. So overnight, our revenue just went within seven days it got because somebody in Cupertino or wherever that reviews a place, deemed it an unacceptable business practice. And it was against the Appstore terms and conditions are devastating. Okay. We'll go like that. And then literally, somebody just pulls the rug from underneath,

Interviewer:

but they didn't really threatened the existence of your business, or what kind of effects Did it have?

Interviewee 6:

Not at that point. Okay. Not at that point. What made us do it, but to be honest, if it happened now, if that game was doing 40 \$50,000 a day, and it was pulled from us, then it would have untold consequences. On the business at that point, there were five of us. We just got a million dollars of funding. So it was a blow. It was a big blow. But it wasn't kind of studio threatening. Yeah, if it happened now, it'd be monumental for us. So it made us evaluate, you know, putting all our eggs in one basket. Very quickly, we started to launch more games more rapidly so that we could spread our risk. But it's, you know, as I said to you at the start, the more I think about it, the more I think I'm absolutely bonkers for building a business completely based on somebody else's platform that I have no control over. And the App Store review process. And I'm sure many others have sent this to you as well as you've got, you know, 30 page app store policy. But the way that it is policed is shocking. Because ultimately, it comes down to human interpretation of that policy. And when we put an update into the App Store, and we get, you know, rejections, and all sorts of weird and wonderful reasons. Ultimately, that person who is rejected is somebody who has those red apples guidelines, and then chosen to interpret it, how they feel like it. And I don't know, they could have woken up in the morning, they could have

had an argument with their wife, they could have had sat in traffic for an hour on the way to the office, and they're just in a bad mood, and they just want to reject things. I've got no control over. And that's the livelihoods of 20 people.

[...]

Interviewee 6:

yeah, I mean, we have so obviously, our main two distribution channels are Apple and Google Play. We have put games on to the Huawei store. On to Samsung's I can't remember what it's called, but into the kind of into the handset stores to kind of prevent handset stores. So we've flirted there. But the reality is we were 20 people. So there's only so much we can do, we're not King, we're not EA, we can't dedicate a team to Samsung TV apps and Huawei TV apps, LG TV apps. The reality is, we are a mobile studio, unless we had a runaway success in the next 12 months, or, you know, an investor coming along that says I really liked what you guys are doing. I think there's an opportunity for you guys to do doing great stuff on Steam, for example. And they want to drop \$5 million into us, when we can build a whole new team, then it's just not really viable for us, even though things like you know, all of our games are built from Unity. So in theory, we can export them into lots of different places. It's all stuff that needs supporting that needs live operations that needs servers and constant updates. So I mean, at the moment, our focus is on mobile and the two dominant platforms Apple Google Play, we might have dead we got alive.

[...]

Interviewee 6:

I, honestly, I can only see it becoming more difficult for studios like, like, what I really would like is there to be a simplification and more consistency across the rules. And the guidelines to be very black and white. And, as I say, kind of consistently, everybody, regardless of size, but I think realistically, you know, these are walled gardens that we operate inside. And regulation takes a long time. And, you know, you can have the European courts, you can have, the American lawmakers come along, but Apple and Google, in particular, have got very deep pockets. And we'll go all the way they can in terms of fighting, any law that is put upon them. So I can see it becoming more difficult for independent studios like [company], you know, one of our biggest issues is, is discoverability. app stores tend to favour You know, the large revenue generating studios. I'm a, I'm a reasonable man, I understand that, you know, if I'm going to merge, if I was merchandise in the Apple Store, I would choose to highlight king and he ate over why Cook, because I know those days will convert and I know, I'll hit my site, because I'll get my bonus. But, you know, the discoverability is key. Apple and Google have all the power in that moment. And then you got people like Facebook, who are increasingly dominant in the space. So yeah, I don't see it getting any easier for us anytime soon. Just more comfortable and more tentative.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 7

Date of the recording: 19.10.2020

Duration: 58 minutes 29 seconds

Format: Zoom Meeting

Interviewee description: Co-founder and CEO of a small (10 employees) mobile app developer based in Moscow, Russia (now defunct)

Start of the interview

[...]

Interviewee 7:

Okay, here's how the industry looks like: you have two phones. You have Android, and you have iOS? That's it. You don't have anything else, right? You have probably some old fact. They have a Windows, Windows phones, or I don't know what else, or how they call them. feature accounts. So you can't you can't do apps and feature phones, right? No apps. You can do apps on Windows pounds. There is no OS support anymore. But basically, it narrows down to two platforms Android and iOS. On Android, you have several app stores. The biggest one is the official google play store that comes there by the default another one Are Xiaomi, Samsung aptoide and many other alternative alternative app stores, so but there are like hundreds and hundreds of 1000s times smaller than the official Google Play. When it comes down to iOS, there's only one store, which is called App Store. And there's no way you can, your app can get to iPhone users, rather than beyond the official App Store. So whenever your app gets removed from the official App Store, there's no way you can reach out to iOS users. So in our specific case, we had 80% of active users on iOS, and what what were cut down, we

were basically like the 90% of our revenue of the whole company was lost. And we couldn't we couldn't grow anymore, because growing. Without iOS, in our specific case, wasn't economically viable. Why? Because Well, imagine you're paying \$1,000 for to blogger on tik tok for advertising, right? Normally, we got 80% of the traffic to the iOS platform, and 20% of traffic for two of the Android platform, right? So if you, if we would like to continue paying these bloggers without having iOS app, we would only pay \$1,000 or 20% of the traffic, which is five times more money per user. And we don't make that much money on Android. That was the problem. So we can't scale our app anymore. That's why we had to close the company because you know, it just happened that iOS audience was was much more accurate, then then the Android audience coming to your initial question, like which, which, what kind of initiatives that we have. So we were trying to communicate with the app review team. And we were super open and super transparent and super active. In this communication, we're trying to sort of figure out some ways that our content would satisfy App Store rules. But there was one huge problem, the communication from the app review team was not transparent. It was not. It was vague. Alright, so they didn't tell us exactly what was the problem. And until even until now, I have no idea why we got removed. So I only know the official reason, which is like the possibility of harmful content. But it has no evidence, it has no proof. And it has no details. So the explanation of the suspension was super big. Right? So I can only guess why we got wrong, maybe because my surname is Russia, right? Maybe because the the they have this policies that apps can have Russian founders or something, because we were removed at the point where we're we're in number four social app on the app store, and we got more organic traffic than Snapchat, maybe that's the case. I have no idea. Right? So we were trying. So basically, there are two ways you can either communicate from from the bottom by communicating with the moderators of the app review team, or you can communicate with from the top by trying to reach out to Apple's executives. So we did to both ways, right, and both ways fail. So the way



from the bottom failed, because we every every new app submission, we did have the same reason for for the rejection. So we submit the app, it has no option of no user content generation, so you can only watch funny videos with cats in our app. And they still claim that our app is harmful. And users can post harmful content, though it's not you know, technical object we that case, right? We're trying to communicate Hey, please explain where exactly it is the case and they were silent. And the second way failed, because no one replied Like we were sending a lot of messages to Tim Cook and Phil Schiller and a couple of other Apple executives, and it wasn't that no one replied. And the, there's another way we did go through is that we could contacted with the app preview, I call him, he was sort of the guy who came up with the idea of the app review at Apple. And he was the C level executive at Apple back in the day, since 2009, up to 2016. So he was the guy who founded the app review team and scaled it up to 400. Team members. So we reached out to that guy. And so basically, he was like the CEO of [company]. That's the term. And we were like, hey, please, give us your date. Can you give us your opinion about this whole situation? This is an invalid, what can we do? And the guy commented that, Hey, guys, this is totally fucked up, and you are bright, but something wrong happened with the app review team, and something wrong happened with the communication system, and you just have to figure it out. on your own, I can help you only with communication, which it did, but you know, it didn't work out, basically, because the communication with the app with Apple sucks. It's, it's super slow. It's super, non transparent. And it's super vague. So there's no, like, there's no person that can explain you exactly why you were removed and how you can get through this process. They don't help you.

[...]

Interviewer:

Yeah. Yeah. And so why exactly? So you said you you shut down the company? What's your motivation behind joining the [coalition]? Or what's what's your hope that they will manage to basically highlight your case visibly, like to Apple and make it right? Or what's the intention behind it for you?

Interviewee 7:

Okay, so before joining the [coalition], I had I had two options. First one, I could I could, I could close down, shut down the company and just move on without anything happening, or I could do something to, to make this case public. So that more developers and more started a conversation going based on social, whether it's on social media or on regular media. So I just wanted my case to be an image of, of this non transparency and injustice that is happening with, with the stores. It's not like, against apple or against playing by the rules, I'm against the non transparent process when when you have different set of rules for different people, I stand for equality. And if you allow people dying on Tick tock, I don't allow I don't understand why you don't allow people having fun on on challenge. Because they're not dying. They're just having fun, and know that we had zero cases of people harming themselves or others. So I'm standing for this. And I chose that path because I realised that if I started a conversation, and if I sort of, you know, because previously they had only big companies suffering from this injustice and non transparency, all you like, you have those companies in your, in your deck, you have, you have no small companies, because they, it's not no big companies can afford having lawsuits, Maine can file appeals and have like Epic Games, they lose \$26 million a month. by by by having only Android and by losing the iOS. So this is like huge, like, small developers gone, we dream of that kind of money. Which is our case. And I want it to be sort of the first small developer to start talking about this non transparency, and then consequences.

[...]

Interviewer:

Yeah. And actually that makes me wonder as well, since you mentioned the money and your  
How did you monetize your your app? Was it through ads or in app purchases? Or how how  
did Do I make money out of it out of the country

Interviewee 7:

we used to, we had two monetization models like first one. So I can challenge you for \$5 to do  
100 pushups. And you do the challenge, you upload your video of your push ups, and we take  
3% of the \$5. So that was like 15 cents. That was the first monetization model. Second  
monetization model is and in app purchases, we have a bunch of stuff on the app that you can  
purchase, basically digital goods, and we didn't have problem paying Apple, this was not the  
case.

Interviewer:

Okay. And just in terms of the alternatives you consider as well, for you because you didn't  
mention it. So the [game], for example, that is being set up or developed where apparently they  
have very attractive terms as compared to the to Android and and the App Store in terms of the  
fees that they charge for the payment system, etc. Was that a consideration for you? Because  
they have like, I think it's close to a billion devices now. So that begins to reach the same scale  
as a as the App Store in terms of list of devices with the Hawaii OS. Is that or for the future,  
eventually a consideration or you did you

Interviewee 7:

imagine imaginary selling would be the best example. Imagine you're selling coffee, right? Like boxes of coffee. And you have Starbucks, your client, which you sell coffee to. And you have another Chinese no names door that you sell coffee. But whenever like, and they remove you from Starbucks. So you're only left with the Chinese no name store. The problem is that when that Chinese store doesn't have, they have people come into the store, but no one buys your copy at their store. So that's the case, we have people are using Huawei, alas or Huawei, app gallery doesn't matter. They just don't pay. Okay. And basically, it's a it's a super simple business question. Business, it shows you, you can have bigger audience. But if that audience doesn't pay, or you can't monetize that, that makes no sense of being on the store. So we had an app. And we have an app on Huawei app gallery. But you know, economix, there is negative. So you can really scale it. If you scale it, you only scale your net loss, which doesn't make any economic sense. Okay,

[...]

Interviewer:

And so so do you think that Apple will basically cave in at some point? Because the pressure is becoming too huge from the app developers? Or do you think they still have so much power that only antitrust regulation will will change anything? Or what what what do you use? What do you expect happening in? Yeah, on that issue? Basically,

Interviewee 7:

I I'm being I'm being conservative here. And I believe that nothing will change unless they have like a strong demand from the US government to do something. But I don't see that happening anytime. Well, come on, there's the biggest company in the world \$2 trillion

company, they pay a lot of taxes in the US. What's like, there's no monetary motivation for the US government to change things. And for me for the better for the compliment of the platform. So no, I don't believe that, that that the coalition of that for Africa is going to change anything, where I don't believe that this public conversation is going to change anything. People are not going to streets with posters about Apple being that, you know, it's not something that end users suffer from, it's only a small group of app developers in the world suffer from this, you know, shit happens, you have to move on. And I personally, I know that I'm going to be doing more apps in the future, and I'm just going to be, this is gonna, it's just a risk that you have to consider that anytime you can be removed with no reason. And you have to diversify your business from the ground up. So you don't. So whenever you're starting a business that that involves the mobile app, you have to consider having more apps on on platform different platforms, including those Chinese ones, and the smaller ones doesn't matter. And you have to consider having the mobile web platform on the mobile app business. Because if you, it will allow you to diversify your traffic. And as a as an advice to other developers, I would suggest testing different testing, marketing on different traffic to different traffic sources. Because what we did previously, we were testing the web version of our app. And unfortunately, the unit economists didn't work there. So this is why we're not continuing the business. Because the the what just happened that our business on the web doesn't work that well as it worked in iOS. So but as an advice to other developers, you better start considering the mobile web platforms, not I don't believe that that's the future, I don't believe that it can scale. But if you're doing if you're starting the business, that's the thing, you have to consider that but just one upset.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 8

Date of the recording: 29.09.2020

Duration: 68 minutes 29 seconds

Format: Zoom Meeting

Interviewee description: Founder and CEO of a small (5 employees) Ad Network Service company based in Nevada, US

Start of the interview

[...]

Interviewee 8:

I think what's even more important, is now how many eyeballs are finally starting to look at this. And the amount of attention that both Google and Apple are getting in the last several months has been really good for app developers? Will it change something I don't know. Because don't forget, Apple and Google, their services revenue is enormous, you know, Apple, I think their services revenue is over 50 billion a year. So they're not going to just lay over and say, Okay, we're going to change our, let's say, we're going to change our platform commission fee, you know, it's not going to be that easy of a fight. And then, so, just like when I spoke to the coalition last week, the biggest issue we have here is a lot of these app developers, these really big app developers, not epic, but if you go and look at like Zynga, glue, mobile Scopely. These really big app publishers, the reason why they don't want to join a coalition, is because they also get a lot of benefit from the Apple Store. For instance, they you know, a lot of these app developers, they pay for instals to get their app on mobile devices, they pay for advertising. So when they put a new game out, more and more people either can see the game through a

certain channel of monetization, where they can download the game. But the biggest thing that Apple offers these big publishers is free publicity. So for instance, when a big publisher like Zynga has a new game, Apple will showcase their game in the App Store as a future game. And this has a huge monetary value to these publishers, we're not when I talk huge, I mean, millions and millions of dollars of free PR for the weekend to 1 billion devices. Apple right now, I think has almost I think 900 million devices worldwide. So a lot of the big problem that we see is you have the epics, you have the Spotify that want to change the ecosystem. But until you actually get the big developers behind this movement, and nothing will change. And they're not going to join because it's like you said they will face retaliation. So if let's say if you have a public company like Zynga, that's worth 5 billion or whatever billion dollars, if they join a coalition and open their mouth and say, Well, hey, we do agree with the anti competitive nature of what Apple is doing. Their apps are no longer going to be featured in the Play Store and the iOS store as a future game. Blair, first of all, it's free advertising, you know, because when you're a future game in the Apple Store, that's free publicity, you know, you have millions and millions of people going to see, hey, download this new app, it's available that has a lot of value for some of these big publishers. And that's why you see like an epic epic, you know, epic. They have the money, but also they have not only do they have the money, but they also have, they can bypass, you know, you can still instal their game on Google. You know, that's that's why that's why the fight between Apple and Google is so different. Now Google, no big deal. You can sideload the app. You have different app stores. Matter of fact, there are several different app stores that are running fine on Google on their ecosystem. The biggest issue here is apple. I think what push comes to shove, Google will change first before Apple because Google right now you can already sideload apps you can do a lot of things already, the ecosystem is not as closed and protected. Like Apple is I mean, Apple, you can do anything at all. And to be honest between me and you, if you do some research about if you do some

reading such about the Apple jailbreaks that, that hackers used to do back in the day, that the apple jailbreak had a huge value for overseas companies, for instance, like China, where if you can jailbreak an iPhone, you are free from the Apple ecosystem, and you can actually insert your own iOS store that was very, very popular several years ago, where a lot of these countries, they would actually pay millions of dollars for exploits to to make the iOS to make an iPhone, be able to be jailbroken, just so they can load their own marketplace. That's how crazy it is. So I think the movement is great. But until you have a very big publisher, a gaming publisher, come on board, things will really change until then it's going to be a very big struggle, you know, Spotify great. But again, they're not a gaming publisher. They're not a publisher, where they are doing millions of dollars a month, and in app purchases, like the gaming publishers are. Now quietly, Guinea publishers all complained about the 30% tax, they all complain about it. But they are afraid if they open their mouth, what's going to happen? So I have so our company [company], we have a monetization, we have two platforms actually, one platform that apple one platform that Apple allows, and one platform they don't allow, our platform that they allow is a gift card marketplace, where users are able to purchase a gift card with over 200 brands. And they are able to earn free in app currency. So you buy a \$50 gift card to target and you're gonna get 5000 diamonds for the game you're playing. This is called a this is called the offer wall, two big monetization tool for app developers. The second product I created, I created a second product about a year and a half ago. It's a virtual currency card that a app publisher can go into our platform. And they can create their own branded virtual currency card and sell their in app currency as a digital gift card. So basically, if you are, let's say, Sanga, let's say your global design home and the your currency in this game are called diamonds, you can actually create your own branded Design Home digital gift card and sell this on our marketplace. And what it does is instead of going through Apple for an in app purchase, you can give the option for the customer to buy a digital gift card with that games currency. And



that game is branded. It's actually pretty clever, because it skirted the rules of Apple because everything is done outside of the app environment, not doing anything inside the app environment. So Apple has no control. Everything is done via via a web browser. And I had some very big publishers ready to sign up for work because we only charge a 5% fee. And when we started to get towards the implementation phase, they kind of got scared and worried of what's Apple going to do if they see this was

[...]

Interviewer:

And the option, and the option of only doing it on Android offer walls and keeping the iOS also wall cleaner. I mean, you have a lot of publishers that have clearly different in app monetization system, depending on the platform on which they publish it. Was that an option? Or is that an option?

Interviewee 8:

It was everything was an option? Yeah, you know, the, you know, Google is not very like, you know, Google, you know, Google makes money in a lot of ways. You know, they make money, they make money in so many ways. If you took imagine Apple makes 50 to 60 billion a year off their services category. You know, Google, you know, Google is, don't forget how big Android is, you know, like, I think like 80% of the market is Android, you know, so, you know, Google makes money left and right. Between the Play Store between, you know, their hardware they sell between the software, they sell between the, you know, when an OEM manufacturer manufactures a phone, they have to pay Google a licencing fee for Play services on the device. And also, Google's revenue is the stretch. So for them, this fight, to be honest is, you know, I

don't think they really care too much. I think Apple Apple is, Apple is trying to keep the ecosystem very tight. You know, and I also, I also understand it, as a developer, I understand it, because Android has a lot of malware in it. You know, there's a lot of apps on the Play Store or the Google Play Store that, that do things in the background of your phone that you don't know what you're doing, you know, like, there's been researches, the last year or so, where they found SDKs, doing fraudulent ad clicks, you know, and generating revenue for a company, you know, so another part of Apple, they want to protect the ecosystem. And if they, if they open up their ecosystem, to a different in app purchase solution, that then what's going to happen to the ecosystem, it's no longer than it'd be open, you know, they're no longer going to have that control. So it's very interesting to see what's going on. But I don't see a big change. They have too much money. They're too big already. And all the big mobile publishers are gonna stay quiet. A Zenga has global goals, sculpt, please, jam sitting, they're gonna stay quiet. They're not going to open their mouth, they're going to be too scared. And don't forget, the mobile industry, like you said, right now is on fire. So why are they going to ruin something? When right now? The mobile industry is just going crazy.

Interviewer:

But So that begs to me the question what you're saying, can you tell me a bit more about the motivations for you to join the [coalition] and what you're hoping to achieve through that, and what what the goals from the coalition of app furnace are and what kind of action that will take?

Interviewee 8:

I think the the only person that's going to be able to so that what the coalition is doing is great. It's bringing up awareness, and I think that's the most important thing. is to start, start talking

about this. Because guess what the gaming publishers are not gonna open their mouth. So the coalition is is the coalition is talking about this on behalf of maybe even some of these big publishers, they might approach the coalition and be like, Hey, we support what you're doing. But we can't say it publicly. Because if we say it publicly, we're going to be blacklisted. The goal, I think of the coalition should be enough where the federal government steps in and says what you're doing is wrong. You know, I think that I think if you get the federal government involved, we could see some change where they loosen up some of their guidelines. For you know, more transparency, when your app gets reviewed, forcing you to have the apple sign in on your apps, you know, there. I'm gonna give you a very funny, funny analogy. So I own I own a laundry mat. I own a laundromat. I've owned this laundromat for 15 years. And this laundry mat is not a traditional laundromat. This laundromat does not use any coins at all. My store is ran by a computer system, and it's ran, the customer purchases a value card, and they take this value card and they put money, they load money on the card, and they use the card to start the machines. The company that I purchased the system for if something happens to the system, for instance, a computer goes down, I can only buy that computer from the company, I cannot go anywhere else. So my computer system went down one time, and the computer they sell you you can go buy it in the store for several \$100 They end up selling it, they end up selling you the same computer. Don't forget, I've already paid for the software, I've paid for everything. But if the computer goes down, I have to buy through them. And that computer instead of costing me \$300, I can just go to Best Buy and buy it, it cost me almost \$3,000. Now don't forget, I've already paid for the software already. I own it. And the cards, the cards that my store uses, I can only buy through them. They're like credit cards that magstripe cards in the back, they just have a mag stripe, it costs maybe 25 cents to manufacture. But I can only buy through them and the card cost me \$2. So imagine, I can't go anywhere else. And if they raise their price, I have no choice. I have to still go through them. So this is another form of

monopoly. But because the laundry industry, you know, nobody is tech savvy, nobody cares. They never have they have never said anything. So, you know, this goes back to my analogy of Apple is so big. And their services revenue is so large that the only change, the only change we're going to see is if the federal government says Alright, it's time for it's time for you to change the way you behave with some of these app publishers, you know, not just transparency, but the way our apps get reviewed, you know, the way the way that if we have a problem, you lock us out of our account, and that's it, we're banned, you know, in app purchases, you know, 30% Commission is a lot. I mean, what do you what is the what are you doing in return for the publishers that are you're taking 30 You're not doing anything, you're not doing anything at all, you favour actually, you favour some of the big publishers, the big publishers, you favour them and you put them you future their app on the on the first page of the Play Store. You know, the little publishers at the end are the ones that are getting hurt, because for them, the 30% fee is a lot. Some of these big publishers that are already making billions of dollars a year. They're used to it. They've been paying the NFP for a long time, and they're making money. It's the it's the smaller publishers that are that 30% fee, the transparency. Some of you know, don't forget some of these big publishers. They have direct access to Apple. They have a problem with their app. They have direct access to Apple. It's the little it's the little guys that don't get any of that favouritism, you know, the direct access the the you know, like you said with Amazon, they ended up making a sweetheart deal, you know, with for one of their services, you know recently not too long ago. But the research you got to do is great. I think it's a great research.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 9

Date of the recording: 03.11.2020

Duration: 49 minutes 00 seconds

Format: Zoom Meeting

Interviewee description: Founder and CEO of a small (20 employees) mobile app developer based in Hyderabad, India

Start of the interview

[...]

Interviewer:

Okay, so they are kind of enforcing monopoly and payment methods as well or trying to Yes, yeah. Okay. And you said something very interesting about setting up an Indian mobile store, if I understood that correctly.

Interviewee 9:

Yes. So that's a project that's an idea, or that's something that actually companies are working on, and that will take effect soon or nothing has been materialised. There is already one Indian app store called India's India's App Store. It's quite a disaster. We already have about I think 500,000 apps on its on its platform. But it it comes preloaded with Samsung devices, Samsung's App Store is powered by Indus in India. That's one thing, okay. Then index as a company is trying to push its own app store. But again, pushing your own app store is very difficult because each phone comes preloaded with a, you know, Google Play Store. Right. So the idea was to have an Indian App Store, because one of the largest companies in India Paytm medium is a,

you know, a company which does wallet transactions, they also have an E commerce platform. So their app was rejected by Google two, three months back. And it was a huge controversy. Because an app which is used by an average unit, for example, WeChat is very common in China. In a similar manner, Paytm is very common in India. Okay, that app, so update was rejected because it was promoting fantasy game fantasy game, which involves money, which is not allowed by Google, by the way. So they had their app was rejected. And that was a lot of controversy. So you know, kind of they're leading this battle in India, where they want an Indian App Store, which will not have as many rules as what Google is trying to enforce the very preliminary stages of discussion, nothing has been come forward. I mean, deep down inside, everyone wants Google to stop collecting 30% fee. So you know, we don't have to reinvent the wheel. But if it happens, then probably you know, people will start looking at alternative solutions. For example, we are currently trying to run pilot campaigns where we can get people to download our own APK and do a side load of the application. If it's successful, then probably once Google started enforcing the 30% permission, we will start trying to direct people to instal the app directly. So, that is one thing which we are experimenting right now. Until you know there is a concrete answer to this problem. Okay. This is one thing. Yeah. So, the industry is you know, mainly of education, startups, there are billion dollar startups in India who are education focused. Then matrimony is a bigger game in India than dating. So dating and matrimonial to different sectors okay. You have lists in India who are matrimonial companies, by the way. So, they are the ones who are also leading this battle with CCI with the help of CCI, see what can be done. Right? This call which is going on. In terms of strategies, if you ask me, what we are trying to do, number one is lobbying the government or the CCI to see what action. Because to be honest, 30% is a very huge function. If I look at my balance sheet of last year, my net profit was around 26%. If I have to give away everything to Google, then I am left with nothing, right? I mean, as a common app developer, it's very difficult to

survive if you're paying 30% Commission. The thing which we do with Apple is that we have increased the prices, because we know for a fact there is no other alternative channel of collecting payments, we pay 30%, Commission to Apple. And the problem with Apple again, is they also did have the Indian tax, which is again not refundable to us. So to be honest, all these bigger companies like Google and Apple, they are very lacks in terms of their, you know, tax systems in countries like India or any country, there are sort of idle and or Singapore, and you know, they have a basis in tax havens, and they don't really care about the end developers tax issues. Today, if my customer pays 1000 bucks, right, let me put it in Indian rupees, I am only paid 500 rupees 50 person, because 30% is my apple, and then 18% of the taxes paid by Apple in India, and I don't get that refund. So that's a huge problem. Because Apple is not going to give me that tax back which I can pay to my own government. So it's kind of like in double taxation for companies like us. We almost have a discussion every other month with our, you know, finance team, or you know, the CAS who try to ask us, you know, this is the new law by the country, is there any update from Apple or Google? But, you know, they hardly care. So that's also a problem with these platforms, because no taxation, they hardly care and they will not respond to any such queries, which we have. So, Apple, we are purely raised our prices, no other alternative. And since the user base is very small. To be honest, we don't care as much prices on Apple. Android is our main platform. And hence, we are trying to work on alternatives, for example, for people to sideload the application by downloading the app, by make sure you're present on desktop and the mobile browsers. Because if today, 10,000 new users join on my app on my platform today, on a daily basis, we add about 10,000 new users. So if I know these users are using violent desktop site, they are not using the Android app. But tomorrow, they will download the app and want to use it. And the problem will be that again, I have to pay a 30% commission to Google for no apparent reason. It's my customer from x location, who is, you know, ended up downloading the app on the Play Store, and he spent 30.

But I activated it was commissioned Google for no apparent reason. So they, you know, divert the traffic back to the website or to the desktop. If he would have used Spotify as a free user, I'm sure you must have seen Spotify, his ads asking you to upgrade. I've seen that anytime. So what's fortify does is if you're a free user, target you separately on Facebook, or Google or any other platform to upgrade, and when you click on the link, it'll take you directly to the website and not to the app. That is what they're trying to save that commission by, you know, redirecting people to pay via their own platform where they own a credit card system or whatever. So this is the idea which, you know, we have also been tinkering, where we get our users retarget them to go to the website and then coax them to make the payment. So this is one thing. And the third thing is, you know, probably in the future, not right now, but maybe restrict features. And just tell you this, you know, these features are not available on the app, but probably you will get them on the website directly. So that is one way of sending back in As opposed to using the mobile site or the desktop site, ideas, which we are still testing on, because this is also very new concept for us to be such a high commission, so we still have money or time and these are things we are, you know, figuring out.

Interviewer:

Okay, cool. And do you want to tell me why you decided to join the [coalition]? And what you're hoping to achieve with that? Or? Yeah, and what kind of actions do you think are planned for the coalition? What what what will happen next, basically,

Interviewee 9:

I think as an individual developer, none of these platforms care for us. Reaching out to them is no point because they will never hear a single startups or developers issues. Joining the, any kind of coalition between India or beating us on euro will help us, you know, talk as an entity



as a group, and, you know, tell them that this is enough is enough, you know, we're not going to get bullied anymore. Not only the question of the Commission's here, but a lot of other things, for example, how the platform was how they reject your application, how suddenly one day, they'll just remove your application for no apparent reason, because one line in your description was not matching the requirement. So it's a lot of bullying also, which is going on. So these are our concerns. And I think as as a group of startups, you know, it's better to put forward our message to a single entity.

[...]

