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CONCEPTUALIZATION OF CROWDFUNDING MODELS IN E-SPORTS MOBA TOURNAMENTS: THE DOTA 2, SMITE AND LEAGUE OF LEGENDS CASES

Rio de Janeiro

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Master's dissertation presented to the COPPEAD Graduate School of Business, Universidade Federal do Rio de Janeiro, as part of the mandatory requirements in order to obtain the title of Master in Business Administration (M.Sc.).

Supervisor: Professor Victor Manoel Cunha de Almeida, D.Sc

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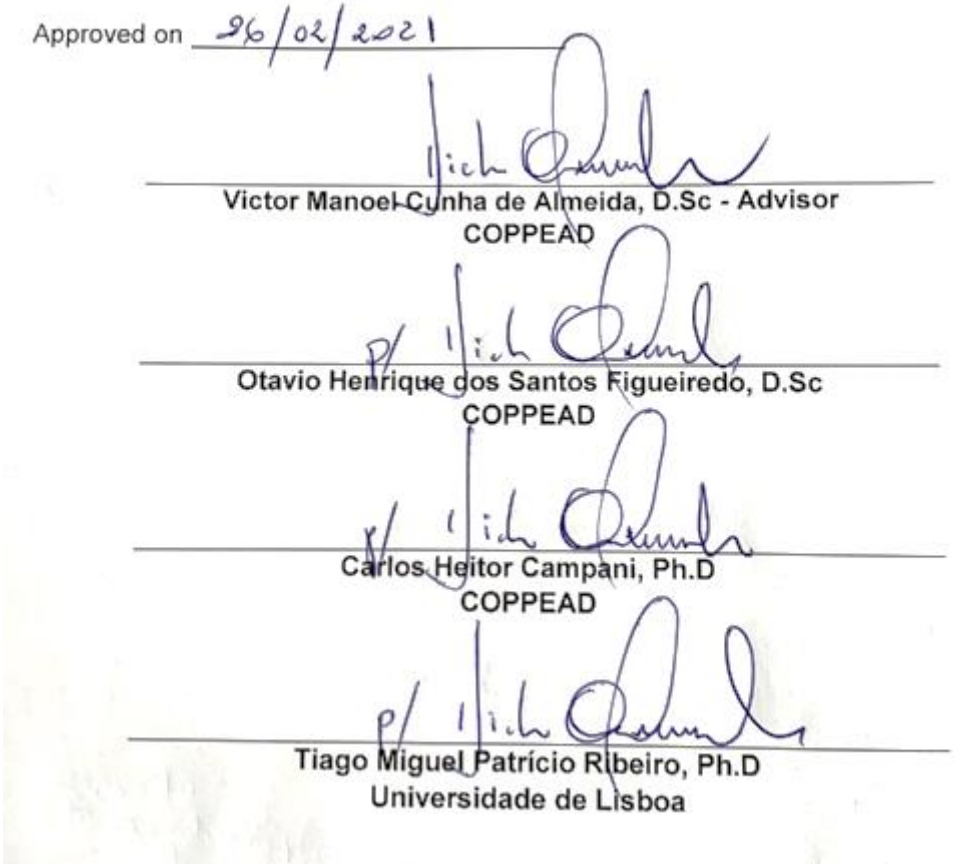

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To all Thank you, Gabriel Schirmer Neves

"Human behavior flows from three main sources: desire, emotion, and knowledge."

Plato

RESUMO

Schirmer Neves, Gabriel. CONCEPTUALIZATION OF CROWDFUNDING MODELS IN E-SPORTS MOBA TOURNAMENTS: THE DOTA 2, SMITE AND LEAGUE OF LEGENDS CASES. Rio de Janeiro, 2021. 76 pp. Dissertation (Master's Degree in Business Administration) - COPPEAD Graduate School of Business, Federal University of Rio de Janeiro, Rio de Janeiro, 2021.

A partir de 2020, o mercado de videogames explodiu, seu valor superou o mercado cinematográfico e foram criadas novas técnicas para gerar lucro. Um desses métodos é a utilização de modelos de crowdfunding. Em particular a League of Legends, Dota 2 e SMITE, esta pesquisa estuda três para propor um novo tipo de modelo de crowdfunding.

O estudo é dividido em três partes principais, a discussão teórica, a análise de casos e a conceituação e validade do modelo de crowdfunding baseado em incentivos. A primeira parte abrange o debate em curso na literatura sobre crowdfunding, passando pela dificuldade de se fixar aos diferentes tipos de crowdfunding, terminando na fusão e adaptação das diversas ferramentas utilizadas para categorizar e analisar o crowdfunding.

A segunda parte é o centro da pesquisa. Os casos analisados utilizando as lentes e ferramentas desenvolvidas na parte anterior forneceram razões suficientes para acreditar que o modelo de crowdfunding utilizado pelos três e-sports mencionados não é um modelo que já esteja categorizado. Assim, no final, derivam as relações e particularidades do novo modelo de crowdfunding baseado em incentivos.

A última parte analisa as seis relações hipotéticas do modelo, utilizando a metodologia SVAR/VAR. Como resultado, as seis hipóteses são confirmadas, com alguns resultados contra-intuitivos. Em conclusão, este estudo visou entender qual modelo de crowdfunding que os torneios de e-sports estão usando e categorizá-lo, se possível. Como o modelo não se encaixava em nenhum dos modelos tradicionais, um novo modelo surgiu, foi provado e validado.

Keywords: Crowdfunding, Incentives, Dota2, League of Legends, SMITE, E-sports

ABSTRACT

Schirmer Neves, Gabriel. CONCEPTUALIZATION OF CROWDFUNDING MODELS IN E-SPORTS MOBA TOURNAMENTS: THE DOTA 2, SMITE AND LEAGUE OF LEGENDS CASES. Rio de Janeiro, 2021. 76 pp. Dissertation (Master's Degree in Business Administration) - COPPEAD Graduate School of Business, Federal University of Rio de Janeiro, Rio de Janeiro, 2021.