Interviewee 9:

It's an interesting question, because discussion I had with some entrepreneurs here in Hyderabad in my city, and forward a very interesting point that going forward in the coming years, hopefully, all these app stores will, will become irrelevant, because each country has their own laws coming up. You have GDPR in Europe, and you know, there are different laws and privacy laws. In countries like Brazil, in even in India, we are going to have some privacy laws. So they're going to be a lot of laws, which we have to deal with as a developer. And on top of that you have Google who's Google or Apple who's sitting and commanding a lot of things. So it is all going to get very fragmented. And people would obviously start directing people to their own website or their own platform, user applications. So the more apple and goo We'll enforce developers with their, you know, what do you say, laws and stuff, I think more people will just fragment out of this whole ecosystem and try to build, you know, something on their own. So, naturally, if a developer cannot make money, they will fall out of all this. So I think game developers assets have been used to this 30% Commission, because they have been paying the same on Apple and Google. Not sure how much it affects them.

Because right from day one, they have been, you know, paying this because it's mandatory for them. For other digital products, like, you know, maybe education or dating or any kind of other digital platform, I think they start directing people to their website or, you know, trying to get people to sideload applications, such because if they would just increase the prices, that's what happened.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 10

Date of the recording: 04.11.2020

Duration: 79 minutes 55 seconds

Format: Zoom Meeting

Interviewee description: Founder and CEO of a leading free-to-play (F2P) mobile games developer based in Kuala Lumpur, Malaysia

Start of the interview

[...]

Interviewee 10:

The thing that is really prevalent over the past couple years that even has kind of been an agitation point ourselves has been these rules that are number one, sort of informal, obviously, like, vaguely structured in Apple's favour, and they are obviously the judges You already have what the rules mean, you know? And that has impacted lots and lots of companies, ourselves included. News like, you know, like, what happened to [company]? And so, like incidents like that, we can really empathise for someone like, you know, like, how long did they develop their service, you know, like, six months, one year, for me, it was actually more than one year, but, you know, they're, they're spending all this development effort, building their service, and so on. And I'm fortunate nowadays, if you're not on iOS, or Apple platform, it's, it's a significant regular channel. To some extent, like your business model might not work if you're not able to be on this platform, because, you know, 50%, or 30% of users will not consider your service. And because of that, you know, we actually don't have any certainty that it's going to be approved. And so that's actually the risk factor in the past sort of been like, hey, you know, it'd

be kind of stick to the rules and the protocol. The spirit of the rules, you know, we're not like cheating and not doing whatever, you know, you should get approved, no problem, you know. And over the past two years, in terms of public incidents, and even our own kind of work that we developed for clients, it's become much more frequent that risk and the risk is both in terms of the business risk of you do this, you try to release it, it might not actually get approved, what happens? There is also, in terms of time, sometimes you have plans, and I want to get to market in July. And, you know, we tried to submit review two weeks before and one week before it. Also, that was rejected. And that rejection reason, you know, we've experienced, like, close to heart denials, meaning like, you know, your app cannot, like the business model was not accepted, something like that, you know, but you all, there's no like mechanism for learning that like, sooner, you know, you can't put it up and say, Hey, here's my app, or something like it. I have not invested the funds to develop it, because it costs a lot of money. Would you approve this, you know, like, there's, there's no like, mechanism escape halted to figure this out. To an extent this leap of faith. So I will say we, luckily, we haven't gotten to quite the stage where we developed something and it just couldn't work. But we have been like, just going through that dance. And like so many developers have experienced this not just I've been developing system does. Doing this bounce back and forth app review about like, they point out some problem, and then you try to fix it, you submit it, and then maybe it was rejected, maybe it's approved. And then on to the next part, we just go back and forth. And it's, I guess, that is one like pet peeve of mine nowadays, where it's just very frequent, that this happens, even a new read, I'm sure. Some apps they've been approved, they don't like last year, he just got approved, I sent me an update today, all sudden, it's rejected. But all I did was like fix this bug, you know, why? Because in that time period, or maybe there's been a reinterpretation of a rule or just an additional rule, where oh, now you're no longer allowed to do this thing. You know. It shifts so much burden to the development teams, owners. So that's one thing. It seems

like such as such an arbitrary restriction. So, so yeah, I mean, and apart from that, I can see the curation or management of the app store, you can see Apple shifting to this focus of it as a service as a revenue stream for them, even in terms of how they support developers. It used to be the App Store app itself would be a pretty good channel to market and get apps if you were featured on the App Store. One of our actually got featured and he got this huge bump in sales. Nowadays, this, I can't understand why Apple did this, because there's like millions of apps and stuff. But nowadays, the App Store, you get this feed of, you know, featured apps, like a lot of exposure for many, many, many apps available. But from our you cater knowledge or experience, I guess, we know that the user behaviour, users don't actually use the app store that much compared to the past for discovering apps anymore. Nowadays, most of the discoveries will be happening soon, web, Facebook, Instagram, and so on, like other marketing channels. And so I guess that's not necessarily an absolute thing that I'm complaining about. But it's just maybe the shepherding of that platform. And it used to be very hospitable to developers who would try and smaller developers who were trying to do like good product release, and maybe being able to do things. Well. And I think nowadays, that's a lot tougher to make the widgets like this, because iOS 14 has this new widget regions, you've got feature. He made it really long, but I think it's a lot rarer now. So I guess my final thing is that I'm just somewhat annoyed, in terms of the business models that you must use to like, exist, I guess.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 11

Date of the recording: 04.11.2020

Duration: 62 minutes 20 seconds

Format: Zoom Meeting

Interviewee description: Co-founder and COO of a mid-sized (50 employees) mobile app developer based in New York, USA

Start of the interview

[...]

Interviewer:

So do you have any open hoped that the [coalition] as an entity will manage to get some kind of concessions or is it more like a to stand your ground and to state? Okay, we are not happy with this. But still the only hope basically is antitrust law, or do I understand that correctly?

Interviewee 11:

So I think number one, it's first of all important that they voiced their opinion, because like, now there's a clear position. What do we actually want in what is basically the interests of developers? And what is what like, there's one voice that speaks we're thus the spring and litre anything? I don't know, I don't think that Google Apple will change this by themselves. Because why would they they're printing money with that this is like a money printing machine for them. And that that's basically the only way how you induce change here is through either all app developers are starting to revolt and stop saying like, Okay, well, we'll not shipping any new apps anymore, we're taking them off, then they might do it, or if the regulator comes

in which they're right now currently do, and looking at that, and basically saying, like, yeah, you guys have to stop this and pay a fine. This is not correct. These are the only hopes that I have, like all the other things that you early earlier saying, saying they are like supporting in that. And there are ways this is these are the only options that we have. But it they will only change if the regulatory regulator comes in more, or they really have they really feel the pain and right now they don't feel the pain.

[...]

Interviewer:

Funnily enough, I was going to mention Amazon, I mean, there was a very prominent New York Times article on how they basically threw data spy on third party sellers to for the Amazon Basic stuff to know what which one they will sell, sell it at which average price. So that's definitely true. And that's why I say, yeah, so sorry,

Interviewee 11:

Regulator need to comes in, they need to say you are market maker or your market participant, pick one you can't be bought. You can't, you can't be the operator of that app store and then suddenly decide, Okay, we'll do this and this and this also helps with SEO, if you're Amazon, you can't have the world's biggest website and marketplace, and then suddenly decide okay, well, we'll also start selling stuff here. And we'll literally have access to all the data and can like literally see what's going best we can even manipulate which products are at the top and this is just this is antitrust, yes. clear headed Ross case. And, and the only way how you stop this is to sue the regulator. This is this this basically this is their job to see this and this takes years. And unfortunately until this behaviour, is basically we can be resolved.

[...]

End of the interview



## TRANSCRIPT OF INTERVIEW 12

Date of the recording: 04.11.2020

Duration: 51 minutes 51 seconds

Format: Zoom Meeting

Interviewee description: Founder and CEO of a mid-sized (30 employees) mobile app developer based in San Francisco, USA

Start of the interview

[...]

Interviewee 12:

I think that's harder for us. Because I think people do discover us through the app store in a way that generally that's not what happens on Netflix. So I think like Netflix you've heard of, and you probably already have an account or visit the website first. We just think it's crazy not to be able to provide alternatives to customers, we prefer those. So the main thing we've experimented with is basically just being able to tell users within the app about the website outfit. So we've always done email communications, telling them about the website option. And like, typically, we'll do we do some seasonal sales for like New Year's, and typically, we basically only do that discount on our website. And then on Android, we actually include a link in the app, like on the purchase page, or else Okay, first on our website, they did take us down for like three days over the summer for that. And then we basically that was like the same exact time that the eBay scandal was happening. And so I think they actually like as soon as we went to Twitter, they freaked out in a scandal. So they've now like since put out clarifications for their guidelines, which basically include a prohibition on leading users to an alternative

payment method, which includes like the messaging about an alternative payment method. Those like aren't haven't been there saying enough to be put into effect for existing apps for almost a year. So it's kind of strange. I also think that's like the first and only case of Google, like Apple generally has a lot more rules about like, various things you can say and can't say and like, they have rules about like what colours you can use were like to include a black button on black background. So like they're much more in this the control of actual content game. Google, though until now, it's like, certain false information and certain explicit information. They weren't disallowing. And I think this like not being able to say you can also purchase on our website is like the first case of Google who's supposed that mission is to make the world's information universally accessible and useful. The first case of them disallowing information that is neither false nor explicit or inappropriate. So I'm kind of curious if they're actually gonna go through with that, honestly. That's right. It seems like they're just, they just decided to follow Apple's lead on every decision, which seems unfortunate. I think they have like a chance to just get some good PR and market share here. Android users are already like way less likely to do in app purchases, like the industry seem to generally agree that the Android user is worth half as much as an apple user for that. And then Google also, they have their whole app, they make their money on ads, and like, you already have app developers bidding, like the full value that they get for instal to Google to get that ad. So if they get 30% more, they're going to be more and Google's going to capture that money anyway. So I think that Google, I just think there's just like, strategy wise, this is just a horrible mess up. And I'm guessing it's like, yeah, it's like, you know, I'm sure it's, you know, someone whoever's in charge with the Google Play team. Their incentives within Google are to grow that specific subscription revenue, and there's sort of like, no one It can be like, from the top down hold company perspective, actually, they should not worry about making money this way. So yeah, so the Google link, we're planning to basically keep up there for another year, at least we'll see what happens with that Apple, we

have at times included a link, and then they've actually rejected most of the courses to take it out. So that when we've kept out, we still communicate the website offer by via email for that. There was one of the things I was gonna say, Oh, we also have never really considered doing the side loading frame for it, okay. But that's partly because we've always just link to our website, and we're sort of happy with their like, again, we're happy to provide an app willing as an asset, as long as we can provide the other options alongside. So I think if Google goes through with this threat, of not allowing even the mention of the other options, we might explore what it looks like to do a sideloading option. It sounds like they're also basically supposed to make sideloading work more seamlessly in the next year. So maybe that'll be a real solution in a year, we would certainly pursue that right away with Apple if it existed, because we're still blocked from showing that link.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 13

Date of the recording: 05.11.2020

Duration: 51 minutes 26 seconds

Format: Zoom Meeting

Interviewee description: CEO of a small mobile app publisher based in London, UK

Start of the interview

[...]

Interviewee 13:

But you know, the Netflix model, you're not getting a share. Apple's not getting huge share out of your use of watching Netflix, because Netflix has a subscription service that you're getting separately. You're just watching it through your phone. And so where you draw the line between a companion app, and the real app is very difficult. We worked on a game, which had blockchain in it. And you could block by blockchain weapons on the blockchain. There's no cut for the app stores in that weapon, that you can import a blockchain weapon you own into the game. We have traded but the thing that we wanted to make sure that we weren't bypassing that, because I think it's important not to bypass, because you don't want to alienate the platform, you want the platform to have a value and reason to be engaged with you. So we made sure there was always something playable that you needed to do, that could be unlocked through in app purchases in the game in the platform. Therefore, there's a platform revenue there to it. That's the kind of innovation that I think people are trying to do, which is to say like, what is the legitimate model? Where is the value for the player? But let's understand the whole ecosystem. So there are plenty of options to generate revenues that don't have the apple tax.

But the apple tax is the cost of doing business in the Apple platform if you're going to use those business models. The issue is scale. And, yes, competitiveness is massively problematic. And I don't want to trivialise, the margin issue, there is a absolute no question a margin issue. But that is about not every game, nor that all the millions of games out there can be successful. The way to resolve that is to test as early as possible, each of the layers of the game, and taking a strategy that allows you to maximise that revenue. In the case of a hyper casual game, they're going for the lowest possible cost of development, the highest possible ad revenue. But this, to think that there's no tax involved in using an ad company is crazy. Because they take their share, too. We're not all going out there and creating ad networks, we're not doing all of the business development to take the advertisers and put them into our inventory, and manage that pipeline, and do all the attribution data and work out what sources are delivering what audiences and so on and so forth. We're not doing that the ad companies and the ad aggregators are doing that. And the attribution data companies are doing all that.

[...]

Interviewee 13:

That's mostly wrong. The banning of it, it's about people who don't understand game monetization. Okay, getting involved in something they don't understand and getting fearful. It's, it's a bit like Reefer Madness, it's the big thing to get to get it. Now, there are some legitimate reasons to be concerned about bad implementation. Absolutely no question about it. I did a talk at this on this at GDC. In 2015, long before loot boxes were kind of considered a topical thing, we have a responsibility to communicate in a transparent way. And to have sufficient escape materials, you know, get out leaving processes, in the way that we build our games, that is our responsibility to be responsible and appropriate to our audience. The reason

for that is if we do that, we sell more things, because we're trusted. And if you build it a Loot Crate system badly, there are two things that go wrong one, you get your lose trust. If somebody buys something and doesn't get what they expect, they're dissatisfied. If they're dissatisfied, they don't buy again, that is just dreadful, is bad business. Secondly, if they can pay out, so if they can cash out the thing they bought that is randomised, then it has characteristics. It's not gambling, but it has issues to do with know your customer to money laundering issues. I don't want to go too far on that one. But if there are functional issues about it, there's also expectation. And you know, there is that potential risk of a compulsion that beyond the actual value itself. So anytime you have a payout, it raises lots of alarms. Now, when you're dealing with non vulnerable audiences, randomization adds to the enjoyment of the goods that you obtained, when you're dealing with vulnerable audiences, the context in which you have that randomization matters. So that's why you shouldn't have the payout. That's why you should have the transparency. That's why you should communicate what it is. But banning loot crates have opens up such a massive hole in terms of interpretation, that it it could do lasting damage to a whole business that didn't need to be damaged. And actually, why you Where does it stop? You've got to start, you got to start banning Magic the Gathering booster packs, you got to start banning buy one get one free offers. Yeah, I mean, I'm not entirely serious. But my point is that by focusing on loot crates, you're focusing in on the wrong thing, we should be focusing on, you know, miscommunication, inappropriate, you know, structures of buy of selling content, we should be focusing on are we delivering value for audiences.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 14

Date of the recording: 06.11.2020

Duration: 50 minutes 30 seconds

Format: Zoom Meeting

Interviewee description: Chief Commercial Officer at a leading mobile game publisher based in London, UK

Start of the interview

[...]

Interviewee 14:

Well, we definitely do look at also other platforms or other options, let's say, the galaxy store or Huawei, or these kind of things? And are we happy with like, quite a significant fee? Certainly not, you know, everybody would want to earn a bit more money. On the other hand, it does come also with some benefits. It's obviously a safe, relatively speaking a safe space where users, right, so they know, kind of what they're downloading. And we're at least to a degree, and it is obviously also an important distribution platform. So you know, it, there is a value also associated with that. Yeah, you can argue if it should be maybe 15%, or 30%. But you know, they also deal with all the taxation on all these kind of things. I mean, I used to work for a company where we were doing the billing ourselves as a as a browser game company. And, you know, that comes with a big team has to kind of sort that, and manage that, etc. And that also costs a lot of money and effort. So, you know, it's, it's a question, you know, do I think that 30% is, is justified? Well, let's say some somebody says it should be 24%. Now, I'm not going to cry. But if somebody says it's 36%, yeah, then I'm going to cry. But you know, it is,

you know, these are kind of the, these are the rules at the moment to a degree. And what usually happens is, yeah, there is not enough competition. [...] But overall, I would say we've always been creative and have found ways to kind of adapt. And, you know, we, as an industry, we look at things for a while, and then at some point, there will be something new, I mean, 10 years ago, was steam really that big? Probably not, right? It came out of the necessity, or somebody said, like, Okay, this is, you know, we need to kind of get all these kind of PC games together in some kind of better platform and not give it all to, to the big publishers, right. So I would also expect that there will be also changes again, I mean, the the app ecosystem, benefits from us developers, as much as we benefit from them, as well. And if, if it's too tight, we will find other ways. We have always been in a, in a very, very, very competitive space, that's for sure. But, you know, with increasing costs for advertising, it means That your returns are kind of getting smaller and smaller. So to say. And, you know, our that, that, I think as developers, we haven't been able to kind of increase our sneakiness thank God and and get even more robust with regards to monetization in the same at the same speed as kind of advertising prices are increasing. So that means you're having diminishing returns, then you're like, Okay, either something happens on the platform, side maybe. Or we have to find other systems, other platforms. So my expectation is rather that there will be something new, a new platform, a new way to kind of distribute apps that are. Yeah, less dependent on the stores.

[...]

Interviewee 14:

On the distribution side, there is definitely pressure, for sure. And that's why I kind of, you know, kind of consolidating makes a lot of sense, then because at the end of the day, you, you, you, you, one of the one of the values are, what is valuable is actually having access to a user and



understanding who that user is and how they behave, at least in a certain game. Right? So it makes a lot of sense also, to kind of be able to kind of use that information to kind of either cross promote, or do, yeah, just or whatever, or monetize that use a better, etc. So I think that's why there's definitely a lot of consolidation happening in the space [...] And the most important thing, I think, why it has actually increased is that today, it's very clear that the risk of kind of developing a game from scratch is higher, or the returns that Yeah, the returns are definitely on average, at least much, much lower than, you know, basically buying something that is successful. So that's why I think mostly the the thing of consolidation is happening and kind of the bigger studios, let's take Zynga Tencent, whatever that they are basically, they buy they're, they're consolidating and buying the revenues that they can get, and also the users ultimately, and even that ad networks are tapping into that, because they are obviously really especially interested in kind of having access to those users.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 15

Date of the recording: 09.11.2020

Duration: 61 minutes 54 seconds

Format: Zoom Meeting

Interviewee description: Founder and CEO of a small mobile game developer based in Berlin, DE

Start of the interview

[...]

Interviewee 15:

that you can't really remove the dependency on the platforms as a developer, because you know, you you need to publish on on the iOS or not on the Epson and Google Play. So it has no real way to remove the dependency? Well, you can come up with more platforms, and of course, but it doesn't remove the platform dependency. So it just makes the one platform your dependent. recollect. Yeah, sure. So I think the most feasible way that was the most promising and easy to implement way, would have been the advertisement. Because when you find a nice advertisement provider, they, we might have a better better company out there. Although even Google doesn't really tell you how much of the money you spend in AdWords, for example, is really get paid off. But there were some apps that have made it to make quite quite some nice profit off. What was it called the [game], just kind of known for putting off like 50k a day with totally shitty game. And it was a diverse exam deck, which has been most gaming a small, like indie 111 people, game companies are doing it, you only need the Asset Store, getting a premade game asset and risking it and push it out in anthem, some games, literally, you have

like that sums, it's the same game even look the same. And so that wasn't enough to disperse on the on the place that I'm on. That it's intuition, but so let me quickly check this out again. So alternative platforms. Again, it doesn't remove the platform dependency. Yeah. bypass the platform. Yeah. I mean, it's interesting, you know, you see what happened to epic. And I'm just fortunate a company that can afford it. And they're willing to do that for awareness and and to fight it through that they have to pause to appreciate it emerge. But as I understand it, a bad feeling.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 16

Date of the recording: 19.11.2020

Duration: 56 minutes 52 seconds

Format: Zoom Meeting

Interviewee description: Director of a leading mobile game developer based in Bengaluru, India

Start of the interview

[...]

Interviewee 16:

So I will take a back step and draw a sort of analogy of how we think about the centre digital ecosystem. It's like government, that probably you will not have elected. Hello? Yeah. Yeah, I think for a second, my last tip for is a government that you're not elected, but the government is there and you have to pay taxes to the government. And you are going to get some services and back, maybe it is going to be an important service or maybe not. If you feel that the taxes are too high, you can go on a report, you can bring your own party, it's very hard, you try to elect another government, you can't because there's only one or two major parties like Apple or Google. So you're fundamentally left like a human citizen saying that, hey, I can't do much. I'm just lonely citizen of this country. So that's how we try to draw on parallel, right? Because every citizen thinks I alone, I'm helpless. What can I do? So if you study any revolutions already old structures where a large controlling defining system was overthrown, was the collective power of everybody else together, right? So if you just go hypothetically, if tomorrow, no one says that I want to publish on Google. What do you think Google will do? Right? Google will

say it's free, right? Come on, I don't want to die. So it will do things which will be unheard of, because there must give retaliation happens. But the possibility of a mass scale retaliation is very hard. It is similarly very hard when any government was overthrown, right? large number of individuals have to come into a collective vision of why it is wrong, and they have to believe in something and they need to be led by a leader and that leader overthrow something. But in this little world, it's just far more x bigger scale is just a normal sight. You're not talking about a country, you're not talking about the entire planet, almost right, except few countries that is barred everybody else is at play. So when we think of this, we think of this very helplessly. While you have taken examples of certain companies like epic and Spotify, sure, or like it saying, like, if Jeff Bezos wants to take on Google can he assure he's got the muscle behind it, he has got a great application or software or, or service behind it, like epic has been making games before I was born. hated that Tim Sweeney has been coding for 30 years making amazing stuff. And they have this brand recognition, they have this amazing what is called fan following or cult following. And of course, not only that, they did it the right time with an amazing game. So many things have to be right in order to do something like that. And I think think like 99.99% of app developers will not hit that ever. So when we start to put this in our cells in that scenario, we try to figure out within the legal bounds, how can we gain traction. And I think that's where we stopped. We said, Hey, you know what, I'm not going to go and retaliate. Google because I have a business to run, I have got 140 developers, that is I need to take care. And I will make money because at the end, that's my business. So what you start to do, and that's what we do is we deeply try to understand how the systems work, how the platform works, right? And the only way to deeply understand anything is through extreme level of data use data distracting. Example, as an organisation, we are storing 2 billion instructions every day. And computing on that what's happening, what's happening, what are the search results with such as a better if user has come from this searches and has clicked on

this button and then that this is that a better retention or not? So you start to really dissect What are those leavers that if you understand better than anybody else, you are going to get heads fast pace with any other competent but competing directly with Google or Apple seems very unclear. So that's where our position is, but then there are a couple of instances where we start to think differently. For example, India has been known. So I left it all back. So one of the biggest thing that Google or Apple provides is distribution. Right? Before we even come to payments, modules and ease of payment, all that the biggest thing is distribution. In a second, if 10 million people can see your app, and they download it, that's the power of distribution. But India is a very large populous country. And India has done extremely good ecommerce distribution, the old school distribution, and have pioneered a lot of things around how to salesman work, and how does what is called a pyramid marketing works and how does one person reach like, like I am a kind of situation and stuff like that, right? So if you go to the remotest town village of India, where there cannot be any truck or a car that can go, you will still find a party biscuit and a tobacco called swill cigarettes. How do they do that? How does that product leads and reaches there is a distribution space, right? So that was something that of great interest to us. And we spent a lot of time almost two years exploring, does it make sense for us to build a word of mouth distribution system through advocates, and advocates means sales up? Can I rather give 20% cut to everybody in the middle, tend to give 30% cut to one big platform. And we did a lot of experiments on that model. And at least in one particular city, in a state, we were extremely successful. In short, we were doing cash on delivery. That's the Indian philosophy, like for an online game. If a user wants to make a digital port sales, he or she calls the local agent of his town or his region, and that person will send in five minutes a person at your home, collect cash, make a punch key, and you get the credit. Now, obviously, this is a very small experiment that you have to do like, is it possible for us to do that. And we feel it is, but it requires huge capital. If you want to have to do that, in one city, in a state, we've

asked for that in 1000s of cities in hundreds of tech, it's just not going to be scary, I need a billion dollars to just do that. But what we were able to prove was, at the end, we believe that there is a way to overthrow Google, there is a way to turn Apple is just that you need smart money, and a lot of smart money, right and most people do not have access to that kind of stuff. And that makes us think more and more that it is just a matter of time where enough critical mass of developers would be upset like the and that could bring about a change. Maybe epic at Spotify doing the cases is a start. And maybe this will go into a revolution curve sort. But what is very hard to believe is that there will be a situation where they'll not be a dominant player. You will always have one or two extremely strong dominant players that is going to give you an unfair advantage. Like when Amazon was launched in India, there was a massive revolt, every shopkeeper were upset. Because nobody can make money because there's one This company has got to give half the price discount, same day delivery, then how does the mom and pop shop on money. So it's a hard situation. That's how we think of it. But we have done our share of experiments to believe, at least in countries like India, and I believe this would be popular in countries like South American countries like Chile, Peru, maybe Argentina, Brazil, or even popular in South African countries, basically countries which are developing a large density of population, low penetration of credit cards, high value of cash, a lot of human connect to network, human network, outside of digital space, that's where these things can work. But we are not really focusing on this because we do not have that kind of capital

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 17

Date of the recording: 24.11.2020

Duration: 61 minutes 44 seconds

Format: Zoom Meeting

Interviewee description: Head of Publishing at a global game developer based in Los Angeles, USA

Start of the interview

[...]

Interviewee 17:

[...] So I think that's fundamentally the problem. happens, like when you have scale, are you realise that the platform, the trickle down benefits of working with a big platform slowly starts going down? Because the amount of merchandise and amount of marketing is a little limited, for example, for a smaller studio, I mean, like, the chances of you actually making it to the homepage, or getting one of the apps that are promoted is very less, right? for you is, um, like, every dollar matters, because that's what you are going to like, always say, to sustain yourself, right? Whereas for a bigger publisher, for us, I'm like, the reason why we want more revenues is because we want more profits. So in a way it is from a platform ownership perspective, it is a very difficult thing to balance for, right? Because there's only so much you can do. Right, either for a smaller developer or a bit complicated. And this is where I think this is a very good step from let's say, from the point that like, people like industries getting more aware that there needs to be much better understanding of how these platforms are doing business is because it is whether we might want to call it like hey, there's a Samsung store there was in Huawei store,



there's law, etc, etc. But the fact is that no, there's just two stores. Right? That is the reality. I mean, like now you might try to ask him, for example, like Google calls itself a digital marketing company. Right? They say like our ad revenues are 1% of the entire advertising industry. This is basically just to throw you off the smoke, right? But the fact remains that they are they own the platform, they will unlike any smartphone, whether it's Apple or Google that that is the reality. And so it's it's very good, that people are becoming more aware of what they stand for one of the things they do and why it's so important for us to understand like how are they being fed? Right? From the perspective what's the like it's to be fair to them it's not like they went on to become like, unfair, it's not like they are looking to like cannibalise the people who are on their platform it is just the way that like you are you are a platform where there are like 30 million apps so how do you how do you ensure that you are being fair to everyone right so this is a fundamental question so I'm just putting myself because on this just to say like there's not necessarily black and white part of this right from what I see from your research it definitely tries to address one problem is like how do we navigate around the fact that these guys are whether we like it or not other platforms where the whole business is conducted? And one of our he was whatever I signed that list it all points towards navigating towards let's say around the fact that these two are what you have to do business with you cannot escape without doing business with them. And that is the very fundamental question that we need to ask is basically like. First of all, we have to accept that there is no alternative right? And for me, I'm like, having tried out like so many different like, ways to navigate this like not going with a telco company for distribution, going. phone companies saying like not the take my app promoted going with like your publisher who has a bigger average, like 10 million users. Can you like across promo so we have tried everything? At least like I have tried everything when I wasn't before, right? The problem there is that like not there is the platform's are not mature enough. Anything you do is basically just say it's a side project. You wait for things to get

better in the main platform. This is why every method that is being tried out other than China, right, China is always such a story where it would not have Apple or Google, right? That's because it's so either you have these kind of closed gardens, where there's an entirely different ecosystem out there for these platforms. Or you just learn how to play with these guys. Right? Every other strategy will work to a point after which there is no optimization. Everything is just optimization. I believe you might do this and optimise keep on optimising, but after that stops. That's That's like my glass ceiling, you can you can see what's ahead of beyond that, but you can never crossed it. Right. And that is the problem with any other strategy. Because those are things which you are doing waiting for the time, it gets better on the main platform. And so this is what I think, what needs to be solved fundamentally, how can we work with these two platforms? and make it more fair? Will it be fair to everyone? Absolutely not? Will it be fair, fair? No, absolutely not. But there has to be a path. And this is where I think a lot of the things which people are doing in like silos make a lot of sense, for example, like, do you have a watchdog? No, I do have an industrial watchdog. Right? So somebody who is able to like, like, for example, like they need to work in different markets, right? They need to have follow regulations and rules of doing business in every country, right? And that's the reason why I was so excited when you mentioned that. Like, another goal of this is to basically to have, let's say, what are the How is the playground where we decided who or what, what are the rules of the playground, right? So every, let's say, if there's a possibility for every regulating body to come together and say, Okay, this is how we're going to let these two platforms playing within our agreed upon ecosystem, right? And this is where I think, is definitely will bring much more leverage and much more benefits rather than isolated insurance.

[...]