As of 2020, the video-games market exploded, its value surpassed the cinema market, and new techniques to profit were created. One of such methods is the utilization of crowdfunding models. In particular League of Legends, Dota 2, and SMITE, this research studies three to propose a new type of crowdfunding model.

The study is divided into three major parts, the theoretical discussion, the case analysis, and the incentive-based crowdfunding model conceptualization and validity. The first part embraces the ongoing debate in the crowdfunding literature going through the difficulty of setting to the different types of crowdfunding, ending in the fusion and adaptation of the various tools used to categorize and analyze crowdfunding.

The second part is the center of the research. The cases looked at using the lens and tools developed in the previous part provided enough reason to believe that the crowdfunding model used by the three e-sports mentioned is not one that is already categorized. Thus, in the end, deriving the relations and particularities of the new incentive-based crowdfunding model.

The last part analyses the six hypothetical relations of the model, using the SVAR/VAR methodology. As a result, the six hypotheses are confirmed, with some counter-intuitive results. In conclusion, this study aimed to understand what crowdfunding model the e-sports tournaments are using and categorize it if possible. As the model did not fit any of the traditional models, a new one surged, was tasted and validated.

Keywords: Crowdfunding, Incentives, Dota2, League of Legends, SMITE, E-sports

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LIST OF ABBREVIATIONS AND ACRONYMS

AoS – Aeon of Strife

DotA – Defense of the Ancients

Dota 2 – Defense of the Ancients 2

LOL – League of Legends

MOBA – Multiplayer online battle arena

RTS – Real-time strategy

TI – The international

Worlds - Season World Championship

Compendium – Dota 2 Battle-pass

KiA – Keep0it-all

AoN – All-or-nothing

Noob - Newbie

EENC - European Expert Network on Culture

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1 – Introduction

This section presents the overall context of e-sports tournaments, academic and managerial relevance.

1.1 – The e-sports scenario

As of 2020, video-games have become one of the biggest markets inside the entertainment ecosystem, amassing more than 100 billion dollars in revenue Media (2020), Webb (2019) in 2019 with good forecasted growth made by respected companies like Reuters. This thriving sector evolved at a fast pace since its appearance in the 1970s with the Computer Space by Nutting Associates in 1971 and the famous Atari Pong game in 1972 Tyson (2020), moving from single-player and local multiplayer simple games to the great variety that is seen today with games for all tastes and ages.

One of these sub-categories of video-games is competitive video-games. There is no clear definition of what is a competitive video-game since it covers a wide variety of the sector. However, it is possible to understand what a competitive video-game is by looking at what players define as competitive. In Steam, the biggest online video-game retailer, platform users suggest and vote for which category a game belongs; in the search for the "competitive" category, it easy to see two clear parameters that users use to define competitive: multiplayer and competing against other players.

Using these parameters, competitive video-games can be defined simply as a game that puts players to compete against each other. Like traditional competitions, we call sports, when a game turns to be competitive enough, tournaments and leagues start to appear, and thus the professional scenario of video-games appeared.

Today many e-sports came to be from the old days of StarCraft 2 to newcomers like Fortnite. The sector faces, as of today, great competition with many companies trying to make the new great hit with popular genres; in the past, it was the MOBA dispute with many big players like Blizzard and Valve making their own (Heroes of the Storm and DotA 2 respectively) and new companies like Riot with League of Legends trying to compete, today the battle royale dispute is raging with Fortnite, PUBG and Apex legends being the most popular ones Clement (2019, 2020).

Looking further, the numbers justify the investment many small and big companies make. Forecasts to e-sports viewership reach more than 600 million viewers by 2023, with more than 250 million being frequent viewers Gough (2020). Also, projections for revenues range from 1.5 billion to more than 3 billion dollars by 2022 Reyes (2021).

This research ultimately focused only on a small part of the e-sports scenario, the MOBA sub-genre. In this scenario, we have two of the most popular e-sports with League of Legends and Defense of the Ancients 2 Hore (2020), millions in prize pools Earnings (2020), and, more importantly, the crowdfunding models used by the publishers.

1.2 – Academic relevance

Crowdfunding is a recent movement and is being studied by many scholars in a great variety of fields with prominence in finance and psychology. With being so new, the gaps in the literature are many as there is no real consensus on the topic.

The more important gaps are in the backbone of all research topics, the definition, and the typology. As of today, there is no majorly accepted definition of crowdfunding which leads to confusion and lack of guidelines to properly categorize the myriad of crowdfunding models.

With a further look, the literature usually does not deviate from studying traditional crowdfunding platforms like Kickstarter and models, as can be seen with prominent researchers like Belleflame, Agrawal, and Mollick. In a way, this characteristic brings consistency to many studies. On the other hand, this narrows the concept and the models of crowdfunding and does not permit new models to the topic even though they fall in the definition of crowdfunding given by many of these authors.

In this confusing scenario, this research has three major purposes. The first two have structural implications in the literature, with ten being to try to create an acceptable definition for crowdfunding that is not too narrow and not too wide (a major criticism made by Mollick, 2014, that will be seen further down), create a set of multi-disciplinary parameters that can and will categorize the accepted and new crowdfunding models and types. The last one is to contribute by providing a new type of crowdfunding that is not displayed in the literature.

1.3 – Managerial relevance

Adding to the contribution to the literature, this study also has the goal to contribute to companies that have or are trying to implement crowdfunding as one of their financings and/or revenue tools.

As stated before, the e-sports scene is growing at a fast pace Reyes (2020), and companies are trying to create a new hit that will win the preference of players. To gain an edge over the competitors is a must and some ways to do it is to have solid financing, create a healthy player community, and carefully understand the needs and desires of your player base.

As will be seen in this study, crowdfunding is a possible solution to gain that edge over competitors. In the cases of League of Legends, Defense of the Ancients 2 and SMITE companies developed successful crowdfunding models to fill their needs being then financing problems in the case of SMITE, more player interaction with DotA2 and more revenue like in League of Legends.