Interviewee 17:

The fundamental problem with let's say, publishing on other platforms is the majority of the platform, right? So you have to understand that when you launch on the front, on any platform, you have built the game for the platform, it is not just taking the APK. And putting it right. So every platform, they will say we will have these 15 set of API's that will do specific things, and you will have to give us a build that works, and works on all the phones. So basically, like you just every time you add a new story, we just replicate all your work. And it's not just that, you also have to tweak your economy to reflect the new platform, right. And the third thing is also the fact that every time you have a small update, you have to do it all over again, for the new game for the new platform as well. So for us, as of now, we don't see us getting much value from working with third App Store. The only thing that we will work with them is let's say we look at them as marketing partners. So a marketing slash publishing partner, so we don't look at them as this necessarily an app store. So we look at [game], and like, what are the things that is essential for your users, they want to see the game and they will be like to make a purchase using PTM on our games. That is the game that you are interested in me like having the game on your app store is just one way for people to start transacting on PTM. Right? So why don't we enable Patreon as one of the payment methods on our game, and you market the game? get people to like, download the gift from Apple or Google doesn't matter because at the end of the day, you are the ones who's going to promote, let's say the offer of like transit computing and you will probably get a cashback So this is the end goal for them. It's not about let's say, being a bigger App Store and Apple or Google, it's basically about like, Am I going to make money out of everybody who's downloading again? Yes, we can help you with that, right? And that's the fundamental way that we look at any kind of large platforms, what are they interested in? And what is their end goal? And if it does, then is there a synergy that we can work towards right without being on the app store, and just increasing our operational nightmare. And you

have to understand that we have to cater to tonnes of markets. Right? And every market is important for us and every market, we have localised the game. So it's a logistical nightmare for us to work with one more App Store. And that's the reason why we will fundamentally look at what is important from their aspect, why do they even have an app store? Right? It's not just like I said, not to just have a platform, it's for a specific goal. And we try to address is there a synergy that we can work towards without us being on that platform? Again, like I said, two years down the lane, things might be different, where we have achieved levels of efficiency in operations, and then we can see all right, let's look at a different experience, right? can we can we go back to Africa, for example, we know that there might be different opportunities for us in Africa, maybe working with a telco where we actually put it on the telcos vertical backbone, and we give up in the game with lots of different things for free for the user so that they can experience again, right. So those things I think will evolve for us right now is winning the non word like non developed and emerging markets, where the next wave of games or next wave of markets that are going to follow these emerging markets, we've been looking at it with a different strategy. In two years from now, the same goes for India as well, we will be very specific that we are going to work with Google and Apple as platforms. But for everybody else, maybe it is with jewel, maybe it is with let's say a PTM. Or maybe a Samsung, or any kind of platform, any kind of player will work with to see what kind of marketing and esport deals can we work with them. So let's like the objectives are met without us, like not increasing our operational load. So again, privileged developers, so we can talk like this, but I'm sure it's gonna be very different when it comes to a smaller developer, where for them, it is, hey, we need the rich we need, we need to be able to like because the demands are going to be like higher or like stronger than us. They are activists for our games. We can say no to them. But we can also give them something various for smaller developer, there is no leverage, right? They have to comply with the law, okay, with only we'll we'll give you 10 minutes of promotion as if you do these

15 things and put it up on our app store, which is not the case for us. We can pick and choose. And we definitely look at them as partners, but not necessarily as app stores where we have to reinvent the wheel that we already doing with Apple. That's pretty much.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 18

Date of the recording: 04.11.2020

Duration: 55 minutes 56 seconds

Format: Zoom Meeting

Interviewee description: Founder and CEO of a small mobile app developer based in Cincinnati, USA

Start of the interview

[...]

Interviewer:

Okay. And so coming to the [coalition], do you want to tell me why you basically why you joined? Or what were the motivations behind the hopes that you have behind your decision to take part in? Yeah, and that's Yeah.

Interviewee 18:

Yeah, yeah, I mean, I think the biggest things are the kind of same complaints that I just kind of gave to you like a ladder, the, they've like a list of 10 different ones that they're trying to push for reform on. And so those things spoke to us. And we've followed DHH and follow, like, I've seen Spotify, his battle and ethics battle. And so it's just like, there's a lot of those things resigned just kind of arbitrary stuff. So it's just like, Well, great. We could we could join something, it gives us more something for me to follow along and kind of see where things are going and potentially have a little influence on like, how do we do that? Because I know there's some there's definitely some extreme voices. In the in the crowd, I mean, DHH, and

stuff can be can be extreme at different times. But it's more like, there's definitely a worry of just how much monopoly monopolistic power monopolies manasse, whatever the other one is, power that that they have. That's definitely a concern.

Interviewer:

And so what kind of the more reasonable changes would you like to see implemented that, like the that are not maybe not too idealistic? or topic? What kind of, yeah,

Interviewee 18:

yeah, I would, I mean, it's like allow stripe as a payment processor, and allow choice. So it's like, wait, great, if, if Apple's in app purchases is as good and there is a, there's a really good case to say they have a great user experience, like people have Apple Pay, and it's like a streamlined thing. And if they made it really easy to integrate, there may be good reasons to do that. But I bet if they're competing against stripe, or others, in terms of that user experience flow, they wouldn't be charging the rates that they're charging, but because they can hold that, that kind of walled garden, they're able to command the premium or command the PD, Sam, they say they have retaliatory measures if you push up against that too much. So the biggest thing for us is just just the choice in that user experience. Like, I think that's reasonable. Like, I think like they're there for the services they're providing, like, it'd be also great if you could choose a different app store to say, Hey, this is a better distribution store. And we have to pay or we have to choose Yes, if they wanted to change the \$99 developer fee to a different fee, or, hey, this includes some other thing like, great, then if we had a choice to say, well, we want to do that, or we want to be able to reach people on the devices that they have like that, that's a big thing. So I think it's a choice is the big one, the big one for me. And definitely just, I mean, if we're running a business, like, the vast majority of our business is not related to the app

development portion of that. And so for somebody to just be able to say, hey, well, you need to use our software, you need to distribute here and to like, reach the people like to be able to give the experience that we want. So yeah, I mean, if if the Progressive Web Apps improve as well, and can we can do that, like, we're just trying to design the best user experience, so we can actually achieve our vision and mission of helping people have have a capsule wardrobe and live a better life and stop going into this kind of consumption kind of mindset, hopefully change the world for a little bit better place. So we'd love to be able to do that. And the more funds we have to do that, I think the more people we can reach and the more people can change. Yeah. And that's, that's probably the clearest most reasonable one is just I think some of the choice especially around the, what it feels like most of the stuff is weighted is on the payment processing or in app purchases, because that's where the fees are being charged. And all they're not doing that on advertising, doing that and other other ways to make money in there. So that's like, Great charged, it should be a cost the same thing, whether you're a free app, or we're using their in app purchases, and if they want to keep their in app purchases at 30% or 50%. Because that's the best experience. And we know that that's going to increase. There's good economic reasons to choose that. But I don't have that choice. It's it's a demand that's created.

Interviewer:

Have you ever like tried any other considered any other measures to kind of reduce the dependence on on the app store or?

Interviewee 18:

No, I mean, we haven't I mean, they I mean, you had some of the other ones listed and we went out on the spot to do legal action. I mean, we're under a million dollars on the App Store, like our chance of we'd be we just be run out of money as soon as possible when So yeah, I mean



that that fear retaliation is real. But it's so it's just trying to how can we ever move a lot of stuff as we're providing a service to? So yes, we have this technology, but like, we also have human stylists who are making sure what we're delivering. And so it's like it's, it's affecting that. So no, we don't we don't have any other strategies or techniques that we would do that. So it's like, it's just, I guess the other frustration I'm expressing is just like, we have other real costs. It's not a zero marginal cost. Isn't this for us? Every time we are providing a service, like we're cataloguing all of their clothes, yes, it's digital. But then we're like, putting some manual stuff to make sure all these things are working well. And then they're actually getting the service like we're a personal stylist effectively. And so that costs human dollars. And so to say it's a zero marginal cost thing. I'm not just selling ones and zeros. So it's, it's a hard thing to have that it's like, well, yeah, we could try to push to say, look, we could position ourselves to say, look how much more we look like, something that isn't digital. And it's this, like, won't you make exceptions for this category of stuff, but I don't think we're big enough to do that. Like, that's not the end goal. It's a good thing for us. But it's not a good, I think, a healthy ecosystem.

[...]

Interviewee 18:

yeah, yeah, I think the rules definitely have felt tighter. Apple seems more willing to reject apps more. So it seems like more rejections. So tighter things. And it seems the policies are changing more rapidly. So like the fundamental, like, underlying guidelines are changing or being created or re introduced too often. And then it's like, well, this thing happened. Or another good example is just like we had Facebook sign in, because a lot of people on Facebook, and so we implemented that. But then Apple's choosing, like Well, hey, last year, we launched Apple sign in. So by the end of this year, you have to implement it if you have any other social

login, like it's causing us development dollars development time, and like, Oh, well, there's different privacy settings, which I'm all for the privacy settings and stuff, but like, now we got to figure out how do we manage that relationship with that with that customer, but like, or we have to remove something else. And so it's just like, as they're developing new features, they're automatically or like, enforcing that. And so it's like, it's at the whim of What's the next iOS releases and what new things Oh, if you want to be if you want to have any chance of being an editor's choice, like, use the latest iOS features and have to be like ready to do that, like that's happening every year. And so that that's that change and then the that paired with some, there's some new features, they need to put guidelines for those new features. And then the grand forces mean features is the thing feeling that's like, hard for a publisher. But it's like, well, what if our business like we didn't want to change from five years ago, like, they will enforce it, like even if nothing has changed? Oh, you have to put one bug fix from a four year old app like, it may just need like your your off the App Store effectively, because you either keep what you have and keep the bug in there or basically go through the review process and have to completely update your app, which isn't always bad. But it's like the timeline is very quick, like you basically have to have, if they haven't big enough staff to support that. So they're affecting more costs without charging us like, like we're not getting their benefit. Like we'd have to do our developer time which engineers are pretty expensive, in addition to a platform fee, that they're charging.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 19

Date of the recording: 25.11.2020

Duration: 50 minutes 35 seconds

Format: Zoom Meeting

Interviewee description: Co-founder and CTO of a mobile app developer based in New York, USA

Start of the interview

[...]

Interviewer:

But production in terms of, for example, app developers banding together, first of all, I'm kind of astonished in a way that it took so long for, for example, something similar to the [coalition] to emerge, like a kind of advocacy group. And I'm wondering why there hasn't been this movement earlier? Is it because the app store has become its, it has become tighter and more restrictive and more exploratory? Or as it's always been like that. And it's just like the pressure has been mounting over the last years. And like recently was enough drops that made the whole thing that whole you. What's your take on that?

Interviewee 19:

I think there's a couple of things right. I think one is definitely fear of retribution, right? Like, people are afraid to even say anything bad, just like privately on Twitter, you know, like, I read this article A while back, and I keep getting DMS from people who are like, I'm afraid to say that Apple did this bad thing. I think that's finally changing. But I think fear of retribution is

the number one reason I think, I think there's other like more complicated like industry reasons to like, there's like this coalition of like, indie app developers who kind of forgive apple and are just like a little bit grumpy, who really make their living on the App Store. And then there's like, sort of midsize services which are really contingent on Apple's like goodwill and promotion, and really can't afford to make them angry. And then there are these like massive services were, any criticism of Apple kind of falls back on them, like Google can't really call Apple anti competitive, because then people are just gonna call them anti competitive. And so I think it's hard to find services that are in that sweet spot of like size, and weight and credibility, which is, I think, what we've seen with Spotify and epic that they're just like, and hey, right, like, where they just have like the right size and like the right flexibility to be able to take that risk. You know, when I worked at [company], like we definitely didn't have that like ability, you know, we were really frustrated. And, you know, and certainly [company] like, even joining the coalition was a discussion about like, oh, like, what if they start to, like, ding us in the app store, or slow down, or reviews or whatever, we would never even know it, we just like slowly, like, sabotage us. We thought it was worth the risk.

Interviewer:

And what does the for example the [coalition] protect its members and in a way of their guarantee of kind of support, legal support, whatever, there's

Interviewee 19:

I think it's definitely a PR move, right? I think especially because they're being criticised for being insensitive to COVID. And I think again, like, they know that as long as they keep these indie developers happy, like, they'll have like this kind of, like group of like supporters and advocates for them. And so they're just like, focused on that group. But I mean, uh, you know,

obviously, it still is a huge tax for all these big services, like, it still doesn't solve the problem of you can't sign up for Netflix, and you still can't buy Kindle books. And it, you know, and as I said, like, to me, especially, and I think, you know, even Tim Sweeney, or whatever it's like, it's not just about the cut, like to cut socks, but like, you can raise your price, whatever. It really is about the fact that you're forced to use this like clunky payment system, and give your users like a subpar experience, because you're attached to this bad payment system.

Interviewer:

So I hear you in terms of, for example, the payment system, and that should that should be a competition in that regards. But would there be a threshold in terms of the cut that's apalis is taking, at which point, you would also consider, for example, adding the option for your users to subscribe on the app directly or for in app purchases on the app directly? Or is that something that you would never consider?

Interviewee 19:

Well, we are adding it now because we have to in order Yeah, okay. But I don't think there is any payment level where it would be worth the engineering work to have a second payment system given that we need stripe to work on the web. And on Android, like why would we add the extra complexity, it's not obvious that the conversion to payment is like so much better. I think if there was data out there that like the conversion of the payment is better. And their take was more like 5% than if we had both of those things. We might be motivated to do it on our own. But we're, you know, anything more than that. It's really just about the pressure being applied to us that's pushing us.

[...]

Interviewee 19:

I don't know. I mean, I feel like they're the It feels like the world can adjust Apple getting its cut. I think there's a question about whether it's fair, or whatever. But, you know, I think development will get more efficient, and like balanced out the 30% cut, like, there'll be this downward pressure on the 15. Like, there'll be an apple based advertising model, I'm sure that doesn't deliver as much money but still delivers some money. I mean, I'm not that in tune with the gaming world. But like, I guess I feel like, the other interesting thing to me about gaming is that, I feel like there's more precedent for the platform taking money there, right? Like, like that kind of carries over from the console world. Even if you're in some third party store, like stadia, or whatever, like, you're still someone still getting a cut, like that's like, built into the world of games, I feel like a little more as that, like the distributor gets a cut of the money. And I think there's a little bit of a distinction between that and like services where you've actually brought your own audience to the table, you know, and like, why is this distributor taking a cut? But yeah, I don't know. It's, it's an interesting question, right. I mean, I think the most interesting thing, to me is almost this, this whole issue of people who are trying to provide sort of meta games, right, like these game stores, or streaming services are whatever how they're all being pushed to the web. And like, whether that Apple is able to continue to hold that line. That means for everybody, for the whole gaming system, if Apple has this dominant set of features on iOS compared everybody else,

[...]

End of the interview

## **TRANSCRIPT OF INTERVIEW 20**

Date of the recording: 27.11.2020

Duration: 55 minutes 47 seconds

Format: Zoom Meeting

Interviewee description: Country Manager India for a global mobile game developer based in Los Angeles, USA

Start of the interview

[...]

Interviewer:

And how are you planning to do it in terms of monetization with your wins the game that you're in the process of developing? Will you be reliant on subscriptions mainly? Or will you also have ads in their office, or loot boxes or whatever.

Interviewee 20:

for India, it would be a hybrid model, with ads, in app purchases and subscriptions. So really, it would be more of not forced ads rewarded video instals rewarded video ads, users would do it by themselves to on something more, that is what most developers do, and subscriptions for additional benefit. So game would essentially be free to play. So it's an actual word you would have, say 50% of the world available to play, but you do need in order to access the other areas, either you need to make an app purchase or unlock that area with gems are subscribed. If you are a subscriber, everything is available to you at no additional cost. But you have to figure out

the rice right price point for India. Because though recently Now, a lot of Gen Z are not averse to making an app purchases and subscriptions but pricing has to be right.

Interviewer:

And are you planning To publish your your app on other platforms, then Google Play and iOS, for example, I've heard for some mobile game developers that now of course, you have, for example, Amazon Marketplace, which is rather popular in Europe or the US, you have the Samsung App Store, of course, you've had. So I've heard of Snapchat, for example, doing Snapchat gaming now, and that is increasingly an option for game developers. So, did you consider also if you are doing a global app for Asia, for example, iOS or any other app store, so, what kind of

Interviewee 20:

plan is to build something that is cross platform, so, even we launch on the upcoming cloud gaming platforms like Project X cloud and PS now, so, so, maybe just to give you a context, now, Microsoft has tied up with reliance geo and on the internet company called geo Giga fibre. So what one of the big television network providers in India called hatheway. So, so, they are kind of reading the ecosystem for a launch where he said they want gaming to penetrate each and every Indian household through set of boxes. And when So, right now, from what I hear the internet speeds and also the data consumption is a big concern at this point of time, because PS now did some tests in India and apparently to stream or play something at a tentative IP or a full 4k quality, it consumes three GB of data is huge amount of data. So, in time after 5g or certain things, again, it would not be very it would compromise net neutrality. So arms that own the distribution platforms will subsidise it for their content distribution funnels. That would be bad for the ecosystem, but that is eventually bound to happen and we also intend to



go that route because then we would be entirely platform agnostic hardware agnostic because the other problems in India is the India is a mobile first country not a lot of handsets or high end handsets. So even if you if pub g had around their global player, user base 30% was in India and I was that person 70% of that were users of again a version of object called is pub g light that was a client especially developed for India for the low enhances because I intend to go forward with a similar strategy

[...]

Interviewee 20:

Yes, in a way, yes. So basically, most of hyper casual and casual games are dependent on ads, especially in India, and with idfa going away and platforms increasingly kind of being the watchdog as to which ads can be served and controlling the whole targeting retargeting metrics. Natalie, the monetization avenues will go down for developers, and a lot of small developers or indie developers would find it difficult to survive in the marketplace. Eventually it will become a case where who has more deep pockets and it will also lead to a lot of consolidation in the game. Game Development space where bigger players would kind of acquires more Other players and beef up there, because they eventually have the money to market UAE, which the smaller players would not be able to stay in. So, already started doing that with them acquiring peak games and rollick. But players will especially find it difficult to survive once the guidelines start or guidelines are tightened. But the hope is also there may be emergence of alternate app stores. But again, you need a big player who is transparent, who is willing to support the ecosystem, to be willing to take that risk and also pump in a lot of money to make sure that the stores are popular.

Interviewer:

And also what what I've heard from some game developers is that these trends that we just discussed in terms of monetization becoming harder and harder. So I totally agree with the fact that it will be especially difficult for hyper casual game. They are basically the interviewees we talked to, they said it will also force game developers to basically step step up and improve their their own game qualities to basically make it attractive for users to buy, for example, in app purchases, because in app purchases are highly dependent on the the investment, the investments you made in your game and the quality of your game. And that's something that you don't need to do with hyper casual. And that you will increasingly need to do when ads, for example, don't are not as relevant anymore. So basically step by step up the quality of your game, as you did use some highly valuable it. To do that. That's one way to kind of generate also the hype and attract users and pushes us to consume in your in your game economy. So basically, this aspect was also kind of mentioned as a big change that will need to happen for mobile game developers to stay successful. And yeah.

Interviewee 20:

And eventually, it will also drive up the price of gaming. So basically, if the developers have to spend more money to build a high quality game, it would eventually have to be passed on to the end consumer. So right now, we are seeing some of that in the console space, like the new big games that are going to be launched, they are planned to be retailed that \$70 instead of the standard \$60 price. That is, and again, only the big players can command that, not the smaller indie developers, they will be forced to price it even though if they've spent a lot of money at a smaller or a lesser retail price.

[...]

Interviewee 20:

Yeah, I think more offline models are unique, innovative models will have to be explored to bypass the platform. Though some apps, they have those PWA's. But again, at some point of time, Apple and Google will crack down on those that have that platform glad guidelines, which would be instructing to people that any purchases that happen should happen through a secure Apple or Google pay gateway. Right now some some apps like some of the travel apps like [app] or [app] that we use are essentially PWA's and we make payments through them through their own payment gateways, which essentially, are not linked to Google Play or Apple So people were, there would also be a lot of OEM opportunities for developers, especially for utility apps, where they could bypass the stores were in the, the version would be embedded part of would come pre installed on your device, and not part of the whole Google Play or Apple ecosystem. But with difficult with Android, it's easier.

Interviewer:

But do you see, for example, the Android so I agree that Apple is a lot more closed in terms of how the ecosystem works. And they're always that it seems like to me, and I don't know if you share that vision that Google is basically just a few years, a few years delay, but it's going exactly the same way that Apple is going by does that mean that Google Play, and Android are becoming more and more closed ecosystems and more and more restrictive in terms of what they can do. And that's why one of my big worries for all the real money gambling companies and as, for example, mobile Premier League, is that in some not too distant future, Google will start to restrict sideloading, for example, for these kind of apps that they consider being addictive or dangerous, or gambling, etc. And I don't know what do you think of that? Do you see it also coming in a few years ahead? Or do you think it's not possible for Google to actually go that far in terms of the risk in India,

Interviewee 20:

India, probably there will be some legislation or something that will be passed, because right now even there is a lobby of Indian entrepreneurs that are thinking of building their own app store. So PTM already has started their own app store. For them to go long way there, they need control over the device voice as well. Right now, they are trying to do it such a way that, okay, if you are publishing through the PTM store, you just need to pay a 15% cut. And if you are 15, or 3%, something like that. But if you use paid a wallets, you don't have to pay anything. So basically, they are also trying to promote their own product. And I also hear somewhere down the line by 2022. Google is also looking to open up Android platform as such, to enable alternative app stores to be a part of the ecosystem. But I don't know how successful players would be because it is something that is very creating an app store, aggregating content, acquiring users making it popular is a very capital intensive thing, which would take time and a lot of effort. Unlike how it's easy with Google pay, because now people are used to Google Play and it comes embedded with every Android device. So something similar has happened with UI right? Right now, whoever UI Google has decided that they will no longer support give Android updates to the UI devices. So they started to work on their own app store's but again, I don't know in India, but in China, it may be big, because the government there would be very supportive of them in a big way. Unless there are policy decisions taken by the government to protect our encourage innovation among the Indian ecosystem. The platform's will get away with

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 21

Date of the recording: 30.11.2020

Duration: 39 minutes 38 seconds

Format: Zoom Meeting

Interviewee description: Vice President Products at a global mobile game developer based in Mumbai, India

Start of the interview

[...]

Interviewee 21:

So in my previous position, I was in a political game. So we were we were we were pretty much the reverse. It was mostly admirable. So we that's one of the things that's one of the reasons why you won't see India developers too. You won't see them too tense if you know, 30%, cut doesn't drop. You won't see too much outrage happening from media because it is an ad driven business model, or majority of the model [company] is pretty much admirable. I don't, [company] is pretty much admirable. sideloading. We've tried a couple of times, I have personally tried a couple of times in other companies again. But it's very, very hard in India to convince people to sideload anything. That's even back in the Amazon Underground days, it was it was seriously hard to get people to this underground was something they ran out Amazon about six years ago, maybe, I don't know, I don't recall. So what that was was, I think Apple arcade. But we pay based on Amazon's platform. So you could download games, or premium games for free all in app purchases was zero, you could do whatever you wanted to. And developers got paid out by engagement. So even then getting people to download the

underground app, instal it and then, and then the rest of work, like the Play Store, just getting that one step done was difficult. Epic could get away with it, because, you know, they got Samsung to help them out. When they launched epic fortnight. On Android, they had Samsung do a lot of the heavy lifting for them, and saying, Hey, you know, help us sideload the game. So that worked. indie developers typically on most developers worldwide, I'm sure not the same problem. sideloading is an issue.

Interviewer:

Okay, okay. And how would you characterise your relationship with the apple and? And Google? Do you see it? Since most like all your traffic is coming from there these How do you have a positive perspective on the work they're doing? And the benefits that accrue for you to publish on these platforms? Are you as many other app developers that are like critical of the practices and have the platform fees that are sometimes considered too high? excetera? Where do you stand in that regard?

Interviewee 21:

So on the Google front is fairly warm, we have we share a fairly warm relation. And that's been my case, throughout my career, it's easier for me to talk to them because I also know that they don't. While they do have the largest store, I also know that I can also get better deals from pre installed stores, like for example, Xiaomi store that comes pre installed in Russia, I can work something out of them, I can work something out at Samsung, you know, so it's easier to sort of play hardball with Google, than with with Apple IDs, you just generally don't want to take them off. You generally don't want to piss them off you so it's slightly more of a distant relation, but it's also because of the fact that traffic from Apple is traditionally lower. So my sweet way more often to, for things like a featuring request, you know, I'd be more interested in getting a

game featured on Google than an apple games are famous for. They're working for us in India, games that are working for us. And in the West, I typically talk to my apple counterparts. My personal opinion on whether it's predatory? Of course it is I don't think there's I don't think anybody will disagree that is predatory. Yarn simply because the fact that, you know, there is an alternative, but that's kind of it. Whether or not it is whether or not they deserve it. Whether or not it is I don't really have an opinion there. Because I don't have numbers that other than just purely anecdotal evidence, there's nothing that suggests that it is worth it or not worth it. Because we don't have we can't go back in time and see if, if we had another alternative, how would it have worked out? We don't know, simply by and, you know, quoting Apple's 2 trillion market cap makes, makes no difference. Right now alphabets grown so as Apple hum, yeah, largely due to the place on the App Store. But we don't know how much so no point in the document that most of my colleagues also have a very, you know, kind of, I can't say that I know, anybody that would say that Apple is, has a very warm relationship with them. And I think that this is obvious in the minds of a lot of people that we don't want to get soft band. I've had three AP soft band. So soft band is a state of limbo, essentially, where Yeah, so what are the three were happened without, without us knowing. And one was done through pure malpractice. But then, you know, it just comes to a point where your app can no longer be discovered. And it doesn't acknowledge this. Apple doesn't even acknowledge that they have something that you know, we've just really termed the software. So the walled garden exists on both sides, you can actually look in and figure out what to do.

[...]

Interviewer:

What what kind of other best stores out there in India to publish as an alternative to Google Play?

Interviewee 21:

As an alternative Google Play? really speaking, there's none. Right? People still use, I'd say a vast majority of users tend to use Google Play. Right. And even if the phone doesn't come pretty much every device I can think of does come instal pre installed with Google Play alongside something else. So the Xiaomi phones in India have two stores. They've got the me store and the Play Store. So you know, the it isn't like, Okay, this doesn't exist. Only Tyson had that for a little while, where, you know, there's a different operating system. So we made no difference. But distinct. Second is the mystery of a distant second is the mystery. Then maybe the galaxy store, and even further third,

[...]

Interviewee 21:

And if you look at this sideloading right, if you look at if you look at Site loading, site loading is completely A lot of people will, you know, say that site loading is Safe and it's true sideloading is safe, as long as you know what you're sideloading, right? It's the same as running an XC on your computer, as long as you know that it's safe, you can download something of C net and run it and it's safe, you know that your antivirus will catch it. It's not. But goo nigs, you know, throws up these ominous messages saying that, oh, you might be installing a very, we're not going to be responsible, whatever state you do, right? And then it'll, it'll scare you with permissions, that makes a lot of people very risk averse. And they'll never sideload. And, and since Google really runs those messages, it's easier to get into people's heads.



[...]

Interviewer:

So CPIs, once IDFA really kicks in, are going to go down?

Interviewee 21:

Yes, but I don't think they're going to go down permanently. I think it's gonna be more of you, you'll see suddenly, this, it's up, it's gone up ever since idfa. went up, because everybody now is trying their last few campaigns, you know, where you can do hyper targeting to pretty much whatever you want. They're trying to run 10s of 1000s of campaigns, and I'm seeing that across the board, right, my CPAs for every product I look at has been going up. The only explanation is people are blowing money trying to run campaigns get as much data as they can, once the changes kick in, this is gonna happen, it's going to fall right off a cliff, overnight, CPA is going to flatline. But they will pick back up, you're not going to be able to hyper target, but people still have the money to spend advertisers will still have the money to spend, they'll still spend, you will still have brand campaigns happening, you will still have, you know, normal campaigns running all the time, it's just not going to be as effective CPAs will be lowered. But they're not going to be I don't know, five a half a cent. You know, like a lot of lot of people are predicting it's going to completely zero out the economy, it won't, it's just going to be lower. So you're gonna have to increase volumes, you're going to have to show more and do things like that. Now, over to offer walls offer walls have traditionally actually never worked outside of a very, very small scale. They're highly popular in some games, but a vast, vast majority of them don't use them because you need the volumes for her to even make sense. For it to be viable, then you need to find the right set of partners for you to offer. Those kinds of things. And that's also why you see you don't see way too many people, ad providers Providing offers

out of the box, there's only a couple you know, who really do that offer walls will get hit, they will get they'll get steamrolled. And there's really not much else to do. But that's been coming because you've you had, see, the big thing for offer walls was, you had no way to really try again, and be rewarded. Now Google and or Apple can very simply do that through the Play Store or App Store. Now, Google's already gone to try it now button, why not just allow start rewarding users to use the trademark feature. You know, that's really the replacement for the offer, will you and you discovered in the field, and the App Store is going to follow suit, iOS 14 already introduced those apps, which is essentially, you know, these instal web apps. So they'll they'll follow suit. That's why that's why now, I have switched to subscriptions. I think, to me, subscriptions is going to be the future. We've we've tried premium premium work for a very, very short amount of time, before FTP really came in. And people realise, hey, we can charge the same user over and over again. Now, that situation really deepened when we got into gotcha. But now with gotcha getting banned in two countries in the EU, I see that same thing that there's going to be this sort of domino effect, it's going to gotcha games are going to get blacklisted. And it's not just the loot boxes, entire games will start getting blacklisted. And not just one feature, it's no longer going to be just, you know, show your drop rates and you can get away with it, it's going to be you're gonna have to change your entire game. Because the entire game runs on this, like [game], for example. It's supposed to be a melee fighter, but nobody can deny that the matter is really just the gotcha. Pretty much all games coming out of Korea and China or data driven games, all of these games now start getting hit. So really, the only thing you can do at that point is if you can't monetize a small bunch of users very deeply, you've got to monetize a whole bunch of people very shallow. You do that through subscriptions. So you increase your ARPU, you increase your ARPU, but you Sorry, you reduce your ARPU heavily, but you increase your number of purchasing users. So it's like, reduce depth and increase breadth, that kind of thing. So I think that that's where the next real

step of evolution that will come in, that subscriptions will start taking over, you will see a lot of these large, large budget games, really working on subscriptions, and somebody has already started doing that, like Nintendo. You know, they put a \$5 sub on supermario on sorry, sukhmani. Ra. They have that in there Mario Kart games. So you can already see this sort of happening. It's more of how long is it going to take for the industry to really catch up. So you will have this the concept of whaling will go away. You know, infinite in app purchases infinite gotcha. All this goes out. I think that's that's where the next evolution is. So when we have a sub subscription model, not, not unlike anything else that you see, like Netflix, look at Hulu, Disney plus, everybody's doing the same thing.