By using these real cases, this research will derive viable crowdfunding models that can be adapted and used by new and incumbent companies in the e-sports market. Further, as will be seen in this research, these models are easily implemented given the virtual nature of video-games and can give great results if properly made.

2 -- Literature Review

This section shows what the literature on crowdfunding has developed so far and what is generally accepted by scholars on the topic. This section is the backbone of the research giving the definition used through all the research and the base used to create a method to categorize crowdfunding models and types.

2.1 – Definition of Crowdfunding

Crowdfunding is a newly carved term from the last decade, and since it has been used in many different situations with varying meanings and definitions. To study it, a clear definition with parameters is needed. This is no easy task as there is no set definition in the literature of crowdfunding.

The concept of crowdfunding is usually defined as a derivation from the concepts of micro-finance (Morduch, 1999) and/or crowdsourcing (Poetz & Schreier, 2012; Howe, 2006a, 2006b); in both cases, there is a key feature exclusive to crowdfunding, fundraising. In this sense, some authors state the crowdfunding is just another form of crowdsourcing designed to

raise funds, like Schwienbacher and Larralde (2010), crowdfunding is "an open call, essentially through the Internet, for the provision of financial resources either in the form of donation or in exchange for some form of reward and/or voting rights to support initiatives for specific purposes." This definition is criticized by Mollick (2014) as an expansive definition that still leaves cases and examples of crowdfunding outside its spectrum; some examples the well-accepted lending-based crowdfunding described as peer-to-peer lending in Lin, Prabhala, and Viswanathan (2013) and others in the following section.

Another form used to define crowdfunding is the self-determination theory; as described by Ryan and Deci (2000), the theory presents two main needs that humans have to execute an action, intrinsic and extrinsic motives. In the crowdfunding literature focused on phycology and linguistics, the definition of crowdfunding is derived from the motives a person has; as stated by Yuan and Wang (2020), a crowdfunding campaign is defined by the motives that the lexicon used to gather funders presents, with texts, not the main definers being motivations derived from relationship building and non-rewarded gratification. This study is backed by another focused on the entrepreneurial side of crowdfunding, following Allison, Davis, Short, and Webb (2015) that had; as a result, the motives resulted from narratives focused on helping others are more favorable than narratives based on investment opportunities. Thus, rendering the definition of crowdfunding as a result of successful application of motives to create the possibility of a crowdfunding campaign.

For this research, the definition cannot be too limiting; however, according to Mollick, to broaden the definition is to elude yourself since crowdfunding covers many cases across disciplines. Looking at this, Mollick gives a narrower definition but a more defined one, "crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries."

Mollicks` definition is very accurate when studying types such and reward-based and equity crowdfunding. However, in the cases studied in this research, it is to be see that those types are not present, so this definition is not the best suited. To solve this problem, it is a must to look back at crowdsourcing and broad Mollicks` definition enough to fit our research, but not too much to elude ourselves.

Crowdsourcing was first defined by Howe (2006a) in an online article as: “The act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call.”

With Howe`s definition, it is important to see two key points that Mollick is lacking, the undefined groups and the undefined motives. With these, we can adapt Mollicks` definition to the following: crowdfunding is referring to the effort of individuals and groups pushed by motives to fund their ventures by drawing on small contributions from a relatively large number of individuals or groups, without standard financial intermediaries.

This definition does not fall in the same situation as Schwienbacher and Larralde's one, and it is broad enough to embrace many of its uses and accurate enough to not leave a creative mind fitting it in wrong uses. It has six key points, two from Howe and two forms Mollick, one common on both and one derived from the self-determination theory, that define what can be seen as crowdfunding or a crowdfunding model and what cannot, from Howe we have the ones from before, undefined motives and undefined groups and form Mollick we got the main point of fundraising and the lack of financial intermediaries, and from both the essential part of the prefix crowd, a large group of people contributing, but it would be all for nothing if the contributors did not have enough motive to do so thus introducing the motive part form self-determination theory.

It is important to note that having a clear definition of crowdfunding is what allows further categorization and modeling of crowdfunding models and types; furthermore, by using other definitions, all the settings and modeling displayed in this research could not be fitted as crowdfunding. As the definition is a gray area with no global or major acceptance in the literature, to carve or adapt a definition is valid and contributes to this discussion.

2.2 – The types of crowdfunding

Different from the definition of crowdfunding, the types of crowdfunding are not globally but well accepted in the literature.

From the literature, it is possible to categorize the universe of crowdfunding into four main types: reward-based, donation-based, crowdlending, or lending-based and equity-based crowdfunding.

Apart from the four main types, a new form of crowdfunding is being discovered, but given the immaturity of the literature regarding them, these new types are still not well established and are not being considered relevant to this study.

2.2.1- Reward-based crowdfunding

Reward-based crowdfunding is the type of crowdfunding that was traditionally called crowdfunding and is the most popular. In this category, crowdfunding is often a two-sided platform with founders on one side and funders on the other with a platform in the middle (Mollick, 2014).

Also, reward-based crowdfunding has, as a result, both material and immaterial compensations, with benefits ranging from pre-selling and pre-ordering, typical in the famous crowdfunding platform Kickstarter, giving both founders and funders material compensations (Hemer, Scneider, Dornbusch & Frey, 2011) to acknowledgment (Belleflamme, Lambert & Schweinbacher, 2013).

This type of crowdfunding can also be masked and not be directly expressed as crowdfunding. As an example, we have the early-access video games present in many popular online stores like Valve Corporation`s Steam and Epic Games` EGS. In this case, the consumer pays for an in-development video-game from small and unrecognized studios, in the end secretly financing the development of the said video-game.

Also, to increase financing, many funders' motivations can be stimulated like previews or demos of the final products, for example, early material compensation or funder's name or dedication in the final product as an immaterial compensation.

2.2.2- Donation-based crowdfunding

Donation-based crowdfunding is directly related to classic fundraising (Kraus, Richter, Brem. Cheng & Chang, 2016), with its main difference in the channel used for the donation.