Interviewer:

But would you agree with the fact that if mobile games or app developers in general, yeah, we'll have to switch to new revenue models?

Interviewee 21:

Yeah. Today by today's business models, I don't think anybody has the margins. Nobody has the margin. So we will to, you know, just a precedent, let's change this. It's going to it's there's going to be a lot of bloodshed, there's gonna be a lot of casualties. I seriously doubt anybody has that kind of nobody has a war chest. I don't think I can't think of any major. AV a couple of guys aside, you've probably talked to them already. They've known you, they have told you one way or the other. But other than maybe a couple of people, I can't think of very many, especially the sister studios, or you know, subsidiaries being able to make this kind of switch.

Interviewer:

Well, one, not one, for me intuitive answer or solution to what you just said, or the fact that more and more we'll have to switch to subscriptions is that it will automatically raise the bar in terms of what kind of quality do mobile game developers have to develop because you have to propose something for an in app purchases to be viable or subscription to be viable and that users will want a lot more than what they get today with ads sponsored games that are free to play, right?

Interviewee 21:

Correct. So you will see a huge rise in quality but you're also going to see you're also going to see complexity in gains reduce. We will also see that So a lot of games will typically onboard you very quickly. But then get more and more and more complicated. And, you know, casual games have five currencies these days. So when I say complexity, I don't, I don't necessarily mean mechanics of the game, but also how much how much information do you need to read it to really play the game, right. So a match three game, for example, with the key mechanic is simply the match be you having to retain and manage five different currencies. five sets are just a number, no game uses it, but just the fact that you need to have so many currencies, and you need to know manage each other, that complexity reduces, because the developers are now going to be focusing more on simply delivering the best experience they can, rather than trying to build this virtual economy to, you know, sort of incentivize people to buy stuff. So that's going to happen, you're going to have it This is, this will also mean that death of a whole bunch of the garbage games, garbage content that exists today, will reduce even further, because nobody's gonna want to pay money to even try it. Nobody's gonna even blow their free trials on on something that's not good. predatory pricing, I think will reduce, but I'm not 100% that predatory practices will go away, because there's always a way to do stuff. Nobody thought

that, you know, I apps could be predatory. But there you have it, you have an entire huge industry built on that. So right. So I don't know which way that's gonna go.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 22

Date of the recording: 02.12.2020

Duration: 27 minutes 07 seconds

Format: Zoom Meeting

Interviewee description: Co-founder and Chief Product Officer at a mid-sized (30 employees) mobile game developer based in Bangalore, India

Start of the interview

[...]

Interviewee 22:

or Apple wise, we are not having any issues as of now. But the Google we have some issues because we mainly publishing the kits. And initially, there was no interest when we started in 2017. But the last two years, we have seen issues related to that sexually. Because when kids types, there is a lot of restrictions. So what needs to be put Actually, we are using some of the third party plugins to or show the ads actually. And very recently, actually, you might be knowing that Google ads so restrictions are what some of the ad networks actually we should not use the ad networks actually. And what we are consistently seeing when we are when we are submitting the app updates, they're improving actually offer some days and find that some of the network is not compliant with the the kids app or the what they call it as family wavelength and they will either they will reject the update or they will remove that actually, that is the issues we are consistently seeing with the Google platform and it goes back and forth and finally they will either they will agree upon some condition therefore they will ask us to remove certain ad networks from our SDK. Or sorry, all right, take care and then they will

approve. Accepting. Amazon and Apple Wait, we don't have any issues. So Actually, Apple say we already taken care about that networks, actually. Because so they have a policy, which the app is taking out of the app. Suppose it sticking out of the app. There should be parental control those guidelines, we already following that.

Interviewer:

Okay. Okay. And do you understand Why? So that was a specific case around the parental control and absolutely hated for kids. But do you understand why, in general, there is kind of tensions between app developers and Google in India at the moment? And do you see the reasons why. And do you see it changing also in the future that Google will adapt to this tension and this backlash?

Interviewee 22:

Because I think right now they are doing a lot of the what to call it. So the app background checks in the automated maybe. Even sometimes, what we are seeing if it is some non improved ad network is available as a keyword or somebody that actually commented that will also get rejected nowadays, actually. But even after we have submitted with the proper food, they are approving, actually, I mean, there is some issues with automated activations of the approval process that is causing a lot of confusion between the tissues, we are seeing huge lead from last five to six months, actually. Okay, and when we are meeting with other rows, similar developers in our conferences, they're also seeing the same kind of issue. Yeah, and then what are the process when we are improving, everything will be okay. But after sometimes, once the upload, I mean, when cities in the store, they start reviewing, and they're rejecting the bills, actually, that is the main payment.

Interviewer:

Okay. Okay. And do you see any problems as well with the fact that it seems like Google is trying to tighten more and more the enforce the platform fees on Indian developers and that more and more of the revenues are subject to these fees? Do you see that as a problem as well for for the app developers?

Interviewee 22:

So actually, they're looking on quality? Actually, they don't want us not maintaining the quality they don't want they're injured in the process?

Interviewer:

And do you see the Indian government that they will intervene to, for example, require Google to have a more transparent app approval process or review process or to require Google to adapt its fees to the revenue of the app developers, etc, etc, this kind of antitrust legislation going to pass? And? No, I don't think so. That is, that is not happening. Okay. And let me go back to monetization, as you mentioned before. So for me, I'm rather pessimistic in that perspective that I share for all app developers in Europe and India. I see, for example, so Apple, enforcing new idsa rules in terms of ads. And I mean, Google will follow suit rapidly, apparently, in terms of adapting idsa as well. And that will reduce ad revenues a lot for app developers also offer wall restrictions, for example, that are being put in place by Apple. That's another way of monetizing that is kind of restricted. You have loot boxes, and so gotra in Europe and America that is becoming like getting forbidden by regulators. So that's another important monetization and revenue stream that is being cut. So what how do you see the future of monetization for example for you as that are really line to 80%. As you said on ads, do you see it impact you a



lot? Do you see a shift to more in app purchases and subscription? Or how do you expect it to be in the in the future?

Interviewee 22:

Yeah, actually, we are seeing a lot of restrictions actually putting the ads, especially on the fifth step, actually, when we are saying except from the overall for the favourite, except comes down to 30 to 40%. Actually, apart from that one, the another restriction, not using Google as putting like or not using certain networks, certified networks for the family friendly as it will even cut down on revenue. By our next strategy, we'll be moving towards a subscription based tax actually planning, all our future development is based on the subscription based on it. Okay,

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 23

Date of the recording: 05.12.2020

Duration: 42 minutes 38 seconds

Format: Zoom Meeting

Interviewee description: Co-founder and Game Director of a mid-sized (20 employees) mobile game developer based in Bangalore, India

Start of the interview

[...]

Interviewee 23:

Yeah, so it is definitely getting harder and harder for mobile developers to make money. The 30% fee is That part is already there. And, and the business model that we adopt, that has a, that has an upper ceiling. So the largest studios, they won't be able to be profitable while making paid games, only, only a very small percentage of people actually buy the games. Right? paid up front, most people would still prefer to play free to play games, games, which have IPS in them. And, yeah, that's where this seems to be going. We still had to work out how we are going to expand in the future. But we realised that ceiling for the date games will not allow us to expand. Or I should say it, you know, it won't allow us to make much bigger games than what you're making. The alternative for developers like us, is to get selected into the apple arcade programme. Which, which base, which removes all the risks from the developer upfront and then gives additional revenue sharing? So yeah, that's fair. I think it's going for developers like us. I I'm not sure what the free play guys and guys who rely more more on advertisements for be doing.

Interviewer:

Okay. So, coming back to I will ask you a question about Apple arcade in a moment. But why? What can justify the fact that you have a paid upfront scheme, because most hyper casual games wouldn't be able to have that no one would buy it. So you have basically made the conscious choice on focusing on high quality games that would warrant paying, for example, \$5 as an escape for for a bonfire, right, you focused specifically on making very high quality games, as opposed to, you know, hyper casual, more hyper casual kind of stuff. Is that is that correct?

Interviewee 23:

Yeah, yeah. So well, there are some things, we as gamers do not play hyper casual games. So we think that we won't be able to make good hyper casual games, the games that we make those other kind of games that we like to play, so we make them and we reduce our risk by, by by releasing it on different platforms, like iOS, Android PC. And we also try to get into consoles. And to make a proper free to play game, which is not hyper casual, but which has loot boxes and other IAP content like fortnight, that kind of stuff is a much bigger team than we have. We are a small five person studio so. So our business model works well for us by making a high quality game, which, which is kind of niche market, but it pays well for us.

Interviewer:

And so you mentioned that you are thinking about more going into the free to play route? What kind of changes would that require in terms of your games? Would you make it to more easily accessible? And would it reduce the overall quality of the game? And for more, let's say, for more casual feeling, or would you want to touch to the game mechanics and simply offer it for free? Do you know what I mean? When when the fact of being a free to play game and tailor changes to what the game is all about?

Interviewee 23:

Yes. So the thing is, we are not going into the free to play models, which is which depends on players buying loot boxes and IP skill sets as things we are going into the free to play model, which works like the shareware model, or how our game is working on Android right now, where people can download the game for free. And then, and then with a one time IP, they can purchase the game. We can also consider some other IPS which expand further scope. But yeah, so it will work similar to our premium games. And we will be able to continue making high quality games while still increasing the player base, you know, so that it's not just a risk for players who are going to buy a game and then if they don't like it, then just stuck with it.

Interviewer:

Okay, so so basically what you implemented on Android now I understand it's like a trial period and then if we reduce feature And if the people like it, they can buy it as one time in app purchase and unlock the full game.

Interviewee 23:

Yes, people can play it for a limited time. And if they want to continue playing, they have to buy the full game.

Interviewer:

Okay, okay. Okay, now I understand, okay. Okay. And that has proven to be very effective in terms of a means to monetize, as opposed to having the app where you have to pay upfront, otherwise, you can't access it. So I've been having this trial period has increased your revenues, let's say,

Interviewee 23:

yes, it has exceeded our expectations on Android. There have been some challenges regarding player reviews. But I think the pros outweigh the cons. And we will be going forward with this model in the future. We've seen some other games successfully implementing this insight on the iOS as well. So yeah, they'll probably be doing this in the future.

[...]

Interviewer:

Okay, and so can you share me with a bit more detail with the reasons exactly for you that it's so attractive to, to be on Apple arcade?

Interviewee 23:

Yeah. So the, the way our premium model works is that, you know, we put all our money and then the game releases. And based on how the game is featured on the App Store, it makes money or it does not make money. We don't know until the day the game is released. And this time, and Apple keeps changing the the stop is layout right? Recently, I mean, last year, the last two years ago, they introduced this game of the day section. And this year, they have moved the new games we love which used to be on the top of the of the game section too much below now. So you people have to scroll much down to see the new games. And with that small change, the views that a new game gets is much lower now compared to how it was before. And there is also increased competition from other games. So overall, the market for premium games is getting more and more difficult. The way Apple arcade works is that Apple will pay you the development cost all upfront. And then they have a pool of money, which is split among all the developers every year based on their own metrics, like player retention or average

playtime, or Well, we don't know for sure for the matrix but something like this. Okay, so And yeah, so yeah, yeah. I think that at allocate reduces, removes the cost removes the risk completely from developing again. It also is very profitable for the people who managed to get on it.

[...]

Interviewer:

So you said that all your games, you also publish them on Steam? Is that correct? And how was your experiences with steam and PC? Is it as competitive and difficult as the App Store and Google Play? Or do you find the terms there to be better and the users to be more willing to spend the money?

Interviewee 23:

Yeah. So on Steam, people are willing to pay a lot more money for a video game. The game which is \$5 on App Store can release for \$10 on Steam. Now, however, it is a much smaller market. Still, even though we price against double of is it, it still around 15% of our revenue of the of all the platforms. So steam is still much smaller. However, we are still trying to grow it. And it has been growing from our previous games. For now, I mean, with every game we released, increasing our revenue from Steam. Because we are also focused on making bigger and bigger titles. So initially, when we started, we're making much smaller games. And those are not so popular on screen. And now with [game], it is a bit more hardcore. So it's, it's able to get a bit more, more traction on Steam. One more thing is that Apple has all these Developer Relations team, Apple and Android both. So be able to talk with them, show them our game and convince them that it's good. And it should be put on the front page. But steam does not

have any such thing. So we just have to rely on the new and trending section, which is at the very bottom of the Steam Store page. So you know, if a game appears there, then the steam algorithm may select it to feature to get to feature to more and more users. So yeah, it's all algorithm based on Steam, so it's much more difficult.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 24

Date of the recording: 07.12.2020

Duration: 41 minutes 59 seconds

Format: Zoom Meeting

Interviewee description: Head of a mobile game accelerator program at a global internet company based in Mountain View, USA

Start of the interview

[...]

Interviewer:

Well, why did you restart your company and, and basically focused on only one app store.

Interviewee 24:

So it's better to be focused on solving one client issue for one kind of audience or to be very narrowed down in what kind of gamer segment you want to target then just to be extremely broad. Otherwise, it's very hard to like, it's hard to get everyone like your product, it's easier to like get a niche like your product.

Interviewer:

Okay. And for that new game, What's what's kind of a business model you will rely on to monetize that game?

Interviewee 24:



So as you clearly said that, there is a lot of problems. When you publish an app we have, we have an in a body call in app purchase and a subscription model. Plus at the same time, what we are trying to do is do a direct promotion with all these Indian companies like [company], which is a clothing company, Flipkart, or Amazon and showcasing their product as product placement. So what happens in influenza is sometimes when you go in the cooking section of the game, where you can upload a food image, you have to first cook the food. So you can have Pepsi and Coca Cola also as a drink it besides which can be used for product placement, or even influenza, you have to travel to a different destination. So you can either go with Emirates or USA airlines and some other airlines, you can do all kinds of product placement, so that we get a direct revenue with all these companies. So this is one strategy that we use is like in direct product placement and branding of different companies. In our clothing games, we have like different brands partner, like [company], and money. And all these guys, this is something which even [company] did, which is a company by [company], they did quite a good product placement. So they have a 40% revenue stream from all these product creation because they don't have slashed down cut rate of what do you call in app purchases and ad revenue?

[...]

Interviewee 24:

Yeah. So this is how the different kinds of strategies which we are thinking of running. And not only we are using, like the rewarded classical ads from all these guys unity and AdMob. And doing the, these are the three different things which we have come up with. This is a feed ad. So Instagram has a feed. It's like how Facebook works. And in that feed, you can display an ad. And we have all these kinds of different product placements inside again, helps us get a better revenue stream, if the game has a good number of downloads. So as you might be aware, like, India is a country, which is not so strong in revenue for mobile games, but it's very strong

in the number of users, which you can get like, you can get 100,000 users or 100 million users, which much less cost to user acquisition, which you have to spend in any developed country. Our strategy is to have our own product placement and branding, and feedback.

Interviewer:

Okay, and the ones that are on the left, for example, this kind of premium accounts or in app purchases, that's something you are considering, or was this only an option that you are disregarding, let's say, or will that be included in your business model?

Interviewee 24:

This will be included. But again, so our focus is our our hunch is that our primary revenue stream will be these two, okay, more than okay, because there's a lot of cuts, which happen when you get the money from, like, Google or any other ag services. aggregations. So okay. Yeah.

Interviewer:

Okay. Understood. That makes sense. I mean, that's how basically how Instagram and other social media apps are monetizing, right? Through product placement, and advertising, etc. So it makes sense for a game like yours to do exactly, basically.

Interviewee 24:

Yeah. So we can get the kind of business which these guys get without actually losing out on it. Good. Like saying something anything could be said. And it's not very hard to have a product placement system inside an application. Okay, cool.

Interviewer:

So you said you're mainly aiming for an international public instead of just an Indian one does it make? What kind of difference does it make in terms of your game? development?

Interviewee 24:

So firstly, like, when it's a social media game, and I am moderating most of the content, then I have to be careful on what kind of like say, if I'm making a food game, then I have to be careful. What are the different cuisines with going Mexico, Brazil, us, I can't just be thinking about the cuisine, which is in my country. And apart from that, after see how people type and text in generally, like, there is a lot of content designing, which goes into this place, rather than game development here, I need to see how a person in US types or in Mexico type, even if it's an English, what, what are the ways? How do we communicate with each other to give it more of a personalised feel for a user. So we are heavily on localization, not on the App Store, friend, that's very easy, because of Google, but more towards how to ingame localise so that we can actually connect with the user and make them feel it's really somebody, even if it's a bot, commenting, it makes them feel okay, this is like, such a cool command. This is like he's talking like how I talk with other people. So to give them a sense of Connect, because if that is not there, in the go game, it will just feel like a very plasticky kind of game, which is just there for the namesake of it doesn't feel like real interactions on their real interaction. But there is a mix of real and bot based interaction to give validation feel.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 25

Date of the recording: 10.12.2020

Duration: 34 minutes 08 seconds

Format: Zoom Meeting

Interviewee description: Founder and Director of a mid-sized (50 employees) mobile app developer based in San Francisco, USA

Start of the interview

[...]

Interviewer:

and so to come back to the [coalition]. What kind of hopes? do you have? You won't be able to achieve through that vehicle? Or are you? Or are you rather pessimistic and think that only new antitrust regulation will actually change something?

Interviewee 25:

No, I mean, it just turns up the heat and the noise. And so there is antitrust regulation, that tends to be somewhat of a blunt instrument. But I'm an ex regulator myself, I'm ex fed. And so, you know, good rules makes for good competition. So not all the rules have to come out of antitrust legislation, there can be just legislation on anti competitive or unfair practices. And so that doesn't have to be anti competitive, to be problematic, and to be regulated. There's just issues around just privacy and like, do users control their own data? Like, under like, kind of European GDPR? I'm like, dude, you know, it's a perspective that says, Look, if you think privacy is a human, right, why is Apple telling me what I can and can't do with tracking my own location

data on my phone? Why do they get to have a say about that? Well, you can say, well, they're worried about my battery life, I'm like, screw it, I'll plug in my battery and charge it, don't tell me I can't like, track my location, for like, risk or whatever purposes I want to do. Like, it could be like, I want to know where my dog is, or my kids are like, like, you don't get to tell me how I get to use my data. Right. And so having other coalition partners that are having similar problems, I mean, like, our voice can collectively be heard. And there needs to be a reasoned alternative to just like the status quo. Now, I mean, we personally are not big fans of ads. So we do think that people should pay for content pay for us. And we believe that that should be done with micro payments, and so or so we're super pro micro payments. It's just that Apple and Google thought they were the only game in town for being able to efficiently collect micropayments Well, guess what? There's a crypto industry, they're side chains. There's other ways there's tokens. And so we, we, it's a Tony Soprano world, we don't have to pay off Tony Soprano to like, you know, to be operated, like whatever we got to pay to be on their platform. So if there's a platform access fee, that's fine. But you know what we do between our users on the platform That doesn't actually require their payment rails, we don't see the meaning like we don't, it's not a protection racket, we shouldn't have to pay them for something that we don't use. I mean, the thing that got Microsoft into trouble was when they were forcing PC makers to pay a licencing fee. for personal computers they sold that didn't even have a Windows operating system on it, they said, Look, you got to pay, you got to pay us even if you don't use us. And you know, that's what Finally, you know, brought the hammer down. And, you know, Apple and Google are essentially positioning to do the same thing. They're saying, if you do this kind of activity, even if you don't use us, you better use us, or we're going to kick you out of the App Store. So we're perfectly okay with people moving from, you know, from ads, or so it's basically just what we call it brave. We call it the basic attention token, people are paying for what they're viewing or doing. And it might be very small, might be \$5 a month spread over

everything you do. But that's between the user and the applications that they're working with that that is not to that extent, iOS, and Android are just dumb pipes to us. And you know, they don't get to see the packets of what we're doing. You know, it's like a net neutrality issue, you don't get to charge at all, because you know what's in those packets, simply because you're carrying those packets, he charges for the packets. You know, we pay for bandwidth, we pay for storage, we paid maybe an access platform fee for you to review our app to make sure it's not malware, we'll pay for what we use. But we don't want to pay for what we don't use.

[...]

End of the interview

## **TRANSCRIPT OF INTERVIEW 26**

Date of the recording: 11.12.2020

Duration: 55 minutes 11 seconds

Format: Zoom Meeting

Interviewee description: Founder and Creative Director of a small (10 employees) mobile game developer based in New Delhi, India

Start of the interview

[...]

Interviewer:

Okay, so you mentioned the business model that will would have been my next question. So you already touched upon it, saying that you focus on high quality games that rely on on upfront payment, let's say. So that's definitely your the strategy you are doing so no ad, are you also having a subscription models or in app purchases or something like that?

Interviewee 26:

No, nothing like that we believe in the reason we believe in the best premium model is because we we like to create experiences, and we want person, like every player to go through the experience, like we, you know, intended it to be. So making it free to play and making it you know, gated with ads and subscriptions, only make sure that you know, not everyone enjoy the experience like it's meant to be. So we believe in you know, just asking for a payment upfront, and then the person is, you know, free to enjoy the game as per their own well.

[...]

Interviewer:

And so if you would compare your experiences with publishing on the App Store, like the regular mobile publishing process, or Android, the Google Play, when you compare that to your experience with the apple arcade, so you will stick to Apple arcade in the future aiming for developing more games for that platform, because you see it as an advantage or something more convenient. In terms of for you, as a game developer, as opposed to the mobile, classical mobile publishing routes, let's say?

Interviewee 26:

Absolutely. I mean, if you look at it, it's, it's, I'd say it's, it's a better improvement for the premium model. And since we are, you know, we believe in the premium model, I'd say Apple arcade is even a better model than the premium model. Because one, the consumer doesn't have to think about spending money on one game. Since he's paying a monthly fee, and he's getting what 150 games in return, and the library keeps growing. I think the kind of consumer the service attracts are some people who really want and really believe in trying out new things, and they don't care about if it's something they've played it before or not. So in that sense, the whole model works wonders for developers like us, who are, you know, who are interested in redefining the medium and don't really want to clone games or clone what the industry is playing?

[...]



Interviewer:

Okay. And so I reckon from from what you said that you strongly focused on on Apple because it fitted kind of your approach to having premium games that require upfront payments. And that's where the quality is to be found on the apple and iOS system. Are you worried about your dependency on iOS? And the fact that if for whatever reason, your relationship with Apple is our? Yeah, okay.

Interviewee 26:

That's that's the point, right? The the problem with being dependent on just one platform is like, what if one day they radically change their policies like they did with the, the whole ad model, right? They they just decided to shut down the whole identifier, Edward, Edward advertising identify things, right? What if they do the same things to a premium model in future? And what if the next game we make is something Apple isn't really interested in? Right, and we've been fostering this relationship for the last seven years. So it doesn't really leave us a lot of room to go to the next owner with just say, Google because you know, I mean, if I've been loyal to Apple for the last seven years, Google won't really welcome with me with open arms. If I tell them that, hey, Apple just rejected us. And would you like, would you be interested in our next game now? So definitely, there's always those sorts of problems. But I mean, if you think about the kind of premium platform stores you have on mobile space, you really don't have a lot of options now.

Interviewer:

And so I, what kind of measures Did you thought about in terms of reducing your dependency? What would be your options, let's say So you mentioned eventually looking at Android and developing games, for for this platform as well.

Interviewee 26:

I would probably like we are already thinking about putting our eggs in, you know, different baskets. So we think Nintendo Switch is another platform where there's, you know, definitely a room for, you know, the kind of games we make, and the kind of business model we follow. And so apart from Apple, of course, we did this game with arcade, but for the future games, we are, in a way, designing them to be adaptable to at least, Nintendo Switch. And making it adaptable to PC is not that hard. But then again, on PC, there's even lesser room for exposure than it is on you know, iOS, but yeah, different platforms are one option, we think is viable.

[...]

Interviewee 26:

I mean, I'd say the whole Free to Play model isn't going anywhere. I mean, if you think about it, Apple also generates almost 95% of their revenues from Free to Play Games, right? So I think it'd be foolish of them to actually ended one day because premium, despite being the whole supportive of all the quality stuff being done, but then again, premium is still not as big as a free to play model. And Apple, I mean, Apple knows that the free to play game, and, you know, the kind of perks you get with it. In terms of ads, I think the I mean, the industry has already found a way to go around the whole idea of a thing. I mean, it doesn't kill the whole ad model, it just, you know, I'd say, it reduces the revenue model to a bet. But then again, the industry is full of smart people. And they've always found a way around, you know, Apple's weird policies and changes in the business model. And if you follow the current, hyper casual boom, and how the hyper casual journal is really aggressive about, you know, bombarding the consumers with ads and offering, you know, I'd say mediocre in app purchases, I think that side of the industry will probably evolve into using, you know, ads and in app purchases more

conveniently. But even developers have to realise that just you know, aggressively bombarding consumers with ads will not go a long way, right? They're more annoying than they are, you know, pleasant. So, people, especially in India, if you look at India, for like two years ago, people thought that the only way to monetize Indian consumer is by showing them ads. And when pub G and fortnight entered, they just changed the game. And you saw consumers in India spending money on in app purchases. And that proved the point that no matter what the region is, if you made something, you know, enjoyable and worthy of a purchase, then even people in India or people in Brazil would probably go for it. So definitely, ads aren't going anywhere. But more and more consumers have now started paying attention to you know, the actual game, and how to make the in app purchases more worthy to a consumer.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 27

Date of the recording: 14.12.2020

Duration: 35 minutes 05 seconds

Format: Zoom Meeting

Interviewee description: Head of Game Development at a global mobile game publisher based in Sydney, AU

Start of the interview

[...]

Interviewee 27:

Yeah, so that's only because of the content of the game. And because my game is more of a casual puzzler with some good in depth narrative in it. And there's not a lot of kind of, what do you say that something that can be replayable and something that can keep on adding the value? It's a fixed content that you it's a fixed experience that the player can go through and that's it like, I don't have my game does not have a lot of scope for purchases or additional value elements like that. Okay, okay, I'll select the type of gameplay it is. It's a it's an emotional narrative puzzler. Right. So I cannot have things like skins or cosmetics and stuff like that or upgrades at all. Like there's no place in my game for this kind of stuff.

[...]

Interviewer:

And what kind of so you, you mentioned that in my shadow, you want to publish it on the mobile and on video game consoles like Xbox and PlayStation as well in the future? What kind of advice would that require? For your game and your business model eventually?

Interviewee 27:

Yeah, so like, if we talk about the project itself, the project itself won't require a lot of adaptations, because the content will remain the same, it's just gonna be some of the changes for the UX, and some of the code changes, that's it. But if we talk about monetization, and like the platform specific things, so on mobile, the experience will remain the same, it's just gonna be technical changes, like UX, or some design and optimization, but the experience is just gonna be the same, but the price will be lower. Because obviously, like, mobiles, people, people would just don't want to spend that much, the price going up is gonna be a little lower, and the quality might be lower, depending on the like, it definitely would be lowered, because obviously, they did not have that same hardware kind of power to run the same game. So but then, to be platform specific on iOS, it's gonna be a paid game, just like steam with just the price a little lower. On Android, it's gonna be a huge change, because Android is not a platform where people like to pay. It's gonna be a free game with, like, suppose I have four rooms in my game, right? So it's going to be a free game in which the first room will be playable. And once you play that, you can, that game will be over, that demo will be over. And you will have to do a one time purchase in the app to to be able to lock that full game. So that's going to be changed. And like, we might like, it's not 100% confirm thing. But we might add features to the in the game that will allow us to show ads, a little bit of ads in the game without changing the experience of the game itself. So that might be there for Android. But for other all the other platforms, like all the consoles, which PS or Xbox, anything, the experience is going to be just as just as same as steam.

[...]

Interviewer:

Okay. Okay. And so if you think about the options or strategies that mobile game developers have: how do you actually, for example, are planning to maximise your value capture on these platforms and reduce dependents? Yeah, well, have you thought about it before?

Interviewee 27:

Yeah, so like, one of the most common strategies is like having it on multiple platforms, right? So that you reduce our dependency on one platform. So that is there. One of the things that weren't mentioned there About the Can you can you open that side? Yes. I feel like this is one of the strategies that developers use to, I wouldn't say to maximise, but it's like to get a good deal out of their kind of relationship with a platform is trying to try to get an exclusive way to deal with one particular popular platform. It's not even a popular platform, try to get get an exclusivity deal with any platform. Because whenever you're exclusive in a platform, then that particular platform will always favour you. And it will always help you to get to get your games, good number of downloads, no, that's a pretty good thing, good strategy, if you don't want to kind of be bothered about publishing our game on a lot of platforms, and doing handling tonnes of strategies for all platforms individually. And separately, you can just try to focus on one platform, and try to get an exclusivity deal for them so that even that platform is easy. Like it's a win-win for us and for the platform, as well, because they want our game and they want it to be exclusive. And we want, we want everything to be simple and favourable to us. So if we get an exclusive deal, they'll get the game, and we'll we'll be getting all the efforts from them will be getting all the help from them. And also be assured that we don't have to worry

about it, right? It's gonna do well, because they are promoting it. That can be one of the strategies. Other than that, I feel like you said that considering alternative platforms is what I am doing right now. And create an alternative, also create an alternative platform is definitely out of the question that most of the people won't even think of doing unless they are they have any immensely popular game like MPL in India, and identify and discredit discrimination. And

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 28

Date of the recording: 16.12.2020

Duration: 46 minutes 47 seconds

Format: Zoom Meeting

Interviewee description: Head of Gaming at small (20 employees) mobile game developer based in Bangalore, India

Start of the interview

[...]