In this type of crowdfunding, it is expected to not receive material compensation (Giudici et al., 2012), but instead, it is expected to receive immaterial compensation, often in the form of social rewards and/or acknowledgments (Leimeister & Zogaj, 2013).

Some scholars studying the psychology behind the motives of crowdfunding found the motives behind donations in online philanthropic behavior being expected to transpose to crowdfunding (Gerber & Hui, 2013). In this case, the motives could range from sympathy and empathy toward the cause (Rick et al. 2007), guilt for not contributing (Cialdini et al. 1981), and an attempt to strengthen social identity (Aaker and Akutsu, 2009).

2.2.3- Crowdlending

Crowdlending is the evolution of the microlending concept, following the original concept described by Spooner (1846) in his work offering micro-lending as a way to alleviate poverty via small entrepreneurial activities; crowdlending just adapts to the crowdfunding environment by having numerous individual lenders instead of just one.

This type is often used to fill the gap on the credit market usually filled by loan sharks, as the clients do not provide collateral and do not have access or the attractiveness required by traditional financial institutions to fulfill their needs, usually entrepreneurial in nature, thus motivating entrepreneurial growth (Battilana & Dorado, 2010).

The mechanism of reward in this type of crowdfunding is what is expected in a traditional loan, and funders will receive an interest agreed before the completion of the crowdlending process (Giudici et al., 2011), making material interest the true motivating factor to fund. Since this type share familiarities with the financial sector counterpart, it has different possible models, from private contracts, peer-to-peer lending, or even contracts between people and companies (Hemer et al., 2011, Mach, Carter & Slattery, 2013).

2.2.4- Equity-based crowdfunding

Equity-based crowdfunding is a definition of the simplest form of crowdfunding. Funders back a project and receive in return equity proportional to the amount funded (Mollick, 2014), like crowdlending, this is the same as the traditional financial counterpart but with a crowd as funders and not banks of other financial institutions.

Like in the financial system, the motive behind the funding is to receive equity and future profits associated with that equity (Beck, 2012).

Even though it is easy to define, equity-based crowdfunding has many complex models, but since the focus of this study does not permeate this type of crowdfunding, it is best not to deepen in it.

Reward-Based	Donation-based	Crowdlending	Equity-based
• P2B • Material - goods • Immaterial - acknowledgment	• P2B • Immaterial – acknowledgment/social reward	• P2P • P2B • Material - interest	• P2B • Material – stocks/dividends

Figure 1 - Crowdfunding types

2.2.5 – Other types of crowdfunding

New types of crowdfunding can be categorized into two main branches: not well-established derivations or subtypes of the previously mentioned types and completely new types of crowdfunding.

On the first branch, we have the dual-class equity crowdfunding described by Cumming, Meoli, and Vismara (2019) as being an equity crowdfunding model, but the funder has the

choice of selection dividends or voting rights. Another similar type is the investment-based crowdfunding proposed by Rossi, Vismara, and Meoli (2018), where the funder has no choice, but the founder displays the rules for voting rights.

Following the second branch, we have newly formed civic crowdfunding, as defined by Brent and Lorah (2019); this type of crowdfunding is specialized in giving a public good; as a result, the community uses a crowdfunding platform to promote public projects.

2.3 -- Methods to evaluate crowdfunding

Another point of intense discussion is how to evaluate crowdfunding to categorize it.

Since crowdfunding, as described by Mollick (2014), is and will in the future be studied and used by many different areas, the methods to classify each model and each type are and will be even more diverse.

The main problem in this topic is the lack of a standard method to classify all the types of crowdfunding; in other words, the different types came to be using different methods, and there is no single method used to describe all of them at the same time.

From the field of economics, crowdfunding models could be classified by the use of econometrics, with incentives being significant variables (Agrawal, Catalini, Goldfarb, 2013). From the near field of finance, the parameters describing the models of crowdfunding could be the communication to investors (Moritz, Block, Lutz, 2014) or the return to investors (Tomczak & Brem, 2013).

On a more qualitative view of the psychology field, motivation could be the main parameter to define crowdfunding types, one theory often used in the self-determination theory, according to it motivation could be intrinsic and extrinsic and has three innate needs that need to be satisfied, competence, autonomy and relatedness (Ryan and Deci, 2000).

The literature does not provide a small consensus on how to evaluate crowdfunding; however, some themes are usually used. When studying the interaction between funders, platforms, and founder's motivation and payoffs are recurring mechanisms, on a more quantitative study, returns, payoffs, and incentives are prevalent.

In the following chapter, it will be clearer on how we will classify crowdfunding models in this research.

2.4 – Crowdfunding, video-games, and e-sports

Literature connecting crowdfunding and e-sports is scarce, and it is not significant to this study since the connection between crowdfunding and the funding of e-sports tournaments has not been found studied before. However, crowdfunding and video-games have a deeper and older connection, thus resulting in richer, but still scarce, literature.

Some connections made by previous studies can be described as the newborn business model based on crowdfunding where video-game publishers are being substituted by crowdfunding (Thurner, Kroenert, Goersch, 2019, Planells, 2015), the advantages and disadvantages of using crowdfunding to develop a video-game (Mollick & Kuppunswamy, 2014) and the shift in culture from being consumers to being investors (Planells, 2015).

Looking further in Thurner, Kroenert, Goersch, 2019, it is stated that this shift in the market creates an environment where small developers, without the backing of big publishers, experiencing a trial-and-error process with the life of the company depending on the success of a single product similar to a start-up environment.

This environment created a surge of indie video-games developers and games; as can be seen in the data extracted by Statista, the number of indie video-games on Steam more than doubled from 2015 to 2017 Clement (2020). Corroborating with Planells, 2015, that concludes that this environment is positive in creating an emancipatory framework for video-games developers.

Also, in Planells, 2015, it is important to notice the development of a participatory culture among users, thus creating the inclusion of users in the development of the game, in the end, converting the consumer to a prosumer-investor.

This result is vital to understand the key feature of user feedback and interaction in the following e-sports crowdfunding models.

2.5 -- Crowdfunding and marketing

Like the previous section, the literature that connects crowdfunding and marketing is limiting, but a relevant part of this literature displays crowdfunding as a marketing tool.

Sayedi and Baghaie (2017) describe crowdfunding as a useful marketing and price discrimination tool. In their work, crowdfunding has effects on consumers' habits and decisions and producers' selling strategies, thus making it a marketing tool to boaster sales using mechanisms like pre-selling and pre-ordering or induce funders to misevaluated the true price of the product.

An infamous case, portrayed by many news media like Forbes and the New York Times, of misevaluation is the Star Citizen project Lanier (2019), Perez & Vardi (2019), Gault (2018),

Parker (2017), a video-game that had millions funded by the crowd but did not deliver any of its promises.

Another study by Brown, Boon, and Pitt (2016) portraits crowdfunding and as a marketing tool to boost brand image and to ensure market readiness to the future pipeline.

The literature lacks when providing an accepted framework or how to implement crowdfunding as a tool for marketing.

2.6 – Crowdfunding models operationalization

In this section, it is displayed how the literature operationalized the different models of crowdfunding.

In the case of reward-based crowdfunding, following Cumming, Leboeuf, and Scweinbacher (2019), they divided the models into two distinct types, the Keep-it-All (KiA) model and the All-or-Nothing (AoN) model.

With the KiA model consisting of pledging for a determined amount for the completion of the project, but if the amount is not reached, the founder keeps all the money that was possible to gather then, and the AoN being the opposite of the keep-it-all model, the founder will only keep the money gathered it the amount reaches and/or surpasses the amount pledged.

It is also described that the big difference in these models is how the users view the project; with the information being asymmetric, the choice of how to monetize the crowdfunding camping gives the user a signal of how good the project is with the AoN model translating to a signal of good quality projects, meaning that "entrepreneurs need to "have sufficient skin in the game" to convince the crowd as entrepreneurs."

The study created three hypotheses based on the likelihood of success of the crowdfunding campaign and the risk associated with each of the models presented. Data were extracted from the studies platform directly with closed campaigns from 2008 to October 2013; data from 2007 and November 2011 were excluded due to not being an option to select between the two models.

Data analysis took from two methods, comparative histogram analysis from the completion ratio of the two models and a comparative analysis of risk (standard deviation) and returned (mean) of each model.

Differently from the previous study in Mollick (2014) consisted of manly as an exploratory study. In this sense, no formal hypothesis was formed.

Mollick gathered data directly from the platform from 2009 to July 2012 and excluded extreme pledging values with thresholds being one hundred dollars minimum and one million maximum, also were excluded from the study non-us projects.

The data was analyzed with a comparison between different categories of projects using descriptive data. The further analysis used the correlation between these variables.

In the crowdlending section, two main distinctions were made the peer-to-peer lending described in Lin, Prabhala, and Viswanathan (2013) and person-to-business lending described by Maier (2016).

In Lin, Prabhala, and Viswanathan (2012), the effects of the online friendships of borrowers are the main point to signal credibility, thus affecting the success rate of the crowdlending, interest rates, and default rates. The model described is a simple loan from a person or a group of people to one individual, with the interest rate being the result of the lending.

The data was gathered directly from the platform, from January 2007 to May 2008, using the platform`s API for borrowers (founders). The empirical model has one joint hypothesis based on social stigma economic theories.

The first model was divided into six different specifications for the level of friendship; afterward, a Probit model was estimated to test the probability of success of a listing.

On the other hand, in Maier (2016), the author proposes a model where speed and flexibility are key points. He argues that instead of using the old financial system to gather resources, businesses tend to use crowdlending platforms because they are more convenient. Like the previous model, the one described by Maier is a simple loan, with the main dependent variable being the decision of switching or not to crowdlending instead of traditional lending.

The study divided the empirical analysis into two steps, first the supply side (borrower requests) and the demand side (consumer investments). For the first part, based on the literature, eight hypotheses were created. Data was gathered directly from users of the platform focusing on SMEs by a survey, and the method of analysis consisted of a partial least squared (PLS) model with Smart PLS 3 with the criterion used to assess validity being a heterotrait-monotrait ratio of correlations (HTMT).

In the second part, six hypotheses were used with data being gathered in the same way as the first part, and the method used to analyze was simple regression.

	Data source	Collection Method	Analysis Method
Keep-it-all	Platform	Manual	histogram/risk-return
All-or-nothing	Platform	Manual	histogram/risk-return
Reward-based	Platform	Manual	discriptive comparison/ variables correlation
P2P Crowdlending	Platform	API	Probit
P2B Crowdlending	Users	Survey	PLS/OLS

Figure 2 - Crowdfunding literature models

2.7 – Legal status of crowdfunding

As expected from a recent phenomenon, crowdfunding legal status is still being debated in many countries in the world.

From a report from the European Expert Network on Culture (EENC) entitled Crowdfunding Schemes in Europe by Röthler and Wenzlaff (2011), crowdfunding should be treated by the proposed reward it gives: no reward, sponsorship, pre-selling, lending, and investments. To judge a crowdfunding campaign, it should be based on its results. In a no reward campaign, for example, the law applied should be the same one applied in donation cases. The report, however, stated that more regulation regarding immaterial goods, such as patents and copyrights, is needed when applied to crowdfunding campaigns.

Moving to the United States of America, the legal situation of crowdfunding is still a debate between a new form of regulation or fitting into the present securities regulation, as studied by Hornuf and Schwienbacher (2017). This state was a reversal from the complete prohibition under the federal securities law in 2013, as stated by Valanciene and Jegeleviciute (2013).

3 – Methodology

The theoretical research was divided into three theoretical parts.

The first theoretical part was the derivation and adaptation of the criterion used in the literature to categorize the different crowdfunding models. In this section, following Mollicks (2104) critic it is important to select a variety of criteria to not exclude different points of view regarding crowdfunding.