Interviewee 28:

They are see when what we think like if if we are into the with this online business, there will be a lot of rules and regulation, which as of now our country doesn't have or it is started being implemented, we need to figure out a way around. Same goes with Apple and placed pal in Google, Google place toasts there also we need to figure out how the things will monetize how, how other things will pan into the picture. But will as of now what we see in India is there is more of a ad revenue than the in app purchases. So like if if you ask me personally for the game, [game], I would like as of now in our game, there is no in app purchases, there are only there's only add like we are monetizing only through ads. So why we did this is just because, like, we know that the Indian audience doesn't tend to pay we know the behaviours of Indian audience. So getting them to pay is a little bit difficult. But when we, when we work with real money platforms, all of these problem doesn't come because either there we have a revenue deal with them or, or we have a problem like before the project goes live, we have our money, whatever, whatever has been committed to us. But we need to see how well we can monetize.



But for the next IP what we are planning it will be an exclusive premium premium game. So that time that time this things might change like that time the person's perception can change. Because as of now we are directly focused on the indirect money I would say rather than direct money from this from the relevant app stores. But that time now what what we are working on the next project, which is which is little bit on the preview, like on the indie side of the game, not in the commercial side of the game. So that that time we need to see how these platforms create behaves with us, like how, how the like, do they ask us to remove certain things? Or do they ask us to remove certain features, but nowadays, they're like there is like a lot of alternate technology I would say there was a company called [company]. These guys these guys are coming up with their own method of loot cards, like regulatory method of loot, loot cards or loot cases or so we even spoke to them and found out like these things is there which can be monetized but we need to see what what should best for our particular game or the particular business.

Interviewer:

And what was the reason behind the switch that the fact that for the next games you will focus on more premium kind of game content and quality? What was the reasoning behind it for you guys?

Interviewee 28:

Yeah, first of all, like we we like as of now we have 32 games in our portfolio, which is like very small, small game. And now we put like, we need to do something of our own taste and our own flavour. That's why first that is the priority. So we are moving towards that and now Now we need to see like, we'll be taking almost a year, almost a year's time now, to build this game, but to but to feel ourselves we will be needing some some resources or some resources

in terms of monetary benefits. So what we thought was it's better to go premium rather than doing a freemium game where we need and freemium games need a lot of efforts even after releasing of the game we need to have constant update we need to have constantly monitor the platform monitor the game monitor this monitor how user behaviour is and based on that we takes a decision we take make decisions so doing all of those things as of now what we figured out is a little difficult so it's better like we go for the more friendly because then then we know we get we'll we'll we'll get some amount of money. But here, if we go into ad revenue until unless the game is not live, you don't have the enough number of user you don't tend to make revenue out of it. So that was the main reason why we have shifting towards the premium model. Okay, and the like that, like we need to go premium. Okay. Yeah, the game is like that, yeah, the game is like that, that we need to go premium because we feel that premium would give give the game more value than the premium exhaust premium.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 29

Date of the recording: 21.12.2020

Duration: 42 minutes 29 seconds

Format: Zoom Meeting

Interviewee description: Head of Revenue & Distribution at a global mobile game developer based in Mumbai, India

Start of the interview

[...]

Interviewer:

Okay, cool. And then, in terms of your mobile games, what kind of monetization scheme do you use? Is it mainly ad based or subscription based in app purchases? What what's your revenue streams there for your for your games.

Interviewee 29:

So we are an ad revenue driven company. Most of our games have both ad, in app ads, and in app purchases. We don't follow a subscription rule yet. Maybe we like do some experiments around it. But that's I'm not really anticipating anything to come out of it, even if we experimented. Not not anything significant, at least. So we are an ad driven company, most of the revenue that we own comes through ads, the games that we make, are kind of made with with that in mind. And when we kind of give players the opportunity to enjoy the game, and still make money ourselves versus kind of have a lot of barriers that can only be crossed by paying money.

[...]

Interviewer:

And since you are an ad-first monetization strategy, how do you think idfa will affect you the monetization of your games? An monetization more generally, do you have seen challenges, for example a loot box ban?

Interviewee 29:

So because we've been heavily dependent on ad revenue, we've we've not kind of faced an issue on this front yet, to be very honest. But it definitely, obviously, like loot boxes and stuff like that. I think it needs to be a little bit more regulated. Not from an app developer perspective, but more from a government perspective, because the government is most of the people who can kind of come in and say, Hey, this is not good. This is gambling. You can do this and you know, it's bad now. That's not the right approach to do it. I think it's something that that has existed for a very long time. And I'm sure that there are ways to kind of do it, I think maybe being most affected, who can use it, or, you know, segregating users that a lot of them kind of already see that, hey, we need to deal with this much to kind of play this game, or the chances of you winning XYZ is going to be this much, I think the focus should be more in terms of making, getting the publisher and the consumer to take a much more informed decision. to kind of help those businesses not get impacted as such. In terms of the platform itself, like I'm not really sure, like, what would be a good amount for most of them, like 5% 10% 20% 25% 50%, what do they think is going to be good, because at the end of the day, if you ask any business, they were always going to be unhappy when we were going to be in taxes. So for them, 0% is the most ideal for the platform, they actually seeing that, hey, I'm providing all the, you know, I'm providing a lot of other value out here. And I'm kind of giving a large consumer base that

I need to manage, there's a lot of overhead that they have to manage as well. And at the same time, I need to run it as a business, and I need to show some profit as well. But they also need to kind of figure out their own market dynamics in terms of being profitable as an as a business unit within the companies, right. So it's, it's something that I guess needs to be flexible. If I may say, again, going back to what I said earlier, right, that the more you grow, the less you have to kind of be back to the platform is an approach that I think everyone would like to take or be agreeable to, that if you hit this deal, then you will be less, if you will, if you're in this to, then you'll be moved to only because all of them want to keep more money with them when they start growing. And none of them are really they're not really that. Although when they're small, and it couldn't be like if you're going to be doing X amount of like \$1 million, and then up this year, you will be paying this much if you go to the people \$10 million of revenue in terms of in app purchases, you pay this much as a percentage, and so on so forth. And then it has a lot more clarity, but at the same time, then it also should also offer you a very clear guideline on why you're paying this much when you went this year, which I think a lot of people don't understand right now, I don't know, maybe even I don't know, what does that 30% really encapsulate in terms of cost for the App Store if they want to be really transparent.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 30

Date of the recording: 09.06.2021

Duration: 61 minutes 19 seconds

Format: Zoom Meeting

Interviewee description: Managing Director at a global mobile game publisher based in Mumbai, India

Start of the interview

[...]

Interviewee 30:

You know, we are the developers. Right? Okay. So basically we are developers, right? For us, the biggest challenge remains of discovery. Right? For my hand consumer perspective or customer is coming in today, and you have a platform. Right? And there are so many new players coming and new stuff coming in, or new competition, and how do I show my product? Right? So there is a very, very critical function that the company mentors that they helped us discover, right. It's like a match matchmaking, right? They will match us players, and that will come in. And the whole revenue model is how efficiently we could do this match matchmaking. There is a number or expected revenue that I can get from a user. Right? And that revenue, the cheapest I can get him is the touch the maths, maths is very simple. What is my cost of acquisition? What is my lifetime value, if I'm able to have the value higher than cost per acquisition, I'm homerun trial. So obviously, it has impacted us a lot. And it is like, we have to see how things shape up. So

[...]

Interviewer:

And so that that's a good point when you say exploring other opportunities so you said ad revenue what kind of other things did you thought of to try to monetize your apps?

Interviewee 30:

So one is we are definitely looking at ads, increasing the ad spaces and stuff like that rewarding people more so that they watch you know, you have rewarded ads, you have rewarded surveys we have been trying people can answer some surveys and get some you know, free goodies and which gives us revenue. We're also looking at some brand partnerships talking to you know, certain global brands and stuff like that which could intermediaries and directly where we could have a you know what's like the in game branding that you see movies or stuff like that collaboration, right, which could then generate users also and revenue, because we have to look at from the perspective of discovery, how does That app gets discovered, how do we get downloads? And then how do I monetize the users better? The primary to first impact comes as in terms of the quality of users that we can get.

Interviewer:

So that's a good point was the acquisition, basically user acquisition, and now we'll jump to basically IDFA. And that's the eventual consequence, or maybe before and just as a quick intro, how much of your revenue is actually dependent on iOS as opposed to Google? 50%. So 50% is 60%, the rest of the platforms basically, okay. And we'll start with customer acquisition, because I heard on a lot of a lot of app developers that basically said that, besides as revenue, ad revenue, and maybe even before ad revenue, the first impact they had was that their customer

acquisition campaigns was basically that's what the aspect that was most affected by the IDF, and not even the ad revenue, but basically how they acquire us, would you corroborate this?

Interviewee 30:

Yes, completely. So primarily, the cost of acquisition and the quality of acquisition, they are the two things that have been impacted for us as a developer, discovery, getting the user is the primary thing. And that is something that has been impacted and starting getting impacted.

Interviewer:

Right, and in which way positively, because the cost of displaying ads has been going down or negatively, because the quality of the target users such requires less,

Interviewee 30:

it's actually it's negative in both aspects. So what has happened is, Apple made an announcement, right, that they are coming up and going, right, and the dimension that happened, it kind of created all kinds of reactions, in terms of developers from a doomsday perspective, and to you know, it's okay, it's business, and we will adapt and we will grow, right. So it went from extremes. And what it meant is that the typically, if you would look at the cost of acquisitions for anyone, normally December would be an expensive month, that's the holiday season, that's the gifting season, there is a new iPhone in the market, right? And that's a time where the cost for the same user, let's say for spending \$1, you can expect and then 1.5 to \$2, the cost goes up just for a month. Right? That's been the trend. But what happened is this idea of it coming into bigger guys kind of took a strategy that let's spend a lot, right? If I want to get, you know, 20 million users in the next one year, why don't I spend that money today, and try and get that 20 million users in the first two months, three months, rather than spreading it



over. So the guys who had better money, and you will see, at least that's what we are tracking in our games and our competition, their ad spend, went up tremendously. So the number of users that they were onboarding increased drastically. Obviously, in the bidding system, if I have to ensure that more of my ad is shown to more of the people, I have to bid higher, right? So the revenue centre costs we saw, summer went up slightly as per December, January 1, two weeks, I saw the tip coming, which was again, natural. That happened every year. But then January and onwards, we saw everything going up to three to four times five times. The same user who could have come to us for \$2, a year was not costing us \$5 or \$6. Right? So these companies, what they did is that they just spent more money. Right? That's, that's our competitive analysis. That's right. And we had to look back because suddenly we are seeing from the same cohort for the same quality of user. Why is he costing me so expensive? Right? And the second trend that happened while they were trying to do it, typically, you look at the last window, right? You say, Okay, I've got a user and I expect this money to be recouped within three months, four months, six months, right. So depending on the various game genre, will expect that the money gets back to you in 60 days, 120 days 180. And what we are seeing now and that's what the UI consultants and all the performance marketing and Facebook and Google said you know double your last window. So expect to get if you are expecting earlier in 60 days, we expect 120 days or 180 days. On a few days we can see 65 days window for you to collect the revenue back right So you said, How do I justify this revenue? How can suddenly the same user which is \$2 weakens \$5? And look at a loss to us window. Right? So it impacted us negatively because we as we are not as cash rich, or as this thing to take that kind of risk, or increase that window, right. So spending that money, we had to reduce our spends. Right. And obviously, you're getting and then so much of money is chasing the smaller set of people. Right? It does cause negative impact on getting low quality. So Facebook was the I would say biggest source of advertisement spends, right? And we would spend 80% of our money on

Facebook and 20% and everything else. But Facebook stopped performing that well, because the rates going up. And it's to ask them, what was the meaning of Apple to do it? I would say it was to say, why is Facebook make money out of their customers? Right? So Facebook posts trying to, you know, work on the algorithm, they're still trying to get it, it's not coming out that well for them. Right. And so that spends coming down. Right, so we have to move from Facebook to other platforms and spend and try. So if I look at the last two months, for example, of may and April, Facebook from being 80% 90% is now maybe 40% of our expense I can give in to have been forced to try other platforms try more getting mixed results, stuff like that. That's the impact back to austerity. Negative is both excellent.

[...]

Interviewee 30:

So, ad revenue was not impacted much. Okay. Primarily these because the inflation rate for stuff didn't come down, there was still nothing more advertisers in the market. And everyone was trying to cope up with that. In that six months, nine or seven months period, right. They announced it in August, September onwards. You know, July, August, they announced Yeah, so ad revenue, per se, has not deteriorated much. So it's CPM rates and stuff like that. Maybe, you know, but that's on a monthly basis yet, and there's a few percentage points. But our expectation is that going forward, now, maybe that will start coming down. So but we are not yet seeing a very drastic drop in. See, the thing is, if I'm willing to spend less money on user acquisition, right, that would have a direct correlation with how much as a supplier Am I getting right? If you are spending two rupees \$2 on an ad, right after margins as I would get only 1.5 right. So that is the not coming down. But I guess the May, data has to come in more. But that's

not been so much impacted. But we are expecting that we have been trying to actually add increased revenue, but we can put more ad spots, because we expect that to come down.

[...]

Interviewee 30:

Right. a caveat. Sorry to interrupt just a small caveat here. See, what happens is there are two broad category of games right? One is which is only making money on an appeasement, right. So they run campaigns, which are more of in the category of instal campaigns, right to those days, CPI is a very low and the simple, they just want installation. Right. And then we have category of games, which are more in app purchase focused, that free to play, right? We are in this category, we are in the category of this, we don't do much of pure installing, you know, campaigns, we do more campaigns that I want users to play, and to spend money, right, that classification makes it slightly more expensive for us. He did the so that when the update, when the ad rates came down, they impacted a lot of the benefited. A lot of the people who just ran instal campaigns was there was a drastic drop, there was not a very, very significant drop for us, because within few weeks, it was evident that the, you know, gaming content is going up blowing up, right, whether it was Netflix, or whether it was gaming, or whether it was, you know, people are at home, they have nothing else, but they will, you know, look at content. Right? So Ott is and as both the industry, that bifurcation came in, we didn't see accurate depth, so which did see better return I would send that period where the attention numbers, people playing longer the engagement numbers, those went up. So we kind of got slightly benefited because people coming and going, we could really, you know, certain points at which you would say there the use of friction, and that causes my I can't place an ad there. Because of the friction and I will lose and silo, we found that people were slightly more accepting of that.

Right? So because the sessions were longer instead of playing, you know, a person playing for five minutes and you know, in between meetings and taking a break, suddenly they were playing 10 minutes, 15 free minutes, right, that's 1520 minutes, allowed us to maybe serve them to more ads for three more ads, the percentage of ad revenue for us actually went up because of this COVID benefit of session time going about three to four times. Right. So that's how I would get one is that two people, two different things. We are not part of instal advertising predominant revenue base advertising was just a secondary base. Right. So for us primary focus, I want customer to play customer to like, engage not have any friction. Yeah, right. So

Interviewer:

and that's why you said you're considering actually or in the process of implementing more reward based ad impressions and stuff like that, because you feel as the sessions have increased, you can actually monetize more by introducing more of these ads. Okay. That's interesting. And so that's a interesting way in which your business model therefore changed through the COVID. Period. What kind of other new monetization measures do you have in mind given the COVID situation giving this new Apple update? What can you do you envision for the future in terms of for you will make money out of your your apps

Interviewee 30:

So we are we are estimating one is, you know, this is our belief, and I don't have much data to support it. But see, Apple strategy has been that they would look at what is working well, and then take it in house. This is a serious check to be complimentary. Whether it was health monitoring watches came in Apple was not the first one, somebody else didn't even notice everyone is wearing health watches. I don't I have watched that takes away the health monitoring. So all those apps started suffering, right? And complimentary, fulfil a very

important function, they are connecting the end customer to the developer. So while Apple might try to remove that compliment to the function is important, someone has to fulfil that function. Right? My bet is that Apple will start fulfilling that function. This was something that Apple did not have. They did have some ads and stuff like that. But it was lower. Right? It was not something which was, you know, very premium, you know, important for them, or revenue source for them and stuff like that. And they said, Oh, why is Facebook making money while other people making money from my users? That's the platform strategy, right? Our strategy boils down to the fact that I control the user, I am the gateway to my user. If I'm not ring fencing the user, right, there is no platform. Right? So they have ring fenced that user, they have used the ploy of privacy. And they have already announced and they're doing we will have recommended ads coming in, you know, there would be a place as implemented for you. So if there's an added benefit, we'll that means they know so we know what Sabine is liking, and what suite has done. Right. So I will spend that money to Apple. One is we are slowly we are seeing that. So now they have suddenly said I will give you yesterday last week, they went outside not last year, this week on the right there, the developer, they said I'm going to give you more pages to have more storefronts, less more creatives and run it and do it. Right. Again, they're increasing their AV testing capability, which did not have earlier. They're giving developers an AV testing and then Okay, how do I test how do I test all this? Where do I advertise that also come by them? They will say okay, here is my platform here is this thing that comes? Right. So that is one that we are seeing and hoping that could come in for because for us it's to spend money, we will have to spend money somewhere, right, this function cannot go away, suddenly, magically discovery cannot happen. I cannot expect no other means of discovery that we are working on that would come in Yes. That How do I move from, you know, being? You know, how can I broaden the user base, so more of instal campaigns, more of stuff like that, when I wouldn't have maybe more revenue sources in my game, where I can

make money from ads and surveys and stuff like that, or in game branding. And so that I can, you know, the effectiveness going down, right? If I was getting, for example, 100 good users from \$100, I might get, you know, 200 users or I will get 50 users either I make more money by those 50 users, right, which is more features more content, more avenues for them to burn money be there will be users who will not spend money, right? Because Finally, three to 5% of users only pay, right rest of them don't buy an indie just play the game for free. Right? Can I show them more ads? Can I show them more stuff? Right? So increasing my content, increasing revenue. They're also exploring certain online offline collaboration, stuff like that real world collaboration, which works for companies like ours in which we have let's say, game around food and stuff like that. Primarily, okay. Can I have a coffee chain team and where as a player you play something, you will get some currency then you can then go and redeem it at the coffee store. Right. And that's a bit and I'm hoping that they give us some money doing some kind of Balti. So those are an excellent entry stage. I don't have to we have done some PLCs here and there, that's looking good. But that's again an alternative source of revenue that could come in how can I get more real life businesses to you know, complimentary instrument which increases revenue source. Finally, being a data will allow us to lower because the effectiveness will go down, right, we are very clearly seeing that number of users are coming. When the cost is going up, the returns are not so good, right? So I have to monetize this set of users more, whoever is coming, help them, even if it's not forget, targeting a \$5. user, we spend, then we target a 50 cent user and acquire him for 30 cents so that I can make 20 cents. Here's a more broad basing. approach that will vary.

Interviewer:

Interesting, I really like the kind of off platform income generation, I've talked with a few app developers that, for example, are trying to push like eSports competition where they can

organise events and or sell merchandising by using the IP they created with the games and stuff like that. So they are becoming very creative to the end that was in link with the whole platform fees and the 30%. And as a way to generate revenue that is not subject to these fees. So that's a very interesting way to do it. And as I understand it, some, you know, there have been this talk of Apple actually pushing this privacy updates, not to not because they care about privacy in general, but because it touches much more of the revenue towards the streams where they can charge for the platform fees. So for example, it will push more to in app purchases and subscriptions and stuff like that as a way to monetize. And also, as you mentioned, Apple search ads. And it's a coincidence that in the same moment, they announced this privacy day, they are also announcing a new way to buy ads on the on the app store, you know. So basically a very self interested, move some, some say, and as far as I understand, indeed, you will be considering buying more of these apps, Apple search ads

Interviewee 30:

is another option. Yeah, he has an option, right. So when you have the fever, if I want you and you are ring fenced by them, how do I reach you? I will have to pay the toll. Right? Yeah, yeah, for that bridge, that toll is where it is. And to me very clearly, and in fact, in public forum and discussions and LinkedIn, are very clear that this is a ploy for them. If I am the owner, and that's very natural strategy, right? I have given a platform, I have got the user, if somebody else is making 3 billion out of a right, I can quickly close that door and start collecting toll and I will make \$3 billion, right. This is a classic, you know, reminds me how Warren Buffet always said investing in companies, right, which will have regular revenues, I need to have a tool I need to collect. All right, that's any revenue. And that's what Apple is doing. Right? Because they do have an ad network everything. This is a function that complimentary of providing, relying on data from the Apple App to this top stat. That's that pie. Yeah, the function somebody

has to do that function can't vanish, right? Discover. There is no other way that discovery will happen. Right? The world has been compromised, right? Anyone can develop a game and publish it. So it's not going to happen that suddenly, I hope it doesn't happen, that will be very sad for industry that, you know, studios closed down and only five games are coming in a month. Right, we'll go back to the older days of the consoles and all where, you know, a game will take years to develop and only big companies will come in so that you are user choice with left to play one of these five games, by an Atari by a Nintendo, whatever it is, that's not going to happen. The world is not going back to the developers will keep on developing, there will be hundreds of game being published on a daily basis. Right, some will work, some will not work. Discovery required, someone has to do that discovery, the function cannot go.

Interviewer:

I totally agree with that. And what another phenomenon that I've seen, kind of as a response to, to that is that you have big, big game studios. And I would say you are, in my opinion, and maybe you differ, but you're you tend more towards the big students in terms of your downloads and the number of apps, etc. You have, they will be relative to other app developers they will be they will have huge opportunities because they can collect a lot of first party data and basically, within these games recommend their new apps to the existing user base etc. You will see yourself being able to use that opportunity as well or Are you planning for example, also to increase the number of games you have within your company by doing some mergers and acquisitions, etc? Are you trying to broaden that first party data access? centre, what

Interviewee 30:

we are doing the first part definitely started, that has been in works for the last four months plus now. So we, so we've been trying to get the control back on the user and know the customer



better. Right? So we're working on three pillars, we say that and this is one is know your customer better KYC, then you have to own the community. Right? So there has to be something you know, rather than looking at from a single game approach, right? Where it is one game and you have premium currency in one game, and you move out that currency goes based, right? Can I take that currency converted and make you go to another game where you will suddenly get, you know, five gems over there. 20 gems lying here, you're bored of that game Law of Diminishing Marginal Utility is there, they're not too keen, but you might still be keen to go to another game, where you might suddenly, you know, get five gems, which otherwise you might have to spend a play. Right? So that's the tuning the community part, and that a plus b should help us scale our commerce as far as KYC is slicing. Right? So we've been working on that. So we are looking at stuff. So we are not very good. Right? So we have I would say, been lucky. We are lucky. Obviously you can't. You have to be lucky, right? to certain extent. And we have worked hard. And we've got some good success, right in the Western world. But from a size perspective, studio size, number of people and money, right at 10 cents, the blue, the history of those gaming companies and the kind of watches that they have, we don't have that. We are talking to a couple of other studios in the region and stuff like that to create a small ecosystem, which gives us the network and the economies of network of networks. Right? So can I create a network, right, that comes in and goes, India is. So that kind of exists, you know, comes around, we could see some damn city doing some stuff, because they have many, but we have only three games, our one is more developed the [company] to our own. Right. And MIT called hyper casual games, it requires a game does require more time, right? It can't come out of the game in two months, three months. It has it takes time. So we would be doing more steps in terms of our games, we will talk to some more model users who are having games in the similar category. So we say we are in the lifestyle category. So while they have two different engine, there's cooking, and there's decoration, room decor,

styling, and patch three. But broadly, the lifestyle category game targeting to a similar customer. The idea is to focus on that segment, where we have users and a start maybe having our own login ID, we can let the customer have a direct Association. Notice, what was happening is a lot of people we did a survey, and we found that they didn't even know the developers. Right? So they know the game. They won't know kings, they won't know blue, they won't know [game] stuff while the logo is coming in top of the game and stuff like that, and the developer that because from a consumer, what we found is that he's he sees a creative, he sees something that is not been interesting to him, which is appealing to me clicks on it, this is the name, he downloads that he remembers the icon right of the day, right? Unless you are a Rubio, which you know, you are up top to blockbuster which gets written about and has some PR, which is, you know, when epic takes people to court and say, you know, epic and fortnight right, to a surprise that the percentage of people who did not were playing fortnight and didn't know, epic as a developer, right? Is that is the most popular I would say that john over somebody knows the developer, right? But when you come out and you put that in perspective, a lot of people will notice to me. Zynga, they would know Zynga was a game but Zynga all the games is in our listing. We didn't run that. But Zynga was still known. We found that people at least could make things better. Again, because it has been there for long. Anybody in from Facebook who came in and they know Zynga, Zynga has games in college press releases, I say mention it wherever it comes. Iconic, but a lot of people didn't know. So we did our own research they didn't know can use the boxes. Right now to track chef, they loved [game], they would love to click but they would not know new box. It doesn't come into the picture. It's in small print, it does come in the first blush screen you see a name but maybe yawning at that time you're doing something else. The bond is with the gate. So we're trying to create that bond where they can appreciate it and then say, Okay, next time it's coming from the same set, right?

So once you know it, I my email campaigns and my communication other places. So for you like this, why don't you do this? I love

Interviewer:

that approach. And I think that makes a lot of sense. And I've read about it as well. The kind of raising the brand awareness, the same way I as a child knew about Electronic Arts because I was playing FIFA and NBA to cake cetera. And the logo appeared, they had a way to, even for amateurs like me to have a brand presence to be remembered. And I think Zynga is the same, that's a very good example of a company that managed somehow to imprint this Zynga logo in the head of gamers that would usually just be interested in playing whatever, and would switch without any. So that I think that's very interesting in creating more of a direct relationship, knowing better the customer having a managing this community and developing a closer LinkedIn. I think that's, that's very interesting. And also what I really liked, what you said at all was it made me really curious about this network of other companies you want to work with, is that kind of a partnership to have access to the same pool of first party data or cross promote your games among this group of friends, let's say that have kind of similar user bases, etc. What is it exactly about?

Interviewee 30:

So it is basically a common user base sharing of some data between us, right, where we are not competing directly much with each other. Right? Or even if we are, I think even if we are competing, the customer knows everything, it's like, we both want the same thing. Customer No, and if I think that I'm inferior to you, then as it is, I will lose you to you know, my cars, I will lose my customer to you. He will go over to you if my product is not fulfilling or satisfying him. Because the freemium the exit is very easy. Right? There's no cost, not spend any money.

Right? So it is kind of astonishing that if you get 40% or 45 50% driven attention, it is considered very, very good. Right? That you paid money to download money, and 50% of them will not even pay you next day. Right gives you the perspective of how serious the user takes on downloading an app and playing for that game. Right? You see something you like just don't mind printing, because you're not spending any money. There's no investment, right? The data is paid for it's just a few minutes. You like it, you try it, you don't try to move on, right. So that's summer. So that's why we said we're trying that. It's not easy, on easy. Because a lot of studios, a lot of people from Western world, I think companies have come in acquired that. So the more M&A activity that has happened the last six months or nine months has been huge to do because they are all realising that, right. So at our level, we are also in talks and maybe we'll be forced to join one of them. Because that would give us you know, you will have to divest some part of it, but that will at least give us a better chance of seeing the next so we are in discussion. to three months back that study was not what we would sell to trade. We were happy we were contented, right? We are profitable, so we're not really thinking of investing mistakes. So we are now joining that network formally. informally. We have been in talks because in India, it's a smaller industry. There are fewer studios, and people know each other. So we have been talking and doing but obviously, you know people are competition. They look at each implementation and stuff like that, and so Only that is an element of Okay, if I lose my customer to you, and I would have maybe lost him after 20 days, but I would have made 50 cents out of him, I lose him in the second day, then what happens is who will who will invest in the tech to manage and run this? Right? You have to do that someone has to make that tech, then someone has to do it. So let's see, I think people will wait and watch. If Apple sees the void, then you know, from our perspective might be just back to normal. I'm paying money to Facebook, I pay money to Apple. I'm right. There's that scenario to a scenario where Apple really doesn't say, okay, no more. I'm also not selling nobody's getting think of something else.