With this in mind, it is also important to use a criterion that is generally accepted in each field but not being too specific as too much specification will lead to the exclusion of crowdfunding types.

Using the idea of a representative agent borrow from economics defined by Edgeworth (1881), the models used to represent each crowdfunding type will be a typical model and will not represent the complexity of the models made by previous scholars.

The criteria were selected to bring variety into the study as well as promote a common base in which all the crowdfunding models could be distinguished from each other.

The following were then selected: the payoffs parameters of the funders and founders from the fields of economics and finance, the motivation parameters derived from the self-determination theory on the field of psychology, and the marketing opportunities a new construct created based on the marketing literature related to crowdfunding on the field of marketing.After setting the criteria that were used to classify the possible models of crowdfunding, the case selection and analysis incurs.

To select cases, two criteria needed to be filled, the amount of data that can be gathered and the presence of a possible crowdfunding model or mechanic inside the e-sport. For the first criteria, both first-person shooters and multiplayer online battle arena sub-genres were plausible. However, only the latter had examples of crowdfunding mechanics.

Inside the sub-genre, the choices for cases were very limiting; two criteria were applied to the selection. First, the e-sport needed to have an international tournament; this is to reduce possible country demographics and cultural bias as is stated in the literature that different cultures are more or less inclined to contribute. The second criterion was the visibility and popularity of the e-sport. This was needed to ensure reliable and open information, as popular e-sports have many different sources of information and also to ensure relevance to the study.

The first criteria were fulfilled by four cases, League of Legends, Dota 2, SMITE, and Vain Glory, but the second criteria at first was fulfilled by only the first here of then, as Vain Glory had limitations caused by their multi-platform setting (iOS, Android and PC) regarding data compatibility.

The final theoretical part was then the case analysis that resulted in a conceptualization of a new crowdfunding model present in the mentioned cases, called incentive-based crowdfunding. The modeling used the results of the evaluation of the crowdfunding mechanics using the criteria developed in the first part to create basic relationships; further ones were a result of the e-sports publisher mentioned relations, theoretical relations made by previous studies that fit the model, and theoretical relations expected in or derived from the model itself.

Empirical research was divided into two parts.

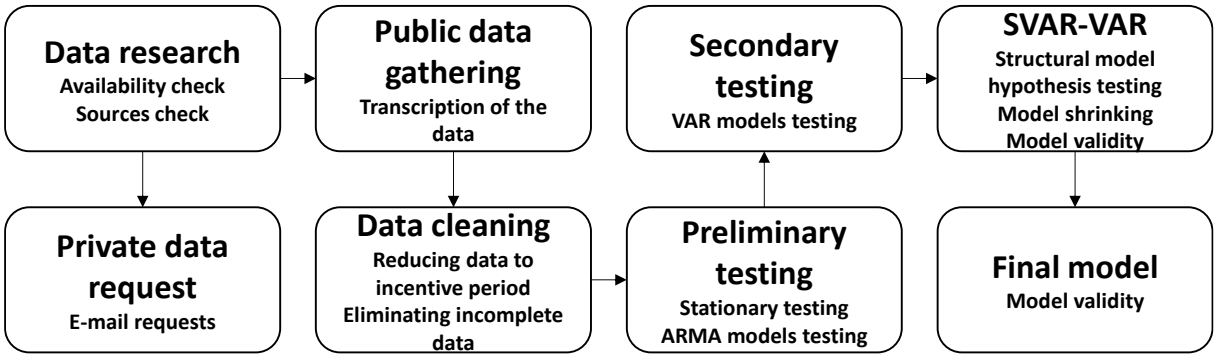

Figure 3 – Data fluxogram

The first part consisting of data gathering and cleansing for each of the cases selected. Of all the cases, only the Dota 2 case presented enough public data to be analyzed, with the other two cases (League of Legends and SMITE) data had to be requested from the developer but resulted in a negative response. Data regarding the number of users and number of Twitch viewership was easily gathered from a website that uses official supported API that gathers information from the platform Steam, developed by Valve Corporation, that hosts the game Dota 2, other information was gathered from third-party news and reports with respectable sources like the official Dota 2 wiki page for incentive dates and unofficial tracking API website that tracked all of the tournaments prize pools increments. Regarding frequency, data was gathered at a daily frequency resulting in 733 observations. Only data from the period of the crowdfunding campaign was used due to complications with heteroskedasticity and error auto correlation.

Due to the data availability restrictions, only the model referring to the Dota 2 case (open multiple incentives model) was possible to be tested. The process of cleansing was based on completion; if a data set for a day was not complete, it was eliminated, data sets leap years 29th of February were deleted.

The variables used were based on the variables defined on the theoretical models, with them being the amount contributed, the presence of tournament matches, the visibility of the game and/or tournament, the number of players, and the presence of an incentive. In cases that a variable is not objectively defined, a proxy variable was used, and for binary variables, dummies were created.

The second part consisted of the creation and testing of hypotheses based on the theoretical models. In the theoretical model, six important relations were hypothesized, with one having the contribution as the dependent variable, two with the number of players being the dependent variable, and three with the visibility being the dependent variable.

H1: the amount contributed to the prize pool of an e-sports tournament is positively affected by the crowdfunding incentives created by the developer.

H2: the number of recurring players that play the video-game that the e-sports is based on is increased by the presence of crowdfunding incentives created by the developer

H3: the number of recurring players that play the video-game that the e-sports is based on is increased by the visibility that the e-sports and/or the video-game has.

H4: the visibility an e-sports and/or a video-game has positively affected by the presence of crowdfunding incentives created by the developer.

H5: the visibility an e-sports and/or a video-game has is positively affected by the amount contributed to the tournament crowdfunding campaign.

H6: the visibility an e-sports and/or a video-game has is positively affected by the presence of a tournament.

Hypothesis	Dependent variable	Independent variable	Signal
H1	Prize_variation	Incentive	+
H2	Player	Incentive	+
H3	Player	Viewers	+
H4	Viewers	Incentive	+
H5	Viewers	Prize	+
H6	Viewers	Tournament	+

Figure 4 – Variables signals

The analysis was made in a two-step process, with a structural vector autoregression (SVAR) being the first and adaptations of the reduced-form VAR being the second. This process was inverted; first, the data was modeled freely by the SVAR and then adapted to fulfill and test the hypotheses. This process was selected after preliminary testing of the data showing an autoregression nature and many variables being endogenous determinate.

Both the SAVR and VAR models assume that the orthogonal restriction to be true; this assumption is very restrictive and is the major disadvantage of the methodology.

First, the data set was tested for stationary status with an augmented Dickey-Fuller (ADF) test developed by Dickey and Fuller (1979); if the series fails the test, it was tested again using the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests, developed by Kwiatkowski, Phillips, Schmidt, and Shin (1992) to evaluate if the series is trend-stationary or not. Apart from the prize poll variable that was not stationary and had the difference being taken before the tests, the other variable that failed the tests was the number of players, and this is due to the negative trend present in it.

After guaranteeing that all the series are stationary, an SVAR regression was applied for all the series giving; as a result, the relations between the endogenous variables and their lags. The SVAR lag count was first set to 30 days representing a month, but after the first analysis, it was set to 7, representing a week since no lag after a week was significant. This structural model was then dismantled in various reduced-form VAR`s that described the relations between the dependent variables and the lags of themselves and the other endogenous variables.

Because the VAR model only regresses with time-lagged variables, the non-lagged relations are not shown in the regression. In this way, it is possible to use the reduced-form VAR as a base to a regular ordinary least square regression (OLS). Adapting the reduced-form VAR regressions obtained previously by adding the non-lagged independent variables, it was possible to test all the hypotheses created above.

The new OLS regressions were tested in multiple ways to guarantee validity and correctness. First, a Ramsey (1969) RESET test was be applied to ensure functional form correctness.Afterward, testing for heteroskedasticity was used both the score test for non-constant error variance (NCV test) developed by Cook and Weisberg (1983) and the Breusch-Pagan (BP) test developed by Breusch and Pagan (1979). Since there were cases of heteroskedasticity, it was corrected using the White-corrected covariance matrices developed by White (1980). This correction had to be used since other corrections like the Box-Cox transformation weren't functioning.

Following heteroskedasticity, the models were tested for serial correlation with the Breusch-Godfrey (BG) test developed by Breusch (1978) and Godfrey (1978) and the analysis of the autocorrelation function (ACF) and partial autocorrelation function (PACF) of the residuals.

When the regression passed, all the tests mentioned the non-significant regressors were eliminated, and the regression was tested again, with another success incurring with all regressors significant the regression was final. In the case of heteroskedasticity correction, only the robust regression was analyzed to eliminate non-significant regressors. Using this process, the hypotheses were considered true if in the final regressions the regressors are present as stated by them.

Hypotheses	Regression equations
H1	Prize_variation = β*Player + β*Prize1 + β*Incentive1+β*Tournament1 + β*Viewers2 + β*Viewers3
H2 H3	Player = β*Viewers + β*Player1 + β*Player2 + β*Player3 + β*Player4 + β*Player5 + β*Player6 + β*Incentive1
H4 H5 H6	Viewers = β*Tournament + β*Viewers1 + β*Viewers5 + β*Viewers6 + β*Prize3 + β*Incentive2

Figure 5 – Regression equations

4 -- Tools to define the models of crowdfunding

As mentioned before, having a standard way to categorize and evaluate the different models of crowdfunding is no easy task.

To be possible to discriminate each type and to discover new types of crowdfunding, it was created a simple but effective standard uniting and simplifying methods used in the literature. To not exclude possible types, we need to select diverse methods from different fields of study.

Following the literature, I have selected three parameters that are used in this research to classify a type of crowdfunding. They being: the payoffs of both the funders and the founders, the motivations behind funding, and the marketing opportunities in each type.

Also, it is important to note that the results of these parameters were simplified versions of the true results since I used typical models and not developed derived models of each type.

4.1 -- The payoffs parameters

To portrait the payoffs, let c be the absolute value of the contribution made by the individual, x the number of founders, f the final product monetary value, p the probability of success of the crowdfunded project, s the satisfaction or utility multiplayer and converter of altruism, r the interest rate, E the total amount of equity available and the amount pledged a.

Also, let i be the identifier for each particular funder.

4.1.1- The payoffs of founders

The payoffs of founders will be the exact value that the founder received after the crowdfunding campaign. This payoff can be zero and can attain negative values in exceptional cases. These will not be portrayed since the only simple representative model will be displayed.

4.1.1.1- Reward-based crowdfunding

In this type of crowdfunding, we will describe four typical models. This decision is due to a possible future implication on the e-sports crowdfunding cases.

The first two models mentioned KiA and AoN models. These models are repeated for the third and fourth models, with the difference being that the first use fixed amount contributions and then variable amount contributions, bath cases being possible to occur and be designed in real applications.

Model 1.1: KiA fixed contributions

Payoff = Money gathered Money gathered = amount of funders*contribution

Payoff = $x*c$

Model 2.1: AoN fixed contributions

Payoff = Probability of success*Money gathered

Payoff = $p(x*c)$

Model 3.1: KiA variable contribution

Payoff = Money gathered Money gathered = sum of each particular contribution

Payoff = $\sum_{x=1}^{i} c_i$

Model 4.1: AoN variable contribution

Payoff = Probability of success*Money gathered

Payoff = $p * \sum_{x=1}^{i} c_i$

It is easy to see that the payoffs of the KiA model is usually be bigger since the probability of success in the AoN models are not 1. However, it is explained by Cumming, Leboeuf, and Schweinbacher (2019) that this may not be the case due to asymmetric information between founders and funders.

4.1.1.2 – Donation-based crowdfunding

Different from the previous type of crowdfunding, donation-based models can be simplified in just two variants of the same model, with both fixed and variable contributions.