And that's where this network of networks will become even more important. So as a first step is to say no to customers, we're trying our own ID establishing some connections, giving that incentive to research. So we do that. And that itself is not easy. Because Apple typically says that, you know, users for them, it's like an apple id, I gave, I gave my game centre, Id I pin Apple ID, I'm playing a game. And I just log in to my ID, right? Facebook, and you can do cross platform, you can do that. So typically, a user who is only an apple user, they don't link it to Facebook or anything else. If you are, if you are not 100%, Apple user, and you have multiple devices, you have a tablet and a phone or a PC for doing that. Those are the users who give the you know, a neutral idea, I would say, then that the game progress can be across synced across, right? So that kind of tells you which kind of user you are. And you're going to bring in multiple devices, stuff like that. So that's the study. So pay, we are going to play multiple devices, take our ID, I will give you some rewards. Right? Very interesting thing that Tim hook said in the deposition against epic. And I guess that's going to really, really be the industry was people were knowing it, but there was scared of Apple to do it. If you send an email and someone buys it, I don't have to pay commission. Right. That's the book's statement right away. Right. But the underlying principle was that you post there in the fine print, you could have interpreted it that way that I can create a platform, but one is the user friction, you know, user is comfortable started, say with a space there. Right? And reliability of email phishing attacks, and you know, scammer attacks coming in, if I send an email, right, what will happen? You will say, I don't know this guy, why should I, you know, there's a trust, right? That is not a scam happening, a lot of phishing going around, and user might not be comfortable, right? And, but now, with the combination of strategies, Apple kind of saying, which means that irrespective of that verdict, if someone does that Apple is going to do that. That's a very, very stated unequivocal statement given to the authorities and say, we don't mind. Right. So facing if I have an idea, and you know, okay, this is my new box ID, or this is my epic ID, this is their,

and I have an epic store where I can go and buy directly on Apple prevents you from coming. There's no way for Android at least I can download the app from anywhere and do anything, right. But Apple doesn't allow you right? Now, if there's an epic store, or there's a new box stores, and you have a new box ID, right. You can get we get 10 gems for \$1 on the game, but you get 12 gems over, like 15 gems. So when you make these, right, there's so much data.

Interviewer:

Yeah, the only Yeah, basically, the only problem is that you cannot directly advertise it on the app itself. But you can use emails basically to, to inform them with the caveat that you mentioned that people are a bit sceptical about this form of communication in today's world. But yeah, that's a huge opportunity, I think epic is the perfect example for that, how they managed to create, use the platforms to grow and then create their own thing based on the fortnight success to kind of start monetize on being the mediator themselves, basically, and having this platform.

Interviewee 30:

So for epic, and again, which is a very high server, intensive game, right? Anytime a person plays, there's a cost to them. Right? If you come and play a game and you do And they were not advertising anything, right? It was all free to play, right. But in app purchases, right. So a they were good incense that day they had a, you know, a history, it's a PC game, it's a game that is known love it came to mobile, it's not a mobile original game, right? Mobile original game serves suffers from the old discovery challenge. There's already a fan base of that game. And so it's coming to mobile, let me play, discovery becomes easier because that platform is open, that's a very egalitarian platform, I can use that platform and come up with it. So they had that platform. Right. And they said okay, and when they came from a new users for them,

right, so they are paying user they are new users, right? Obviously, they will have that data. But if I look at data for anything, or marble pub, g became very big in India. Similar john are coming in India, but and they were doing 30% of traffic of 5g. Right, but from a revenue perspective, only less than 2% of the revenue or 3% of poverty numbers, or it was less than 2%, or 3%, doesn't matter. But one of that was the revenue from India. So my 30% of users are coming, but I'm only getting 3% of the revenue. Maybe that ban is good for because I would have got a top line. But my bottom line can't be very right as a fortnight when it comes. And typically for all the games that comes industry benchmark, they say three to 4% of your paying user. Right? So they got Yes, they made a billion dollars a billion dollars plus in a year, but I'm sure that cost was also the mobile as a stand alone, and that billion that you made 20% in one drop. Right. So that is so you've made that and that is 5% of people have paid for you because you are fortnight rest or 3% 6%. I don't think that number could have been higher than that. Right? 6% of paid 94% are playing for free. Every time they are hitting the server they're going all that cost is being born or fortnight, right. So you come and play a match, you do this thing you have contributed zero to four. So for them, it's not exactly a billion dollar cost, I will say it is a significant refinance 30% of 700 million. And that's 700 million if I remove the cost that they will make maybe it's a bit of a million couple of million dollars. Right. So they were fair in going after them because they could negotiate them negotiated, I think a better rate with Google. Right. That's another avenue. That works. Right. So that's how things are. So it's good, I think industry will Apple force to change. They did say that a million dollars, we will take only 15%. Google has announced that strategy that up to a million dollar. Right? He said after six months, we will do it. But that easily means another \$50 \$150,000 extra in the hands of the developers who will make it right. And so I think they tried to soften that. Blow but it's going to be interesting.

Interviewer:

Very lucky to be here. I we are already over overtime. No, no, yeah. And I and I love it as money is just for you. I could I could spend another half an hour but

Interviewee 30:

I really appreciate just anything more you want to say something critical. You want to ask I do have time I'm not going to stop. Okay, there's something if there's something else that you want to just

Interviewer:

basically I just have two small questions. And then I really will release you and not take any more of your not take your hostage. And the only thing I wanted to ask is has this whole? So this new Apple rule to come back to the IDFA. And the privacy update? Has it changed the attractiveness of Android, for example for you where you said, Okay, well, we'll maybe focus a bit more on Google because that's where it will be easier to generate revenue without having to pay the platform fee as a change kind of the concentration of other platforms. By the way, whatever you are considering hasn't changed the focus on which platforms you want to strategically invest in the future or not really.

Interviewee 30:

So we are spending more, I would say yes, that has an impact. Right. But we do know that. See, the thing is that just drawing on the fortnight example that I gave the number of users versus paying, right, so Google number of players for us was 80% is Android 20%. is Apple, that 20% Users are giving 50% of my revenue, or even less than for us is the highest margin us could have 15% could be Apple users, or player population, right? So that's the premium



customer. That's a customer, for whatever reason, one reason is very obvious, actually, they spend more than spot a phone that costs a kidney, right? So they are going to spend more money for India, for example, it's an Android Market, right? in app purchases, or Southeast Asia, that 5% would be Apple, and hardly make any revenue. If I acquire those users more, my revenue will not go up drastically, but the cost is similar cost difference, right? So unless Google says, Okay, I'm going to cost you 110. Which makes sense, and they are not. Right. It's very difficult for us, Apple will remain predictable. We will obviously, because we're not sure I, maybe I'm locating more. But that's a very small percentage point. It will not be able to clearly really, you know, unless those rates come down, who will not be? That's the hard truth. That's a hot chick who will might say anything and everything that they use its own thing.

Interviewer:

And another thing is, because we mentioned these alternative technologies that some of the Chinese for example, a Chinese developers are considering with the chi then that device fingerprinting and hash emails and stuff like that. You yourself investigating any of these things to continue being able to target for your customer acquisition, for example, target users better, etc? Or are you saying it's too risky? If I get caught, and Apple pulls me from the store, I'm, yes,

Interviewee 30:

I'm in a bad place, we, so we are not going to do anything, which is which can be read wrong. So but as I said, we are working on that having a new box log in it, I want a customer to have a new workflow organised, right, which is within the purview, and get them and have, you know, new blocks paid in a store and upfront, like that, which is within that ecosystem, right? Yes, there are ways I can, you know, have an update, there's a lot of assets I can send to there

are technical, I would say answer to bypass some of those things. But we have taken a conscious decision not to go there. Because the cost of that is too high. Not only in terms of Apple, but let's say it comes out and you know, at the end of it, the customer also wants its privacy. And they don't want to be abused, right. And if I do something, and I might not be abusing the customer, and you know, that sends, but if you get in that, that you don't respect the privacy of the customer, right? I'm not in danger selling business. I'm in keeping you happy, I want you to be associated with me keep on coming back. A lot of times happens, you play you stop playing a game, you see that after six months, or one year or three months, you again, come back, you see that association as a lifelong Association, the game.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 31

Date of the recording: 15.06.2021

Duration: 49 minutes 12 seconds

Format: Zoom Meeting

Interviewee description: Head of Strategy & Corporate Development at a global game publisher based in Redwood City, USA

Start of the interview

[...]

Interviewee 31:

Yeah, no problem, no problem at all. So [name], I would like to add a different perspective to the app tracking transparency framework. So there are. So if we classify gaming, gaming, typically now, if I broadly classify it, it has two broad categories. First is, all other categories. Second one is hyper casual category. So hyper casual games are games by [company] as you have interacted with some of the executives, they are the ones who develop very short snackable. Games, they try to reach out to as many people as possible, their game has an element which can create a virality, or can show a high level of user interest, keeping the user acquisition costs low, and they show the advertisements over a longer periods of time, and generate revenue from that. So that's the business model, what hyper casual developers are currently targeting. Without tracking transparency, I don't think they will exit because at the end, there is this user need, that needs to be still be fulfilled. So users would still be wanting to play these games, they still would want because the volumes are huge. I mean, if you if you look at all the other categories, and hyper casual category together, in the US, it's 5050. So just

one category of games. hyper casual has 50% of overall installs in the US, when compared to all the other genres and sub genre that includes casual RPG simulation strategy, and whatnot. So that need is going to be there. But what app tracking transparency framework, which is IDFA, deprecation, man, whatever you may choose to call it is doing this, it is juggling the market around. So basically, the smaller developers which had problem on targeting whales, because they could not spend money that not have much money in UAE, they can also effectively reach out to a wider audience and can get some revenue share. So in it of sorts, this is Apple's way of creating a level playing field for all publishers and developers. As a result, I feel Apple can actually gain more revenues. Because I mean, if you look at us revenue trends, they have been increasing even after ATT has been in place. So this can create some level playing field. That that's my one point, so. So your point on ad driven monetization model are companies which are highly motivated by ad driven may be obsolete, I think it's a bit too much, because I think they will still exist, because there are users who would not want to pay, they would want to rather watch an advertisement to play the games. And the games are so addictive, and snackable. Of course, there is another element to it, it's getting harder and harder for these hyper casual developers to develop hyper casual games. So maybe the reliance on ads in general, as an industry trend may reduce. But that won't be because of app tracking transparency. And since these users are anyways, targeting wider audience, they will take a hit on the revenues. So their overall profitability and unit economics will be tested. But I think we'll see less number of games, but we'll see more period of those suitors. The period has been elongated to basically accommodate the unit economics of that. But yeah, that that's my piece, and there is a lot of debate that you can see, I mean, people have different points of views of living for these things, but and the effects are so in the early stages that that you will not be able to predict what is going to happen in future. Yeah.

[...]

Interviewee 31:

problem. So do you do your first point on [company], taking advantage of its ecosystem of games, don't you think that would have been a better idea, even before upgrading transparency, because anyways, they're spending some money, if it's not much, it's some money. And going by So just to give you some numbers, it is Google's publishing agreement actually states 25 cents as CPI, I'm sure there are some games which has even lower CPAs to 10 1115 cents in the US iOS, fb. And they have a lot of games. So they are spending 35 cents, the LTV is somewhere between so it can vary again, game to game, but LTV would be on average between 35 cents to as high as 70 cents. So that's the unit economics that you're speaking of. So, and anecdotal data suggests that [company] has currently organic users. So organic users would be both Bible users who are word of mouth publicity, or app stores featuring and whatnot, is 33% of the overall instals. The 66% is paid. So it would still make sense for guru to increase that 33% share, even before app tracking transparency came into place. So I don't think that cross promotion is going to be as effective as, as it was, sorry, it would be as effective as it was before, because that would have been a better business model for [company] as a portfolio. So due to that, to counter that point. On second, I feel that they will be losing some revenues, honestly, to women, at the end of the day, they would be losing some revenues. Because the CPMs are not going to be as high associates will be ad revenues on the on the ad revenue side, it's not going to be as high that they already were targeting a wider user basis, the CPMs are not going to go down to the extent that would balance the unit economics. So it feels hamper, some publishers, some developers, but I think these publishers would anyways be operating at the margins. So there are multiple publishers, who had poor unit economics, and yet, they were making some money. Rules are the publishers who will get five out of the market. So these are,

these are the publishers who basically took games from developers who have been rejected by say, the Voodoo or crazy labs or IEC or game jam or for a game jam as a developer of its own and publishers well, so not Game Jam, but any other publisher. And these are the ones who would take that those games, and they would publish it without putting too much effort into balancing the game or improving its metrics or working on creatives to reduce the overall cpis. But yeah, I mean, essentially, I get your point. That and this is also true that some anecdotal data points that I have, so they have observed 10% drop in ad revenue CPMs. So as of now, I mean, it's still early to know the index and and iOS 14 rollout is just 6% of its overall daily active users not more than that six to 7%. So, it's still very early. But yes, it will definitely impact their overall revenues and threaten their business. But I think these players still exist because they were operating at a higher margin before.

[...]

Interviewee 31:

And this actually reminds me of our meetings internally, these are the questions that comes up quite frequently and regularly we discuss it out debated out, see how our users are trending, to have an update iOS add, and the problem is not only on disentangling COVID with ATT effect, it is also the user behaviour. So the ones which have adopted iOS 14 right now, they are early adopters. And we cannot say that the revenues are dropping, just because, I mean, they are early adopters. So now if you are seeing a 10%, drop in CPMs, it could be very high. Because as more and more users start to adopt it, their user behaviour will be completely different. The early adopters, as we know, from a previous experience, and from multiple readings, and secondary researches, they're quite open to experiment out new things, they interact with

advertisements, and basically interact with the games a lot better. So I think that's the reason why the drop is 10%. It could be higher, it could be lower.

[...]

Interviewer:

What is the kind of feeling internally [company] about this whole idfa? thing? Is there some kind of? Are you worried that will impact negatively your business models?

Interviewee 31:

Yeah, so there are a couple of things which we did internally. And this has been done by most of the major publishers as well. The first one was, we had to quickly adopt the infrastructure, which would let us some flexibility around identifying users at a very early stages of user behaviour of spending patterns and multiple other aspects of how the user is interacting with the game and develop a probabilistic model on where we should spend on advertisements and how we can optimise it. So that's that's definitely once one thing that we did, we changed our infrastructure from our previous targeting techniques to a new infrastructure. The second thing that we did is we move from our deterministic model to a more probabilistic model. So we are now not assigning the LTV predictive federated entities on a deterministic basis on our vows and vows and multiple other KPIs that we track. But we are assigning probabilities of of a user attaining that LTV and having that tree and branch kind of have a structure to predict the LTV. And then, even internal it's a bit debated, right? we are looking actively actively into fingerprinting as a way to avoid some of the idfa restrictions and basically have more time to find a solution. So those are the these are three things that we have done Apart from that, I think, as I mentioned, right, it's just level playing field. And the volatility of revenues would increase. I mean, sometimes you may target good users. At one goal. Sometimes you may target

bad users at one goal so the volatility of revenues and income streams would be high, but I don't They will have an overall negative effect because you still have user base who wants to play your game. We have seen after COVID. So if you look at COVID figures after q1 2020, US installs have remained stable in us, at least I'm speaking of the Western markets investing geography only. I'm sorry, I don't have full exposure, I have some but I don't have full exposure and how the markets are trending in Japan, Korea and China. But I'm sure the trends would, I'm sure the trends would be almost similar. So after q1 2020, the installs sort of dropped for all the other genres I'm not speaking of hyper casual as of now. So all the other genres which are IP driven, they have decreased installs have decreased, the vows have decreased Tao is daily active users have decreased and yet the revenues are constantly increasing. So that indicates that the opt out. So the average revenue per daily active user has been increasing. So you are basically monetizing those users better or the users have an inherent interest in purchasing those items and having some utility associated with those games, entertainment value and utility value associated with those games. So I think the volatility which would increase but overall, I think it won't be a major impact on many players because of the infrastructure issues, the predictive modelling and the inherent nature of the ATD problem that we are facing here. So that's that's my take on it. Of course, it's too early to say. But that's that's my take. Some of our my colleagues would disagree with me. But but that's my take. Yeah, internally, we we are of this opinion, I'm of this opinion.

[...]

End of the interview



## TRANSCRIPT OF INTERVIEW 32

Date of the recording: 18.06.2021

Duration: 57 minutes 11 seconds

Format: Zoom Meeting

Interviewee description: Head of Product at a global mobile game developer based in Bangalore, India

Start of the interview

[...]

Interviewer:

And in that regard as well, did you feel really a change since Apple's privacy update? Or how's the situation for gamberi? labs and the effects of this update? Did you feel it at all? Is it still developing? Are you still assessing? Or are you not worried at all?

Interviewee 32:

So the main here is there is two ways in which this impacts, the first bit will be our ad revenues will be impacted. How was it that the logic for that is pretty obvious. So if you don't have the identifiers, you won't be passing that to the networks, and the bits will dip automatically. So the ad revenue will be significantly impacted. The second concern will be our user acquisition efforts will be impacted. Because once we acquire the user, the information that we have around his behaviour that there is a purchaser, what sort of values you can expect, those things will be impacted a lot, and we won't have those sort of ideas. So the returns or our campaigns will be impacted. So this will be true, especially concerning for a studio which is very highly user

dependent. For us, it has mainly been organic, and you will make some very small fraction of the users tuition revenues coming up. So luckily, that had not been a major focus area for us. So the impact on that side facility reduced. And the ad revenue bit as we said, like, overall, it makes close to like 20% of the impact that we have, out of that I was will have like, less than 10% of it. So the impact overall on the studio level will be then that impact on added value can itself be on a area that's covering like 10%. So if there is a dip of like 20%, then overall on studio level, it will be like a 2% difference. It is a 40% tip that we get one cpms out of iOS, they will only be a 4% across the studio. So there is that. But yeah, but having said that, immediately, as of now, we haven't seen that big an impact on it. Even the admin news says This has been about I think the main the main reason is it hasn't been like hard implemented yet. Yes. 14, yes.

[...]

Interviewee 32:

Yeah, has mentioned about the adoption Can I think that's the main reason and on top of that, there will be another factor involved. So even when this kicks in, the ad networks will have some historic data for a while. So for this to dig, very significantly, I think it will only take a couple of months like the actual impact of entity to be visible. Even apart from the adoption curve, that historic data, we will also have a little bit of compatibility to two months, after which we'll probably start seeing the actual effect on ads about the second bit regarding the ad revenue model that we have, so not really, so ad has never been a focus. For us, it was like a good to have. So as a studio, we are sort of like, what we see is the sort of revenues that we are getting has a lot of scope for a lot more. Let's say whatever our IP revenue is, we expect like we can push this to, even to the existing user base, we can push it to like, close to three times

what it has. So the ad revenue has never been a priority for slate. I mean, if you this is something that will give you a 300% ROI than if we would have focused on ad that's even like a 20%. So this was never a priority for the students. It's like a, it's a good to have because we have a lot of users who won't, we will not be able to monetize through it. But it's never been a focus. So yeah, there's nothing changed. It has always been the focus of att doesn't really change anything in that regard. I think that question will be more relevant for let's say, hyper casual studio or somebody who is the bulk of revenue is coming from ads sale. Go do what? Yeah, so not.

Interviewer:

Why have you decided to put a stop on campaigns on iOS?

Interviewee 32:

Oh, so this is I mean, it's live yet I mean, we will be pausing it in the near future. So as you said like as of now the curve elevates for adoption is not that great. So it's not it is not impacting it overall so much immediately, but it will start doing it after a month or two. So because of so many uncertainties, which will be there around the entire iOS ua staff will be sort of pausing it will be sort of waiting it out and see what was the best practice. How to Turn that so yeah, but okay, studio let's see how this studio in more advanced stage with these pipelines more started getting a 30 and 40% of the users through UAE they will be impacted much more so like we have like it's already making A six 7%. So even if you are not stopping in place to the efficacy of pips by 40%. So again, that same numbers work out net is one 1.5% impact for us. So, yeah.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 33

Date of the recording: 28.06.2021

Duration: 23 minutes 06 seconds

Format: Zoom Meeting

Interviewee description: Associate Vice President User Growth at a global mobile game publisher based in Philadelphia, USA

Start of the interview

[...]

Interviewee 33:

And that definitely saw big drop off. So that's good that we have our app on App Store. Now with the idfa coming in, how it is hurting us big time, is we spend a lot of money in acquiring customers on digital channels. So we spend a lot of money with the with the on Facebook, on Google on affiliates, on on whatever, you know, digital inventory is available, we'll be spending money there. And for us, the ROI calculation is a function of how much I spend and how much money I'm making as a user. Now that can only be done if you know which user came from which source. So previously, if I'm getting 100 users, I know 10 of them came from Google 30 came from let's say, some affiliate 40 came from Facebook and 20 came from less than warm, organic. So I at the end, or at the end the day or a week, I can always see you know what, like my Google bot campaign is performing Great. So maybe I should spend more money here, or I shouldn't bring my spend down Facebook. So that's how I'm making those decisions, looking at the entire panel on what user acquired how much money he's generating. Now, what happens is with IDFA phase, that information is going to be camouflaged, I would not even know for

the people who are not allowing them a lot for the people who are opting out from the tracking IV will not know who this user is, and where we came from. And our overall level will know but will not load an individual publisher level and a source level. And that creates a problem for us. No writer, what you see, and this is a industry benchmark for engine in general for India, that 35 to 40% people are opting in. So we are getting data for 40%. But 60% we don't get the data. And that is a business risk for us that which is essentially coming from like how does where to spend how much money is a decision which we are finding difficult to make right now and which can impact our our scale of efforts like how much we can grow in a month or in a year on the on the acquisition side on acquisition front of things on the iOS? So that's the you know, the story here. Of course, before I move to you know how we are tackling it does is that the direction you want? Is that something I

Interviewer:

definitely that's that's about it, basically, that's on the point, specifically on the platform disruptions through the privacy of data.

Interviewee 33:

Got it. Perfect. So now coming to how do we you know, at least for now, how are we tackling this, of course, we use a different mmps like branch appsflyer we use branch. And of course everyone is claiming they have come up with their own probabilistic model, which is gonna tell us at least to some degree, you know, how is each source performing, but what we see at least our take is that none of them have a solution good enough to use it right now. Like it's pretty, like the margin of error huge. So what we are we are doing right now is envy enables us to do that even for Android. So Let's say we have spent 100 marketing dollars on on iOS. So even every channel when you spend money has a direct impact and has a impression impact

like which is not direct, but you're seeing it in a warm by warm, I mean the organic traffic which are getting on the platform. So let's say if you're spending 100 rupees on Facebook, you might get three users directly, but you are also getting 10 users indirectly. And that's also very important for us because we are like, our budgets are pretty big numbers enough for us to understand what was happening. So what we do is usually, we see the warm impact of we have our internal models, the data science models, who, based on the spends we are making on each and every platform, they are able to predict how much warm impact each channel is providing me. So they can tell me, three came from directly but 10 also came indirectly. And they actually attribute to Facebook or Google or someone else. Now what you're doing is we're just using the same model on on iOS, the only difference we are doing is right now is we are scaling each channel one by one. So as to be sure, so what we do is let's say you know, today we for this week, we'll just see how his performance is changing, when we scale it up. So we have a fair sense of Okay, I only have tracking for 40%. But how is the other 60% doing, that model is helping me to understand, you know what, like your Spencer giving you users in that range, and that kind of, and that I'm, I'm calibrating each and every channel in the same fashion week, on week and month on month. Of course that increases my effort a bit. But that's what we are using to decide upon which channel we keep on spending for which we don't have the information directly because the user might have opted out. So that's what we are doing right now, you know, to understand is still the performance general costs. 40% also really helps because, like you get a sense of how 40% users are doing. But of course, there's also selection bias because the people who are opting in, are always more, you know, more higher value customers than the ones who are opting out because they trust the platform. So we take the number directly and just interpolate 40 to 60. Rather, we use more scientific models to understand that that.

[...]

Interviewee 33:

The only impact was we had to do a survey it impacted us is actually in two ways. So one was, like the whole acquisition piece, like, you know, we have to make a lot of changes in our tracking. The second way it impacted us was, we have a very strong referral programme. So like we, of course, there's a very high percentage of users who we acquired to reference. And why do people send reference because they get some money out of it, right. So previously, our referral programme was such that you send an invite, you click on a link, and you join an automatically will know who to send invite to whom, and we'll give them money or the reward to the reference or the parent the child. But now that tracking gets broken once you move to iOS. So what we have to do is, then we have to make changes, then we have to move to the you know, the more standardised way of reference, which is using a unique code. So as we can track the user who's sending otherwise our journey was much more smoother before.

Interviewer:

Okay. And actually, because that's something also that I'm so and actually discussed with some of the interviewees, especially the big players, they said that this idea of a change, so especially the big players said that this idea of a change was not that relevant for them in terms of customer acquisition, because they had such a broad user base that they could cross sell, basically, and use the first party data from one game to attract their publisher new games attract that user base, because they are very similar profiles, etc. are you? Are you doing exactly the same thing for your portfolio of games and apps? Or, and have you plans to expand that approach? Because usually, I heard you saying that you're using your adventure inventory for yourself, basically. That's why I got it. Yeah.

Interviewee 33:

Yep. Yep. So unfortunately, for us, our games are very different. Like, the kind so the overlap is, is less than let's call it like, you know, it's not, it's not that high, the overlap between the two games is very low. So you can't really use the audience of one game to target the other game like cross sell, we do cross sell, but the cross sell is not very high. So hence the point that you mentioned like it doesn't work for us in that in that smoother way. But yes, like for us, you know, we on our app, we don't run ads. So we don't promote any third party we only promote either our own game or our sister games. And for example, I'm not gay, my wife might promote fantasy to users who I feel have very strong affinity to play fantasy. So that's the only transition which is happening and that is, every everything is in house. So we don't really that this change doesn't impact us in from that most activities.

[...]

End of the interview



## TRANSCRIPT OF INTERVIEW 34

Date of the recording: 29.06.2021

Duration: 52 minutes 18 seconds

Format: Zoom Meeting

Interviewee description: Country Manager at a global mobile game publisher based in Paris,  
FR

Start of the interview

[...]

Interviewer:

a very, very interesting, and but what I was wondering is in that case, so from what you said, the feeling to come, for example, to the subject of the idfa that so my suspicion based on what you said is that this idfa change with the targeted advertising restrictions, etc. That didn't have such a big impact for you, as I understand it, your way of monetizing your your your games and in general forgiveness to generate revenue. Is that correct? Or would you say

Interviewee 34:

I would say I say they have like a lot of decisions internally on the subject, right. So as a global I came up as a as a as a overall market perspective or India as a market specific, I say, globally, they packed for us in terms of the idfa implementation is very limited to us. I would say like 10 to 15% impact. And if I will look at it advertising contribution to our overall revenues is is about 10% war. So if I look at it from that perspective, the revenue impact from the overall game of revenue perspective is gonna be just a 1%. I said, it's not a significant revenue impact

on the game of globally. But yeah, if I were to look about the Indian market, we know for the fact that stadia is all Android. So I was very small in terms of the market, just about five 7% of the iOS devices out in the market, we are seeing significant traction coming across on Android, we see great traction coming across Windows platform for us. Well, and, and iOS, as it's very limited in terms of in terms of we are not so bothered by consent. And given the fact as I mentioned us it's more about like your commodity ad unit, which is any issue is driven to the programmatic. And we are more concerned about the high margin businesses, which is about doing innovations, custom solutions to the bath.

[...]

Interviewee 34:

I think, I think very relevant point at the nation, as I see the impact to be more on the customer acquisition point, there, then from the monetization standpoint, the customer acquisition is gonna be a challenging thing, it's gonna actually have the expectation is actually gonna increase the acquisition costs for us. And knowing the fact I say, as an industry, everybody is struggling for the margin sites, our margins have shrunk significantly over the years. At one point in time we had when Google and Apple didn't had so many, so much of content or clutter. So we had very good featuring available for our games and used to have significantly huge organic downloads of gains coming first on Google and Apple. Now the problem which is corrected more and more in organic downloads are required. And the organic download count is shrinking. Which makes it difficult for from the advertising standpoint in terms of getting more users onto onto our games. And, and all the rights that is something which, which is being driven globally, and we don't do much on this activation on this on our side locally. But I think they have to be a lot of innovations that people will need to think through. Currently, the

industry probably is still in a phase where they are just not fully adapted to this. I'm sure I said the industry would identify means do actually get to reach out to the users. I said, I think it's a matter of time. I think once it happened, I say industry will actually get into the challenges and find ways and means probably currently, they don't have an answer to it as to how they're going to do it. But I think eventually, they will be able to find answers around.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 35

Date of the recording: 30.06.2021

Duration: 40 minutes 36 seconds

Format: Zoom Meeting

Interviewee description: Co-founder and CPO at a mid-sized (30 employees) mobile game developer based in Berlin, DE

Start of the interview

[...]

Interviewee 35:

I honestly have never really deeply looked into that. I think as long as, like my and my thinking is very simplistic. In the end of the day, the market that we compete in is one that is completely dominated by companies that can do profitable user acquisition. Right. So the only equation that matters in in the games we make is, is the cost per instal lower than the money we get per instal. Right. How much because it's free to play, right? That's the only equation that matters. And as long as you compete through the while, because all the all the user acquisition is driven through bidding, right? Basically, the person who makes the most money with their game can bid the highest. Right? And because everybody has the same 30%, that gets deducted. I don't I don't think the impact on the actual income for the company that I want to build, right, which is not a million a year, right, which is a million a day relief, what I'm looking at as a goal. I don't think it really matters. I mean, it sounds it sounds weird, right? I'm not sure if my thing is completely accurate. But that was my understanding of it as well, as long as everybody has to pay it. In the end, the battle is one with the user acquisition, you can either do profitably or not.

And everybody gets the same 30% deducted, which in the end has an impact on how high are they willing to bet? Right. So I think for us, it's almost a non factor in the end, which does lead to if we were to reduce all the platform fees to 0%, I think what would just happen is that we would be willing to bid higher primary will be willing to bid higher, 30%, higher, we everybody bids. 30%, higher now just like Well, I mean, revenues would go up, which I guess you know, it's nice if you want to have a nice exit. I don't know. I mean, so I've never had him I also I've never heard anyone in the business that I'm in, discuss this even or complain about, like, it's a non issue. And, and the changes. I mean, the changes that were made there, I guess it's nice if they reduce them. I mean, I don't think that can be bad. I don't think the impact is as big as people might think for bigger, like for companies that want to become bigger developers or publishers. And the reduction that they had was like, if you're under a million a year is I mean, it's completely irrelevant. irrelevant for us. I mean, even though we're very small. I mean, I think I think we passed it in like two months or so. And we just thought we were barely even started. Right? So it's like, non impact, basically.

[...]

Interviewer:

And has, let's say in the ideation phase of your game, or even at the beginning, as a subscription based revenue model been of consideration or with upfront payments, you know, or something like that.

Interviewee 35:

Yeah, so upfront payment never, like I 100% of my experience is in free to play me making a premium game game, I think would be suicide. Two different, they have almost nothing in

common. And subscription is something that we never considered as a primary monetization option. I also write, I never really investigated it. Let's say that I would have doubts. If someone were to pitch me like, Hey, we're gonna make the casual simulation game with this odd sound, and so on, like, and then put, put our main hope on subscriptions. I think that's suicide mission or a genius decision. But suicide suggestion for us would be a complimentary, right? When we do think like, yeah, you know, like, if once we understand very well, what our users do, how they behave, when they spend what they value in the game, that we then go in there and invest, investigate, like, how do we implement a great feeling subscription without ripping apart our our existing in app purchase economy?

Interviewer:

Okay. And so we talked about ads, in terms of possible revenue stream, what about or how important ads for you and paid customer acquisition basically. So I guess it's dependent now that we are entering in a phase where you are really publishing your game or you want to publish your game across the across the world, let's say, we'll pay customer acquisition be a big part of it.

Interviewee 35:

It always has been, it's super important. And I think all I mean, most most games require that most games at the scale that we want to be at, and even though scalable, we are in genres that we attack, need paid user acquisition, basically, from day one, and including the soft launch, right? Like if we launch our game. If we launch a game like ours in 10, markets, and we don't do user acquisition, we get like 100 instals a day. Right? No matter how many posts we do, and forums and so on 100 instals, right. We need like 1000 instals, to even be able to measure like the day one retention, like properly right to validate is this game shit or not. There's no way

around us acquisition, it was super important basically from I mean, not day one, let's say after week 10 founding the company paid user acquisition made up for 90% 95% of all the users we have. This will only get worse, right? Like soon I think now we're like, what, 99.99% of all users come through page user acquisition? I don't think they will. Yeah, they will not really change like organic installs. I mean, so there's, of course, like an organic installs that happened, but they are directly related to the user because we do so you could almost argue for every user we buy, we get like whatever, like zero users for free. But if we don't buy the users, it's not that we suddenly get like 400 or like 4000 users organic, no, they come because we buy in, right, so there's a weird cross effect there.

Interviewer:

And it's interesting, I mean, for the for the bigger app developers, what what we realised that does is that especially in that That's the subject that we come through with the idfa that they are developing the capacity to use first party data and basically their existing user base for their portfolio of game to cross sell. And that's a huge advantage of of scale so when you're like whatever

Interviewee 35:

you know, you know you're completely right. Yes, if you bigger companies both can use this cross cross marketing a lot, right? And then of course, you know, it goes down from 90% to sometimes I guess even 5050 that comes from like cross referencing 100% King does I mean a shit tonne of Android Wear baby. Yeah. So that definitely happens. And then also a caveat to what I said there is a certain some few companies have enough brand power that you know, they even even without marketing, they can soft launch games and so on, right, like and know that Supercell for a while. Supercell the makers of like, clash of clans and so on, right, they had

such a strong brand understanding and like fan following, and also target audience that like actively were looking and waiting for so they if they soft launch in Canada, they suddenly had like, 10,000 instals a day, right? if, if, if fuckin [company] launches came in Canada will get a bet you we get 20 instals a day no matter what. Right? So there is there's exceptions that get that, and genres matter a lot. Like if you like our own is 80% like my mom is my audience, right? My mom doesn't go to a forum and check like, oh, let's check out what software in Canada, right? You know, with Clash of Clans, if you target like, like 14 year old teenagers? Yeah, I mean, there's nothing else to do, they're gonna score the forum and find your game, right? So it changes a bit across like genres and target audiences.

Interviewer:

Now coming to the subject of like, the outer core of our research, the idfa update, and its consequences. So quite in general, what, like, how important is that, that change for you? Or how relevant is that change for for you and your business from not at all to key and you had to think over all your customer acquisition strategy and your way you monetize? So

Interviewee 35:

yeah. Okay. So a side note, like, I'm not super deep into the user acquisition part of, right, I only talk bullshit on a very high level. But we have people who, like we have a head of marketing handles all of this right. My understanding was there was complete unclarity, what would happen all the way from like, internally for us and like coming from him talking to all friends, right? In our network that was like, all the way from like, this is going to completely demolish even the biggest players, right? I had that all the way to year for some people might be amazing, actually. Right. And then I heard like, hypercasual is going to die, pray gods that will happen finally? Or, or I've heard, you know, it's gonna be great. They figure out this and



this, and then it works, right. And I guess, and now it happened. And the main input that I had, and also that we had was, that's where like, it didn't really change anything so far. Like, why, why? Why isn't this fucking us more? Right. And that was, I think the overall sentiment that I've heard from dealers on how it still works, you know, I don't know really why, but it works. So that was it. And it was very similar for us. But then also, we did end up scaling down a bit our user acquisition iOS, right? So that's one thing I got, like I'm come I'm not sure if we are the right test balloon to really wait a little bit. And furthermore, we as a company that the user acquisition we did was still pretty basic, right? So I mean, of course, we have a guy who really has been doing it for like, eight years or nine years. He knows what he's doing. But with a game that's so fresh, you don't really need like, you don't need to deep dive into like the hyper targeted and retargeting right that I the idea of a would have would have allowed like we didn't, we never really entered this depth where where now that it felt it broke away. We didn't really miss it, because we only were scratching the surface of like, very simplistic basic targeting, right, which still now work. So like we we almost have a black blind eye to like the real impact of it, because we never used the capabilities of of the ad ID there. Yeah. And then so now we are still in the phase of like, well, let's see what happens now. We didn't really see a huge impact for the reasons I mentioned. Let's see, in the end, we felt like there's not too much we can do with that if they feel that was a lot of like what we heard from especially other small developers where they feel like we don't have the capacity to like prepare for this shit. Let's see what happens. And maybe the big guys actually suffer more than us. Right? That was the sentiment was always I talked to and the big some of the big guys that I talked to they did a bit of preparation where they were like Yeah, kinda like, already preparing, like, hey, which events can we use to eventually replace idfa? Right? Like, do we want user behaviour? Can we anonymously, right? Like so there were thoughts around this. But, but yeah, I don't know how successful any of that was and, and detect details honestly just don't care.

[...]

Interviewer:

No, no, that's exactly what we what we are after, let's say, and just in terms of the changes that idfa eventually implies. So we had stories about how, basically, and that's why it basically led to some antitrust complaints in Europe, especially in France and Germany, that basically it was a way for Apple to push away ad revenue on which they can chop out from fee and force kind of, or incentivize a course of developers to use more of the new features that they are put in place in terms of the App Store and search ads, etc. Do you see these search ads on for example, on the app store, and the new suggestion ads that you can pay for

Interviewee 35:

I think so. But I can't I my, my understanding is that before this idea of IDFA changes, we didn't use those ads at all, because they were not performing as well as the other ones. So that the conspiracy theory of like saying, well, maybe that's part of the reason that it's not just that Apple care so much about user privacy. Yeah, I mean, business, right. I think I understand why people have these conspiracy theories. Yeah, I think that might be part of it, and also like to push their own ad services and so on, maybe maybe, right, I mean, it would align pretty well, right? Like, whatever, whatever the actual goal was, it also happens to do that. I do think that now we've been expect at least experimenting more with those ad from AdMob platform more and more and more Apple centric, I guess, I can't really tell you the outcome.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 36

Date of the recording: 03.07.2021

Duration: 21 minutes 20 seconds

Format: Zoom Meeting

Interviewee description: Head of Products at a global mobile game developer based in Bangalore, India

Start of the interview

[...]

Interviewee 36:

also adding to your second point, forget different type of games, right? The casual gaming, or there's a role play games and all of that. So each of these have their different revenue structure, some will naturally in app purchases, right? Let's, for example, Candy Crush and all of that, like for that some would heavily rely on ads for their monetization, some would, we are real money gaming, where obviously the users are raising the money and the other commission driven model when it depends on game to game also, basically, since I'm in this RMG space, it might not have impacted that much. I use a different game where casual game is there, and we are relying heavily on this ads to generate revenue, they might get impacted. So that that also might be a reason we are these last mile is kind words, it was lean business.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 37

Date of the recording: 04.07.2021

Duration: 33 minutes 18 seconds

Format: Zoom Meeting

Interviewee description: Head of Business Development & Strategy at a global mobile game publisher based in Beijing, China

Start of the interview

[...]

Interviewee 37:

As far as I see, like, because the main concern is going to be related to the Android, if something is coming in terms of the Android, then definitely, this is the biggest problem to target. But as far as I see my experience with the iOS user or something, yes, this is the problem like you are not able to target the audience in that way. And we will, it's going to be the more challenge for the US, but I'm sure about it. A person is going to target with the iOS user base or something they will definitely come up with an innovative idea. For example, I got to Like Google is making his own inventory that can help for the user acquisition, if they are making all inventory. So in that case, there is no no need for tracking the user every time. So maybe iOS will come with some of the innovative idea in this way. And Google has announced this going to be happening 2022 Second year working in it. So I'm definitely sure like iOS is ahead with Android, if we talk about it, and the smoothness and the culture, the ecosystem, everything. So definitely, they will come with the idea that can help us that can help the industry to go further. Most of the time, we see and it's like not most of the time, recently, we are seeing a lot, a lot.

Even the privacy issue is being raised in India as well, where people are less concerned, what Facebook is doing what Google is doing. But after the WhatsApp update, I hope you must have heard that news like. Let's see in coming future, definitely, it's going to be the new innovative idea over there. And it's an open platform for some advertisement platform lab, like ironsource AppLovin, as well, they will come up with the idea or something. And in that way this will happen because it's industry. So this is required step and now we will see some revolution evolution or innovation or something.

[...]

Interviewee 37:

You're right, you're right. In this way, you're right. Because always, it's always be like big companies have more advantages. They have data they know like, what the user are, they try to make their data sometime to run to their website. So they can they do they find so many ways to just engage the user base in a way. But indie developers, they have not that much resources, first of all, they don't have that much budget or something. So definitely, it's going to be a challenge for them, it's going to be a challenge for them. So as I said, like how they are going to curate or they are going to show everything on their platform or how they change their elbow while showing the game algo or something, how it's going to work out. So it required to see when it's all implemented and going to happen, then definitely we will observe some changes. So we need to wait and see.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 38

Date of the recording: 05.07.2021

Duration: 36 minutes 15 seconds

Format: Zoom Meeting

Interviewee description: Product Director at a global mobile game publisher based in Vilnius, Lithuania

Start of the interview

[...]

Interviewee 38:

These topics, of course, are relevant for us, of course. So, now business model, of course we are using. We're using mobile advertising, monetization, tools and sources. So mobile advertising plays quite a big part of our monetization strategy. Because of our [game], so and maybe many other points. So, frankly speaking, what is important that? Yeah, we see huge influence of transparency, tracking tools were implemented in, in Apple platform, how its influence to the market, especially for user acquisition. So we will face these changes. And actually, we are trying to adapt to these changes. But what's happening now? I see that the whole industry, I mean, I'm talking about mobile developers, and especially about developers in in casual games segment. So that what I see is that marketing teams are still do not know what to do, is it? Because like, simply, talking IDFA disappeared. So it's directly influence on the performance, advertising and performance, user acquisition. And the first reaction on the market was like to change the target and budget from the App Store to Google Play Store. And, actually, yeah, almost everybody did it. And of course, it goes, increase of CPI on the on the

Google Play Market. So and, yeah, we see now it's situation stage. So definitely just its influence on the user acquisition. And frankly, speaking, the our assaults is about it. Due to this change with our transparency drinking, that it becomes that I mean, marketing in mobile games becomes more like TV marketing, it will become so we probably we will might, there are possible two direction of further development in user acquisition. And first of all, it will become like more TV like advertising. So we're not talking about performance advertising. But we will start talking about the efficiency of whole marketing campaign in the internet, like, you know, we broadcast our marketing efforts to the huge amount of possible users and then evaluate how this marketing efforts was effective. But it's, of course, it will be like two or five years step back for the performance advertising campaigns. Of course, it's not really interesting. The other option possible that Apple will implement their own tracking tool for performance and digitising so in this case, everything will be okay. So, we will just follow the the apple recommendation and so, I think the balance in the market will come back, I mean, balancing performance of the data, because currently the market is like not in balance, because I see that CPI in mobile advertising like in games goes down essentially it goes down, but I mean, eCPM eCPM goes down, so the advertising in mobile games especially will become less profitable. And but CPI goes up on the market, because of a lot of publishers refocus their efforts to the Google Play Store and, you know, everybody hunting for for this users who has a GPA, so but the amount of players with a GPA became essentially less, but companies has the same bar. it okay market react that the price per user will will will be increased. So, because everybody expecting still perform based on performance campaigns, so, but the market share of players who has a GPA become less, less less the price, of course, goes goes up. So, but logically it should cause it mobile advertising, I mean ads monetization models. They should be balanced. Of course, we have less users with with a GPA, but we have to have more players without a GPA. And what should happen, the performance of players, the price of showing advertising

to players who is no IDPA have to be increased this condition, but it didn't happen. And it's not happening now. What I see, so I'm expecting that this balance will be reached sometime. Because yeah, because because this is how our nature works. Yeah, I see, I see the point of advertising, with the publisher more pushed to be like, maybe, to open our books have Kotler or classic marketing, and be more concentrated on classic tools like promoting the application, like broadband promoting like TV, radio, offline, promotion, and so on, so forth. But, of course, for us as an industry, it's like 10 years go back, because we are not able to use our performance advertising tools to track the efficiency of user acquisition campaigns. So so we will see, this changes definitely affect the market. But I'm quite optimistic because you know, when huge players like Apple and Google make changes from the market, so this changes applicable for all of the players on the market, and this is means that the only the only thinks is important, how quick you react on these changes, because the rules is equal for everybody. So what only one thinks, which might be negative for the holiday industry, the performance of whole industry will go down. So we will see in the Hamptons this year, how mobile gaming, especially will perform till the end of this year, compared to so is it performance of mobile industry go down in general? So this is a bad news for all of us. I mean, game developers mobile developers, because because it will mean that this man is this users, this players, this ecosystem, as he said, goes in other industries. But I don't know what, like offline networks of suppliers or maybe like, offline, something offline as a product. So people will start consuming as a product, because they are more adapted to this new conditions. So if it's a if it will be like war of industries, in the scope of new conditions, so might be bad news for all mobile developers. But if not, so we will see the new rules, we will adapt them and every single so don't panic, because presentations, some guys exit mobile platforms in relationship, right.

[...]



Interviewee 38:

What we do now to react? Okay, we have our performance advertising campaigns at Apple Store. It's doing bad. Okay, we'll go to Google Play. So okay, we see that Google Play is CPIs grows rapidly. So we need to react somehow, again, we are a little bit more focused on huge advertising networks, like lift off, and so on, so forth. So then, if the performance of liftoff campaigns will decrease the game, we will need to create some new options and how to find our players how to find our players. Maybe in the future, we will we will start TV advertising, if it will be effective, of course. And actually, we already started preparing for it. In case of like situations, the market will be developed in this direction, because nobody said that Google Play till the end of this year might also implement this up transport, transparency, tracking rules. You so because they compete with Apple? And currently Apple has a huge, unique selling point on the market because they privacy and all.

[...]

Interviewer:

Do you see that revenue impact as well since Apple's change?

Interviewee 38:

It's changed. It's completely changed eCPM it's price publishers pay for the 1000 views. Question. Yeah, impressions, it's decreased about maybe 30%. Okay, was it up? Transparency? Yeah. So that actually is a question Where is money disappeared? So it goes. So this is mean that, for example, advertising in India, the games become more key, the price goes down. So this means that the cost for user acquisition in the games should go up. But it didn't happen. Why? Because publishers deal orientated on players who has this Agfa because they can train

track performance. This is what this is a reason why CPI cost per user per pair installation goes up. Because we have less players who has ADP, we have to peak amount of marketing campaigns who are asking about this players want to have guys with IGFA. So you so this is this is a reason why the cost per instal goes up. I know that some companies in the market, they start campaigns, which are not targeted to a defence to try just how it works. Currently, it works. But this looks bad. Because because it's not relevant to users, so you're not relevant to users.

[...]

Interviewer:

Do you see a way to bypass these privacy changes, to avoid the IDFA restrictions?

Interviewee 38:

Actually, my personal opinion is that there is no option to cheat big platforms, from reaching agreement between the ecosystem and users, that platform promises user privacy and users wants his privacy. Again, you might try to cheat this agreement. But anyway, in a really short time, you will be punished for it, okay. I know that a lot of a lot of developers looking for new ways how to track users, but come on guys, in general, it's about agreement between the ecosystem and user of this system, that the user wants its privacy. So you might accept it or not. So but if you are trying to cheat this agreement be ready, you will be punished for it.

[...]

End of the interview

## TRANSCRIPT OF INTERVIEW 39

Date of the recording: 07.07.2021

Duration: 39 minutes 52 seconds

Format: Zoom Meeting

Interviewee description: Chief Creative Officer at a global mobile game developer based in London, UK

Start of the interview

[...]

Interviewee 39:

Yeah, no. So I mean, some things like kind of ads is, you know, is a good example of something where we just, we've definitely, we've definitely sort of brought in the expertise to get the most out of ads, we can we're not, it wasn't about deciding to go more ad funded or look at kind of ad based games, we're still going, Yeah, we're still going to make the games we wanted to make. But we wanted to get everything we could out of the ads in our approach to ads that we put in. So you know, that, like I say, that is a that is a useful, you know, a useful sort of revenue source for us. I think. I think I don't know if this falls under one of the categories or not. But I think there was, we've over the past sort of four or five years, we have, we've taken a vote, I think as soon as we I think it was, it was a bit of both really, it was just a sense of a general sense of not wanting to be reliant on the platforms. And then also, as we saw the effectiveness of the app stores start to start to drop it, that was another factor. But we definitely made a conscious decision to move towards models that don't necessarily require the don't not rely on on the huge volume of traffic. So I think in the early days of harch, we were really quite reliant

on platform featuring, like, if we if we didn't have that, I think some of our early games just wouldn't have worked. We they would have, we would have never found the players for them. Because in some ways, that platform featuring is just, it's just, it's just free players. And I think what but I think we were we were, I think we were just always nervous about that. And it meant we were very, very reliant on the platforms. So this isn't straightforward. But we made the decision to move towards models, like I said, like kind of deeper RPG models, then we knew that didn't need, you know, the same number of kind of daily players. And they would tend to retain their players for longer, you know, they'd retain them for years.

[...]

Interviewee 39:

No, no, I mean, everything is is I think, I think ad revenues have, you know, have dropped have taken a little hit in the past couple of weeks. But it's nothing. They were they were Yeah, they were they were going great before that. And it's the drop is nothing is nothing we, you know, it's fine. It's just, it's just a small drop at the moment. So we are, in a way, we are still waiting to see, I think this is such a cop, you know, that the whole ecosystem is so finely balanced, and it's so complex, that we are just we're almost just seeing from week to week, what what the impact is, but But definitely, definitely for us. It wasn't it wasn't a thing where it's like, as soon as that happens, it's it's, you know, it's catastrophic ly bad, or it's, it's, um, you know, it's made a, you know, a huge negative impact.

[...]

End of the interview

## **TRANSCRIPT OF INTERVIEW 40**

Date of the recording: 14.07.2021

Duration: 36 minutes 36 seconds

Format: Zoom Meeting

Interviewee description: Head of Business Development at a global mobile game publisher based in Warsaw, Poland

Start of the interview

[...]

Interviewee 40:

The only problem, the only problem of being active on many platforms will be a huge need of resources that will be required to maintain the presence on different platforms. I am not sure that there is a proper way to. Okay, let's put it say right now, there are like two platforms, you can understand it through, you can follow its regulations, it can be not fair, whatever. But these are just the factors. If you multiply to 10, you can say that you are less platform dependent, but at the time, you will need significant increase in people that will first of all understand what are the rules on that platforms, we can comply to that rules, then to manage it. The main the main reason why the people are not for example, going too far away massively is just because first of all, yeah, there are good cases when you understand how much you're earning. But afterwards, you don't understand much people you will need to support that. What are the outcomes of going into each platform, sometimes it's easier to cut any attempts to go on that platform, if you see that the revenue you will get there will not even worth trying it out. But but on the other hand, until you try you won't understand if this is a workaround or not. So

generally, a trend on the platform dependency is good. in specific cases, it can be a real pain in the ass with a lot of people management and huge risk of over populating a team.

[...]

Interviewee 40:

What was the impact on us? Well, we always expect but so I think that's even half a year ago, we started preparing for that. And that's why there was not significant change on that, because I think it can be specific with some exactly hypercasual publishers, NGOs are very dependent on amount on total amount of UAE base of the with mid core audience, I think that generally, there was less importance on this very built on this very policy, there were enough time to get ready. So maybe there was some declining, what we expected or what, what can be, but it was not a big one. So not something that required stopping production changes or strategies or whatever. May be like, okay, minus 1%, of what was expected. Still, it's a matter of what you started with a good balancing. So a lot of things were put into proper order to make sure that this very update won't impact us.

Interviewer:

Okay, and also, you said you have prepared for it? What kind of preparation Have you have you made? What did that entail?

Interviewee 40:

Analysis of UA campaigns, that's very implementing of better monetization algorithm. Basically, softer depth of UAS, so there was not, I think, huge weigh in out of audience, so they're not active campaigns right now. So there could be risks of this performance not good.

So basically, it was reducing the level of activities to the minimal possible level to see how it will impact and after seeing that the impact is not very good. So can be disregarded the rolling out activities to the usual level.

[...]

End of the interview

## LIST OF REFERENCES

- Aarikka-Stenroos L, Ritala P. 2017. Network management in the era of ecosystems: Systematic review and management framework. *Industrial Marketing Management* **67**: 23–36.
- Adner R. 2006. Match Your Innovation Strategy to Your Innovation Ecosystem. *Harvard Business Review* **84**(4): 98–107.
- Adner R. 2012. *The Wide Lens: A New Strategy for Innovation*. Portfolio Penguin: New York, NY.
- Adner R. 2017. Ecosystem as Structure: An Actionable Construct for Strategy. *Journal of Management* **43**(1): 39–58.
- Adner R, Feiler D. 2019. Interdependence, perception, and investment choices: An experimental approach to decision making in innovation ecosystems. *Organization Science* **30**(1): 109–125.
- Adner R, Kapoor R. 2010. Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. *Strategic Management Journal* **31**(3): 306–333.
- Adner R, Kapoor R. 2016. Innovation ecosystems and the pace of substitution: Re-examining technology S-curves. *Strategic Management Journal* **37**(4): 625–648.
- Adner R, Lieberman M. 2021. Disruption through Complements. *Strategy Science* **6**(1): 91–109.
- Alexy O, George G, Salter AJ. 2013. Cui Bono? The Selective Revealing of Knowledge and Its Implications for Innovative Activity. *Academy of Management Review* **38**(2): 270–291.
- Van Alstyne MW, Parker GG, Choudary SP. 2016. Pipelines, platforms, and the new rules of strategy. *Harvard Business Review* **94**(4): 54–62.
- Ansari SS, Garud R, Kumaraswamy A. 2016. The disruptor’s dilemma: TiVo and the U.S. television ecosystem. *Strategic Management Journal* **37**(9): 1829–1853.
- Appleyard MM, Chesbrough HW. 2017. The Dynamics of Open Strategy: From Adoption to Reversion. *Long Range Planning* **50**(3): 310–321.
- Armstrong M, Wright J. 2007. Two-sided markets, competitive bottlenecks and exclusive contracts. *Economic Theory* **32**(2): 353–380.
- Baldwin CY. 2018. Bottlenecks, Modules, and Dynamic Architectural Capabilities. In *The Oxford Handbook of Dynamic Capabilities*, Teece DJ, Heaton S (eds). Oxford University Press: 1–41.
- Baldwin CY, Woodard CJ. 2009. The architecture of platforms: A unified view. In *Platforms, Markets and Innovation*, Gawer A (ed). Edward Elgar Publishing: London: 19–44.
- Barney J. 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management* **17**(1): 99–120.
- Basole RC. 2009. Visualization of interfirm relations in a converging mobile ecosystem. *Journal of Information Technology* **24**(2): 144–159.
- Battistella C, Colucci K, De Toni AF, Nonino F. 2013. Methodology of business ecosystems network analysis: A case study in Telecom Italia future centre. *Technological Forecasting and Social Change* **80**(6): 1194–1210.
- BCG. 2019. The Emerging Art of Ecosystem Management : 1–20. Available at: <https://www.bcg.com/publications/2019/emerging-art-ecosystem-management.aspx>.
- Benner MJ, Waldfoegel J. 2020. Changing the channel: Digitization and the rise of “middle tail” strategies. *Strategic Management Journal* : smj.3130.



- Binken JLG, Stremersch S. 2009. The Effect of Superstar Software on Hardware Sales in System Markets. *Journal of Marketing* **73**(2): 88–104.
- Birkinshaw J. 2019. Ecosystem Businesses Are Changing the Rules of Strategy. *Harvard Business Review*. Available at: <https://hbr.org/2019/08/ecosystem-businesses-are-changing-the-rules-of-strategy>.
- Bock W, Field D, Zwillenberg P, Rogers K. 2015. The Growth of the Global Mobile Internet Economy. *BCG* : 44.
- Bogers M, Chesbrough H, Heaton S, Teece DJ. 2019a. Strategic Management of Open Innovation: A Dynamic Capabilities Perspective. *California Management Review* **62**(1): 77–94.
- Bogers M, Sims J, West J. 2019b. What Is an Ecosystem? Incorporating 25 Years of Ecosystem Research. *Academy of Management Proceedings*.
- Boudreau K. 2010. Open platform strategies and innovation: Granting access vs. devolving control. *Management Science* **56**(10): 1849–1872.
- Boudreau KJ. 2012. Let a Thousand Flowers Bloom? An Early Look at Large Numbers of Software App Developers. *Organization Science* **23**(5): 1409–1427.
- Boudreau KJ. 2017. Platform Boundary Choices & Governance: Opening-Up While Still Coordinating and Orchestrating. In *Entrepreneurship, Innovation, and Platforms (Advances in Strategic Management, Volume 37)*, Furman J, Gawer A, Silverman BS, Stern S (eds). Emerald Publishing Limited, 37: 227–297.
- Boudreau KJ, Jeppesen LB. 2015. Unpaid crowd complementors: The platform network effect mirage. *Strategic Management Journal* **36**(12): 1761–1777. Available at: <https://onlinelibrary.wiley.com/doi/10.1002/smj.2324>.
- Bresnahan TF, Orsini J, Yin P. 2015. Demand heterogeneity, inframarginal multihoming, and platform market stability: Mobile app. *Working paper, Stanford University, Stanford, CA*.
- Burgess TF, Shaw NE. 2010. Editorial board membership of management and business journals: A social network analysis study of the financial times 40. *British Journal of Management* **21**(3): 627–648.
- Caillaud B, Jullien B. 2003. Chicken and Egg: Competition among Intermediation Service Providers. *The RAND Journal of Economics* **34**(2): 521–552.
- Casadesus-Masanell R, Yoffie DB. 2007. Wintel: Cooperation and conflict. *Management Science* **53**(4): 584–598.
- Ceccagnoli M, Forman C, Huang P, Wu DJ. 2012. Cocreation of value in a platform ecosystem: The case of enterprise software. *MIS Quarterly* **36**(1): 263–290.
- Cennamo C. 2018. Building the Value of Next-Generation Platforms: The Paradox of Diminishing Returns. *Journal of Management* **44**(8): 3038–3069.
- Cennamo C. 2021. Competing in Digital Markets: A Platform-Based Perspective. *Academy of Management Perspectives* **35**(2): 265–291.
- Cennamo C, Ozalp H, Kretschmer T. 2018. Platform architecture and quality trade-offs of multihoming complements. *Information Systems Research* **29**(2): 461–478.
- Cennamo C, Santalo J. 2013. Platform competition: Strategic trade-offs in platform markets. *Strategic Management Journal* **34**(11): 1331–1350.
- Cennamo C, Santaló J. 2019. Generativity tension and value creation in platform ecosystems. *Organization Science* **30**(3): 617–641.
- Chan S. 2021. Global Consumer Spending in Mobile Apps Reached \$133 Billion in 2021, Up Nearly 20% from 2020. *Sensor Tower*. Available at: <https://sensortower.com/blog/app-revenue-and-downloads-2021>.
- Chen L, Yi J, Li S, Tong TW. 2021. Platform Governance Design in Platform Ecosystems: Implications for Complementors' Multihoming Decision. *Journal of Management* : 1–

27.

- Chen Y, Pereira I, Patel PC. 2020. Decentralized Governance of Digital Platforms. *Journal of Management* **47**(5): 1305–1337.
- Chesbrough H, Lettl C, Ritter T. 2018. Value Creation and Value Capture in Open Innovation. *Journal of Product Innovation Management* **35**(6): 930–938.
- Chesbrough HW, Appleyard MM. 2007. Open Innovation and Strategy. *California Management Review* **50**(1): 57–76.
- Corts KS, Lederman M. 2009. Software exclusivity and the scope of indirect network effects in the U.S. home video game market. *International Journal of Industrial Organization* **27**(2): 121–136.
- Cross T. 2021. Why Hardcore and Hyper Casual Games Will Win in the Post-IDFA World. *VideoWeek*. Available at: <https://videoweek.com/2021/02/23/why-hardcore-and-hyper-casual-games-will-win-in-the-post-idfa-world/>.
- Cusumano MA, Gawer A. 2002. The elements of platform leadership. *MIT Sloan Management Review* **43**(3): 51–58.
- Cutolo D, Kenney M. 2020. Platform-Dependent Entrepreneurs: Power Asymmetries, Risks, and Strategies in the Platform Economy. *Academy of Management Perspectives*.
- Dattee B, Alexy O, Autio E. 2018. Manoeuvring in poor visibility: How firms play the ecosystem game when uncertainty is high. *Academy of Management Journal* **61**(2): 466–498.
- Davis JP. 2016. The Group Dynamics of Interorganizational Relationships: Collaborating with Multiple Partners in Innovation Ecosystems. *Administrative Science Quarterly* **61**(4): 621–661.
- Dedehayir O, Mäkinen SJ, Roland Ortt J. 2018. Roles during innovation ecosystem genesis: A literature review. *Technological Forecasting and Social Change*. Elsevier Inc. **136**: 18–29. Available at: <https://doi.org/10.1016/j.techfore.2016.11.028>.
- Doz YL. 2019. Governing Multilateral Alliances. *California Management Review* **61**(3): 93–114.
- Eaton B, Elaluf-Calderwood S, Sørensen C, Yoo Y. 2015. Distributed Tuning of Boundary Resources: The Case of Apple’s iOS Service System. *MIS Quarterly* **39**(1): 217–243.
- Eckhardt J, Ciuchta M, Carpenter M. 2018. Open innovation, information, and entrepreneurship within platform ecosystems. *Strategic Entrepreneurship Journal* **12**(1): 369–391.
- Edelman B. 2014. Mastering the intermediaries. *Harvard Business Review* **92**(6): 1–13.
- Eisenmann T, Parker G, Van Alstyne M. 2011. Platform envelopment. *Strategic Management Journal* **32**(12): 1270–1285.
- Eisenmann T, Parker G, Van Alstyne MW. 2006. Strategies for Two-Sided Markets. *Harvard Business Review* **32**(2): 353–380.
- Ethiraj SK. 2007. Allocation of inventive effort in complex product systems. *Strategic Management Journal* **28**(6): 563–584.
- Foerderer J, Kude T, Mithas S, Heinzl A. 2018. Does platform owner’s entry crowd out innovation? Evidence from Google Photos. *Information Systems Research* **29**(2): 444–460.
- Freeman RE. 1994. The Politics of Stakeholder Theory: Some Future Directions. *Business Ethics Quarterly* **4**(4): 409–421.
- Fuller J, Jacobides MG, Reeves M. 2019. The myths and realities of business ecosystems. *MIT Sloan Management Review* **60**(3): 1–9.
- Furr N, Shipilov A. 2018. Building the Right Ecosystem for Innovation. *MIT Sloan Management Review* **93**(5): 1–17.
- Ganco M, Kapoor R, Lee GK. 2020. From Rugged Landscapes to Rugged Ecosystems:

- Structure of Interdependencies and Firms' Innovative Search. *Academy of Management Review* **45**(3): 646–674.
- Gawer A. 2014. Bridging differing perspectives on technological platforms: Toward an integrative framework. *Research Policy* **43**(7): 1239–1249.
- Gawer A. 2020. Digital Platforms' Boundaries: The Interplay of Firm Scope, Platform Sides, and Digital Interfaces. *Long Range Planning* : 1–43.
- Gawer A, Cusumano MA. 2008. How Companies Become Platform Leaders. *MIT Sloan Management Review* **49**(2): 28–35.
- Gawer A, Cusumano MA. 2014. Industry Platforms and Ecosystem Innovation. *Journal of Product Innovation Management* **31**(3): 417–433.
- Gawer A, Henderson R. 2007. Platform owner entry and innovation in complementary markets: Evidence from Intel. *Journal of Economics and Management Strategy* **16**(1): 1–34.
- Gawer A, Yoffie DB, Cusumano MA. 2019. *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power*. HarperCollins Publishers: New York.
- Gioia DA, Corley KG, Hamilton AL. 2013. Seeking Qualitative Rigor in Inductive Research. *Organizational Research Methods* **16**(1): 15–31. Available at: <http://journals.sagepub.com/doi/10.1177/1094428112452151>.
- Glaser B. 1992. *Basics of Grounded Theory Analysis: Emergence vs. Forcing*. Sociology Press.
- Glaser B, Strauss A. 1967. *The discovery of grounded theory: Strategies for qualitative research*. Routledge.
- Gomes LA de V, Facin ALF, Salerno MS, Ikenami RK. 2018. Unpacking the innovation ecosystem construct: Evolution, gaps and trends. *Technological Forecasting and Social Change* **136**: 30–48.
- Graham BM. 2020. Apple's seismic change to the mobile ad industry is drawing near , and it 's rocking the ecosystem. *CNBC* : 1–7.
- Granstrand O, Holgersson M. 2020. Innovation ecosystems: A conceptual review and a new definition. *Technovation* **90–91**.
- Gu G, Zhu F. 2020. Trust and Disintermediation: Evidence from an Online Freelance Marketplace. *Management Science*.
- Gulati R, Puranam P, Tushman M. 2012. Meta-organization design: Rethinking design in interorganizational and community contexts. *Strategic Management Journal* **33**(6): 571–586.
- Hagiu A. 2006. Pricing and commitment by two-sided platforms. *RAND Journal of Economics* **37**(3): 720–737.
- Hagiu A. 2014. Strategic decisions for multisided platforms. *MIT Sloan Management Review* **55**(2): 71–80.
- Hagiu A, Eisenmann T. 2007. A Staged Solution to the Catch-22. *Harvard Business Review* **85**(11): 25–26.
- Hagiu A, Rothman S. 2016. Network Effects Aren't Enough. *Harvard Business Review* **94**(4): 64–71.
- Hamel G, Zanini M. 2018. The End of Bureaucracy. *Harvard Business Review*.
- Hanelt A, Bohnsack R, Marz D, Antunes Marante C. 2021. A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change. *Journal of Management Studies* **58**(5): 1159–1197.
- Hannah DP, Eisenhardt KM. 2018. How firms navigate cooperation and competition in nascent ecosystems. *Strategic Management Journal* **39**(12): 3163–3192.
- Helfat CE, Raubitschek RS. 2018. Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems. *Research Policy* **47**(8): 1391–1399.

- Hinings CR, Greenwood R. 2002. Disconnects and Consequences in Organization Theory? *Administrative Science Quarterly* **47**(3): 411.
- Hoffmann W, Lavie D, Reuer JJ, Shipilov A. 2018. The interplay of competition and cooperation. *Strategic Management Journal* **39**: 3033–3052.
- Hogendorn C, Yuen KYS. 2009. Platform Competition with ‘must-have’ Components. *The Journal of Industrial Economics* **57**(2): 294–318.
- Holgersson M, Granstrand O, Bogers M. 2018. The evolution of intellectual property strategy in innovation ecosystems: Uncovering complementary and substitute appropriability regimes. *Long Range Planning* **51**(2): 303–319.
- Huang P, Ceccagnoli M, Forman C, Wu DJ. 2013. Appropriability mechanisms and the platform partnership decision: Evidence from enterprise software. *Management Science* **59**(1): 102–121.
- Hyrnsalmi S, Suominen A, Mäntymäki M. 2016. The influence of developer multi-homing on competition between software ecosystems. *Journal of Systems and Software* **111**: 119–127. Available at: <https://linkinghub.elsevier.com/retrieve/pii/S0164121215002010>.
- Iansiti M, Lakhani KR. 2017. Managing Our Hub Economy. *Harvard Business Review* **95**(5): 84–92.
- Iansiti M, Levien R. 2004. Strategy as Ecology. *Harvard Business Review* **82**(3): 68–79.
- Idu A, van de Zande T, Jansen S. 2011. Multi-homing in the Apple ecosystem. In *Proceedings of the International Conference on Management of Emergent Digital EcoSystems - MEDES '11*. ACM Press: New York, New York, USA: 122.
- Iyer B, Lee C, Venkatraman N. 2006. Managing in a “Small World Ecosystem”: Lessons from the Software Sector. *California Management Review* **48**(3): 28–47.
- Iyer B, Subramaniam M. 2015. The Strategic Value of APIs. *Harvard Business Review*. Available at: <https://hbr.org/2015/01/the-strategic-value-of-apis>.
- Jacobides MG. 2019. In the ecosystem economy, what’s your strategy? *Harvard Business Review* **97**(5): 128–137.
- Jacobides MG, Cennamo C, Gawer A. 2018. Towards a theory of ecosystems. *Strategic Management Journal* **39**(8): 2255–2276.
- Jacobides MG, MacDuffie JP. 2013. How to Drive Value Your Way. *Harvard Business Review* **91**(7): 92–100.
- Jacobides MG, Tae CJ. 2015. Kingpins, Bottlenecks, and Value Dynamics Along a Sector. *Organization Science* **26**(3): 889–907.
- Jones SL, Leiponen A, Vasudeva G. 2021. The evolution of cooperation in the face of conflict: Evidence from the innovation ecosystem for mobile telecom standards development. *Strategic Management Journal* **42**(4): 710–740.
- Kapoor R. 2018. Ecosystems: broadening the locus of value creation. *Journal of Organization Design* **7**(1): 1–12.
- Kapoor R, Agarwal S. 2017. Sustaining superior performance in business ecosystems: Evidence from application software developers in the iOS and android smartphone ecosystems. *Organization Science* **28**(3): 531–551.
- Kearney. 2019. The platform imperative : 12–15.
- Khan LM. 2017. Amazon’s Antitrust Paradox. *The Yale Law Journal* **126**(3): 710–805.
- Khanagha S, Ansari S, Paroutis S, Oviedo L. 2020. Mutualism and the dynamics of new platform creation: A study of Cisco and fog computing. *Strategic Management Journal* : 1–31.
- Koetsier J. 2021. Apple Rejecting Apps With Fingerprinting Enabled As iOS 14 Privacy Enforcement Starts. *Forbes*. Available at: <https://www.forbes.com/sites/johnkoetsier/2021/04/01/apple-rejecting-apps-with-fingerprinting-enabled-as-ios-14-privacy-enforcement-starts/?sh=611e01c33d19>.

- Kretschmer T, Leiponen A, Schilling M, Vasudeva G. 2020. Platform ecosystems as meta-organizations: Implications for platform strategies. *Strategic Management Journal*. Available at: <https://onlinelibrary.wiley.com/doi/10.1002/smj.3250>.
- Landoni P *et al.* 2020. Business model innovation in cultural and creative industries: Insights from three leading mobile gaming firms. *Technovation*. Elsevier Ltd **92–93**(August 2019): 102084. Available at: <https://doi.org/10.1016/j.technovation.2019.102084>.
- Landsman V, Stremersch S. 2011. Multihoming in two-sided markets: An empirical inquiry in the video game console industry. *Journal of Marketing* **75**(6): 39–54.
- Langley A. 1999. Strategies for Theorizing from Process Data. *The Academy of Management Review* **24**(4): 691. Available at: <http://www.jstor.org/stable/259349?origin=crossref>.
- Laziuk E. 2021. iOS 14.5 Opt-in Rate - Daily Updates Since Launch. *Flurry Analytics*. Available at: <https://www.flurry.com/blog/ios-14-5-opt-in-rate-att-restricted-app-tracking-transparency-worldwide-us-daily-latest-update/>.
- Leiponen AE. 2008. Competing Through Cooperation: The Organization of Standard Setting in Wireless Telecommunications. *Management Science* **54**(11): 1904–1919.
- Leswing K. 2020. Apple exec warns it may remove apps that track users without permission. *CNBC*. Available at: <https://www.cnbc.com/2020/12/08/apple-may-remove-apps-that-track-users-without-permission-in-2021.html>.
- Li Z, Agarwal A. 2017. Platform integration and demand spill overs in complementary markets: Evidence from Facebook’s integration of Instagram. *Management Science* **63**(10): 3438–3458.
- Mäkinen SJ, Dedehayir O. 2013. Business Ecosystems’ Evolution — An Ecosystem Clockspeed Perspective. In *Collaboration and competition in business ecosystems (Advances in Strategic Management, Vol. 30)*, Adner R, Oxley JE, Silverman BS (eds). Bingley, UK: 99–125.
- Mantovani A, Ruiz-Aliseda F. 2016. Equilibrium innovation ecosystems: The dark side of collaborating with complementors. *Management Science* **62**(2): 534–549.
- Massa L, Tucci CL, Afuah A. 2017. A Critical Assessment of Business Model Research. *Academy of Management Annals* **11**(1): 73–104.
- Masucci M, Brusoni S, Cennamo C. 2020. Removing bottlenecks in business ecosystems: The strategic role of outbound open innovation. *Research Policy* **49**(1): 1–17.
- Mayring P. 2000. Qualitative Content Analysis. *Forum: Qualitative Social Research* **1**(2). Available at: <https://www.qualitative-research.net/index.php/fqs/article/view/1089/2385>.
- Mayring P. 2014. Qualitative Content Analysis: Theoretical Foundation, Basic Procedures and Software Solution. *Social Science Open Access Repository (SSOAR)*. Available at: <https://nbn-resolving.de/urn:nbn:de:0168-ssoar-395173>.
- McGee P, Murphy H. 2021. How Apple’s iOS 14.5 update is shaking up the app economy. *Financial Times* : 17–22.
- McGrath RG. 2010. Business Models: A Discovery Driven Approach. *Long Range Planning* **43**(2–3): 247–261.
- McIntyre D, Srinivasan A, Afuah A, Gawer A, Kretschmer T. 2020. Multi-sided platforms as new organizational forms. *Academy of Management Perspectives*. Available at: <http://journals.aom.org/doi/10.5465/amp.2018.0018>.
- McIntyre DP, Srinivasan A. 2017. Networks, platforms, and strategy: Emerging views and next steps. *Strategic Management Journal* **38**(1): 141–160.
- McIntyre DP, Subramaniam M. 2009. Strategy in Network Industries: A Review and Research Agenda. *Journal of Management* **35**(6): 1494–1517.
- Mckinnon JD. 2020. These Are the U S. Antitrust Cases Facing Google, Facebook and Others. *The Wall Street Journal* : 19–21.
- McKinsey. 2020. Ecosystem 2.0: Climbing to the next level : 1–9. Available at:

- <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/ecosystem-2-point-0-climbing-to-the-next-level>.
- Meyer AD, Gaba V, Colwell KA. 2005. Organizing Far from Equilibrium: Nonlinear Change in Organizational Fields. *Organization Science* **16**(5): 456–473.
- Miles MB, Huberman AM. 1994. *Qualitative data analysis: An expanded sourcebook*, 2nd ed. Sage.
- Miller CD, Toh PK. 2020. Complementary Components and Returns from Coordination within Ecosystems via Standard Setting. *Strategic Management Journal*. Available at: <https://onlinelibrary.wiley.com/doi/10.1002/smj.3143>.
- Miric M, Boudreau KJ, Jeppesen LB. 2019. Protecting their digital assets: The use of formal & informal appropriability strategies by App developers. *Research Policy* **48**(8): 1–13.
- Miric M, Jeppesen LB. 2020. Does piracy lead to product abandonment or stimulate new product development?: Evidence from mobile platform-based developer firms. *Strategic Management Journal* **41**(12): 2155–2184.
- Moore JF. 1993. Predators and Prey: A New Ecology of Competition. *Harvard Business Review* **71**(3): 75–86.
- Moore JF. 2006. Business Ecosystems and the View from the Firm. *Antitrust Bulletin* **51**(1): 31–75.
- Nagle F. 2019. Open source software and firm productivity. *Management Science* **65**(3): 1191–1215.
- Nambisan S. 2017. Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship. *Entrepreneurship Theory and Practice* **41**(6): 1029–1055.
- Nambisan S, Baron RA. 2013. Entrepreneurship in innovation ecosystems: Entrepreneurs’ self-regulatory processes and their implications for new venture success. *Entrepreneurship: Theory and Practice* **37**(5): 1071–1097.
- Nambisan S, Sawhney M. 2011. Orchestration Processes in Network-Centric Innovation: Evidence From the Field. *Academy of Management Perspectives* **25**(3): 40–57.
- O’Mahony S, Karp R. 2020. From proprietary to collective governance: How do platform participation strategies evolve? *Strategic Management Journal*. Available at: <https://onlinelibrary.wiley.com/doi/10.1002/smj.3150>.
- Oh D-S, Phillips F, Park S, Lee E. 2016. Innovation ecosystems: A critical examination. *Technovation* **54**(8): 1–6.
- Overholm H. 2015. Collectively created opportunities in emerging ecosystems: The case of solar service ventures. *Technovation*. Elsevier **39–40**(1): 14–25.
- Ozalp H, Cennamo C, Gawer A. 2018. Disruption in Platform-Based Ecosystems. *Journal of Management Studies* **55**(7): 1203–1241.
- Ozcan P, Eisenhardt K. 2009. Origin of alliance portfolios: Entrepreneurs, network strategies, and firm performance. *Academy of Management Journal* **52**(2): 246–279.
- Ozcan P, Hannah D. 2020. Forced Ecosystems and Digital Stepchildren: Reconfiguring Advertising Suppliers to Realize Disruptive Social Media Technology. *Strategy Science* **5**(3): 193–217.
- Ozcan P, Santos FM. 2015. The market that never was: Turf wars and failed alliances in mobile payments. *Strategic Management Journal* **36**(10): 1486–1512.
- Palmer A. 2021. Amazon sellers worry they can’t meet holiday demand as company limits warehouse space. *CNBC*. Available at: <https://www.cnbc.com/2020/12/08/amazon-warehouse-limits-causing-sellers-to-run-out-of-holiday-products.html> [21 November 2021].
- Panico C, Cennamo C. 2020. User preferences and strategic interactions in platform ecosystems. *Strategic Management Journal*. Available at: <http://doi.wiley.com/10.1002/smj.3149>.

- Parker G, Van Alstyne M. 2018. Innovation, openness, and platform control. *Management Science* **64**(7): 3015–3032.
- Pereira J, Tavalaei MM, Ozalp H. 2019. Blockchain-based platforms: Decentralized infrastructures and its boundary conditions. *Technological Forecasting and Social Change* **146**: 94–102. Available at: <https://linkinghub.elsevier.com/retrieve/pii/S0040162518319693>.
- Phillips MA, Ritala P. 2019. A complex adaptive systems agenda for ecosystem research methodology. *Technological Forecasting and Social Change* **148**. Available at: <https://doi.org/10.1016/j.techfore.2019.119739>.
- Pierce L. 2009. Big losses in ecosystem niches: how core firm decisions drive complementary product shakeouts. *Strategic Management Journal* **30**(3): 323–347.
- Pisano GP, Teece DJ. 2007. How to Capture Value from Innovation: Shaping Intellectual Property and Industry Architecture. *California Management Review* **50**(1): 278–296.
- Porter ME. 1996. What is strategy? *Harvard Business Review* **74**(6): 61–78.
- Porter ME. 2008. The five competitive forces that shape strategy. *Harvard Business Review* **86**(1): 79–93.
- Ranganathan R, Ghosh A, Rosenkopf L. 2018. Competition–cooperation interplay during multifirm technology coordination: The effect of firm heterogeneity on conflict and consensus in a technology standards organization. *Strategic Management Journal* **39**(12): 3193–3221.
- Reeves M, Lotan H, Legrand J, Jacobides M. 2019. How business ecosystems rise (and often fall). *MIT Sloan Management Review* **11**(1): 1–8.
- Rietveld J. 2018. Creating and capturing value from freemium business models: A demand-side perspective. *Strategic Entrepreneurship Journal* **12**(2): 171–193. Available at: <https://onlinelibrary.wiley.com/doi/10.1002/sej.1279>.
- Rietveld J, Eggers JP. 2018. Demand heterogeneity in platform markets: Implications for complementors. *Organization Science* **29**(2): 304–322.
- Rietveld J, Ploog JN, Nieborg DB. 2020. The Coevolution of Platform Dominance and Governance Strategies: Effects on Complementor Performance Outcomes. *Academy of Management Discoveries* **6**(3): 1–47.
- Rietveld J, Schilling MA. 2021. Platform Competition: A Systematic and Interdisciplinary Review of the Literature. *Journal of Management* **47**(6): 1528–1563.
- Rietveld J, Schilling MA, Bellavitis C. 2019. Platform Strategy: Managing Ecosystem Value Through Selective Promotion of Complements. *Organization Science* **30**(6): 1232–1251. Available at: <http://pubsonline.informs.org/doi/10.1287/orsc.2019.1290>.
- Ritala P, Agouridas V, Assimakopoulos D, Gies O. 2013. Value creation and capture mechanisms in innovation ecosystems: A comparative case study. *International Journal of Technology Management* **63**(3–4): 244–267.
- Ritala P, Almpantopoulou A. 2017. In defense of ‘eco’ in innovation ecosystem. *Technovation* **60–61**(January): 39–42.
- Rochet J-C, Tirole J. 2003. Platform Competition in Two-sided Markets. *Journal of the European Economic Association* **1**(4): 990–1029.
- Roland Berger. 2019. How companies of all sizes can benefit from business ecosystems : 1–7. Available at: <https://www.rolandberger.com/en/Publications/How-companies-of-all-sizes-can-benefit-from-business-ecosystems.html>.
- Saunders M, Thornhill A, Lewis P. 2019. *Research Methods for Business Students*, 8th ed. Pearson.
- Schilling MA. 2002. Technology Success and Failure in Winner-Take-All Markets : The Impact of Learning Orientation , Timing , and Network Externalities. *Academy of Management Journal* **45**(2): 387–398.

- Shipilov A, Gawer A. 2020. Integrating research on interorganizational networks and ecosystems. *Academy of Management Annals* **14**(1): 92–121.
- Smith D. 2013. Navigating Risk When Entering and Participating in a Business Ecosystem. *Technology Innovation Management Review* **3**(5): 25–33.
- Snihur Y, Thomas LDW, Burgelman RA. 2018. An Ecosystem-Level Process Model of Business Model Disruption: The Disruptor's Gambit. *Journal of Management Studies* **55**(7): 1278–1316.
- Srinivasan A, Venkatraman N. 2018. Entrepreneurship in digital platforms: A network-centric view. *Strategic Entrepreneurship Journal* **12**(1): 54–71.
- Steiner M, Wiegand N, Eggert A, Backhaus K. 2016. Platform adoption in system markets: The roles of preference heterogeneity and consumer expectations. *International Journal of Research in Marketing*. Elsevier B.V. **33**(2): 276–296.
- Straub R. 2019. What Management Needs to Become in an Era of Ecosystems. *Harvard Business Review*. Available at: <https://hbr.org/2019/06/what-management-needs-to-become-in-an-era-of-ecosystems>.
- Strauss A, Corbin J. 1990. *Basics of qualitative research*. Sage.
- Suarez FF, Kirtley J. 2012. Dethroning an Established Platform. *MIT Sloan Management Review*.
- Taeuscher K, Rothe H. 2021. Optimal distinctiveness in platform markets: Leveraging complementors as legitimacy buffers. *Strategic Management Journal* **42**(2): 435–461.
- Takahashi BD. 2020. The DeanBeat: What's at stake in Apple's potentially apocalyptic IDFA changes. *VentureBeat* : 1–17.
- Takahashi D. 2021. Post-IDFA Alliance finds iOS 14.5 triggered up to 21% growth in Android ad spending. *VentureBeat*. Available at: <https://venturebeat.com/2021/05/19/post-idfa-alliance-finds-ios-14-5-triggered-up-to-21-growth-in-android-ad-spending/>.
- Talmar M, Walrave B, Podoyntsyna KS, Holmström J, Romme AGL. 2020. Mapping, analyzing and designing innovation ecosystems: The Ecosystem Pie Model. *Long Range Planning* **53**(4): 1–9.
- Tavalaei MM, Cennamo C. 2020. In search of complementarities within and across platform ecosystems: Complementors' relative standing and performance in mobile apps ecosystems. *Long Range Planning* **45**(3): 1–22.
- Teece DJ. 2007. Explicating dynamic capabilities: the nature and micro foundations of (sustainable) enterprise performance. *Strategic Management Journal* **28**(13): 1319–1350.
- Teece DJ. 2016. Business Ecosystem. In *The Palgrave Encyclopedia of Strategic Management*, Augier M, Teece DJ (eds). Palgrave Macmillan: London, U.K.
- Teece DJ. 2017. Dynamic Capabilities and (Digital) Platform Lifecycles. In *Entrepreneurship, Innovation, and Platforms (Advances in Strategic Management, Volume 37)*, Furman J, Gawer A, Silverman BS, Stern S (eds). Emerald Publishing Limited.
- Teece DJ. 2018. Profiting from innovation in the digital economy: Enabling technologies, standards, and licensing models in the wireless world. *Research Policy* **47**(8): 1367–1387.
- Thomas LDW, Autio E. 2020. Innovation ecosystems in management: An organizing typology. In *Oxford Encyclopedia of Business and Management*. Oxford University Press.
- Thomas LDW, Autio E, Gann DM. 2014. Architectural leverage: Putting platforms in context. *Academy of Management Perspectives* **28**(2): 198–219.
- Thomas LDW, Ritala P. 2021. Ecosystem Legitimacy Emergence: A Collective Action View.



- Journal of Management*. Available at:  
<http://journals.sagepub.com/doi/10.1177/0149206320986617>.
- Tiwana A. 2015a. Evolutionary competition in platform ecosystems. *Information Systems Research* **26**(2): 266–281.
- Tiwana A. 2015b. Platform Desertion by App Developers. *Journal of Management Information Systems* **32**(4): 40–77.
- Tiwana A, Konsynski B, Bush AA. 2010. Platform evolution: Coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research* **21**(4): 675–687.
- Toh PK, Miller CD. 2017. Pawn to Save a Chariot, or Drawbridge Into the Fort? Firms’ Disclosure During Standard Setting and Complementary Technologies Within Ecosystems. *Strategic Management Journal* **38**(11): 2213–2236.
- Tsujimoto M, Kajikawa Y, Tomita J, Matsumoto Y. 2018. A review of the ecosystem concept — Towards coherent ecosystem design. *Technological Forecasting and Social Change* **136**: 49–58.
- Vasudeva G, Leiponen A, Jones S. 2020. Dear Enemy: The Dynamics of Conflict and Cooperation in Open Innovation Ecosystems. *Strategic Management Review* **1**(2): 355–379.
- Walrave B, Talmar M, Podoynitsyna KS, Romme AGL, Verbong GPJ. 2018. A multi-level perspective on innovation ecosystems for path-breaking innovation. *Technological Forecasting and Social Change* **136**: 103–113.
- Wang RD, Miller CD. 2019. Complementors’ engagement in an ecosystem: A study of publishers’ e-book offerings on Amazon Kindle. *Strategic Management Journal* **41**(1): 3–26.
- Wareham J, Fox PB, Giner JLC. 2014. Technology Ecosystem Governance. *Organization Science* **25**(4).
- Wen W, Zhu F. 2019. Threat of platform-owner entry and complementor responses: Evidence from the mobile app market. *Strategic Management Journal* **40**(9): 1336–1367.
- West J. 2003. How open is open enough? Melding proprietary and open source platform strategies. *Research Policy* **32**(7): 1259–1285.
- West J, Wood D. 2013. Evolving an Open Ecosystem: The Rise and Fall of the Symbian Platform. *Advances in Strategic Management* **30**: 27–67.
- Williamson PJ, De Meyer A. 2012. Ecosystem Advantage: How to Successfully Harness the Power of Partners. *California Management Review* **55**(1): 24–46.
- Williamson PJ, De Meyer A. 2020. *Ecosystem Edge: Sustaining Competitiveness in the Face of Disruption*. Stanford University Press.
- Winter J, Battisti S, Burström T, Luukkainen S. 2018. Exploring the Success Factors of Mobile Business Ecosystems. *International Journal of Innovation and Technology Management* **15**(3): 1–23.
- Yoffie DB, Kwak M. 2006. With friends like these: The art of managing complementors. *Harvard Business Review* **84**(9): 88–98.
- Zahra SA, Nambisan S. 2011. Entrepreneurship in global innovation ecosystems. *AMS Review* **1**(1): 4–17. Available at: <http://link.springer.com/10.1007/s13162-011-0004-3>.
- Zahra SA, Nambisan S. 2012. Entrepreneurship and strategic thinking in business ecosystems. *Business Horizons* **55**(3): 219–229.
- Zhang Y, Li J, Tong TW. 2020. Platform governance matters: How platform gatekeeping affects knowledge sharing among complementors. *Strategic Management Journal*.
- Zhao Y, von Delft S, Morgan-Thomas A, Buck T. 2020. The evolution of platform business models: Exploring competitive battles in the world of platforms. *Long Range Planning*

- 53(4):** 1–24.
- Zhu F. 2019. Friends or foes? Examining platform owners' entry into complementors' spaces. *Journal of Economics and Management Strategy* **28(1)**: 23–28.
- Zhu F, Iansiti M. 2012. Entry into platform-based markets. *Strategic Management Journal* **33(1)**: 88–106.
- Zhu F, Iansiti M. 2019. Why some platforms thrive... and others don't. *Harvard Business Review* **97(1)**: 118–125.
- Zhu F, Liu Q. 2018. Competing with complementors: An empirical look at Amazon.com. *Strategic Management Journal* **39(10)**: 2618–2642.
- Zott C, Amit R. 2013. The business model: A theoretically anchored robust construct for strategic analysis. *Strategic Organization* **11(4)**: 403–411.
- Zott C, Amit R, Massa L. 2011. The business model: Recent developments and future research. *Journal of Management* **37(4)**: 1019–1042.