Model 5.1: Donation fixed contribution

Payoff = Total amount contributed

Total amount contributed = amount of funders*contribution

Payoff = $x*c$

Model 6.1: Donation variable contribution

Payoff = Total amount contributed

The total amount contributed = sum of each particular contribution

Payoff = $\sum_{x=1}^{i} c_i$

It is no coincidence that the payoffs from the donation-based models are equal to the KiA reward-based crowdfunding. They essentially are the same model of crowdfunding for the founder, with the only big difference the target audience (funder group) since the motives behind the two models are distinct.

With this in mind, if we had just this parameter to evaluate the different types of crowdfunding, all the donation-based models would be misclassified as KiA reward-based models. Showing the importance of a multiple-sided approach to classify crowdfunding models.

4.1.1.3 – Crowdlending

This type of crowdfunding requires attention when using this parameter. Since there is a large number of possible loan contracts to simply this in one contract is not possible, so to

create the possible payoffs of this type, we need to understand two aspects of loans linked to the founders.

The first is that there is no fraction loan, meaning that the amount pledged has to be fulfilled exactly, so it is not possible to apply the same strategy as the KiA model or to gather more than the pledged amount. The second is that crowdlending may not be successful as a loan since there are no collaterals or guarantees attached to the loan or a previously made financial profile of the founder. As a consequence, there is a risk factor for the founder of crowdlending.

With these two aspects in mind and considering that this type of crowdfunding does not affect the development of this research, and does use the simplest loan possible. In this loan, there is a probability of success of gathering all the money needed, and the amount contributed by each funder is variable with the possibility of being just one funder, thus creating a private loan contract.

Model 7.1: Loan variable contribution

Payoff = Probability of success * amount pledged

Amount pledged = sum of each particular contribution

Payoff = $\boldsymbol{p}$ ***** $\boldsymbol{\sum_{x=1}^{i} c_i == a}$

4.1.1.4 – Equity-based crowdfunding

Like crowdlending, this type of crowdfunding presents many possible real case scenarios. However, for the founder, it is as simple as selling part of his company. In this case, there are only two limitations that we need to impose on all possible models.

The founder cannot sell the control of his company; this limitation is put to stop the founder from committing fraud and another illegal trading since equity-based crowdfunding can be viewed as an open stock market. This conditions that the maximum amount gathered via crowdfunding be 50%-1 of the company.

The other limitation is that there is no possibility to not receive the amount gathered. In other words, it is impossible not to be using a KiA strategy. This condition is important because the founder project/company will be viewed as a normal operating company; in this case, the funders will view their contribution as buying stocks, so there is no return money. In the scenario in which the company does not receive the amount desired, it would be similar to declaring bankruptcy, thus granting funders rights on the company assets.

With these two limitations in mind, we can design a typical simple model for equity-based crowdfunding.

Model 8.1: Equity-based variable contribution

Payoff = Money gathered

Money gathered = Sum of all individual contributions

Payoff = $\sum_{x=1}^{i} c_i < 0.5*E$

4.1.2 -The payoffs of funders

Analog to the payoffs of founders, the funders will receive what the founders promise, being products, services, money for future payments. In this scenario, negative payoffs are also possible, and the payoff of zero being not receiving what was promised and getting the contribution back.

4.1.2.1 – Reward-based crowdfunding

Using the same four models used prior in the type, there are few changes to be made to evaluate the payoffs for funders in reward-based models.

The main change is that in both types of models (Kia and AoN), the funder has a risk component attached to the contribution. In the keep-it-all model, the risk is more evident with the project not being successful and the funder losing the amount contributed. On the all-or-nothing model, the risk is more subtle, the funder will not lose the amount contributed, but the risk of backing an unsuccessful project still exists.

In this sense, the payoffs need to reflect mainly the risk of success of the project.

Model 1.2: KiA fixed contribution

Payoff = Probability of success * Final product monetary value

Payoff = $p*f$

Model 2.2: AoN fixed contribution

Payoff = Probability of success * Final product monetary value + (1 – Probability of success) * Contribution

Payoff = $p*f + (1-p) *c$

Model 3.2: KiA variable contribution

Payoff = Probability of success * Specific amount contributed

Payoff = $p*c_i$

Model 4.2: AoN variable contribution

Payoff = Probability of success * Final product monetary value + (1 – Probability of success) * Specific contribution

Payoff = $p*f + (1-p) *c_i$

On the opposite side of the founder's risk, the funder shares risk in any model of reward-based crowdfunding. This characteristic is not explained by Cumming, Leboeuf, and

Schweinbacher (2019), but one could argue that this is a result of asymmetric information leaving the risk factor implicit for the funders. This argument would only be valid if the platform or means form which the founder is pledging is not disclosing essential information that the final product would only be delivered if a certain funding threshold is met. This is also considering that funders do not know any crowdfunding mechanism or model.

However, this scenario could constitute consumer rights violations in many countries, thus rendering compensation a probable way out of the unknown risk. It is also hard to believe that funders would not know anything about crowdfunding before backing a project.

In the end, the risk factor should be disclosed in the models presented, seeing the possible scenario for it not being present being very unlikely.

4.1.2.2 – Donation-based crowdfunding

Different from its founder counterpart, the funder payoff is not as simple to understand. Going back to the literature, the funder of donation-based projects has very subjective motives on backing them; this subjectivity causes issues when trying to give value to the amount of satisfaction one receives upon donating.

To solve this, we borrow the economic concept of utility. This concept translates into a unit, the unit of utility is subjective and based on each individual. As a result, each individual has his base of measurement.

With this concept, we created the multiplier of utility *s* unique for each individual; in the end, the payoff will not be displayed in monetary values like the other types of crowdfunding but units of utility. It is important to understand that these units can be translated ultimately in monetary values, but to do this, it is necessary to have the conversion rate each individual has for utility (with this being impossible).

Model 5.2: Donation-based variable contribution

Payoff = Unique utility multiplier and converter * Amount contributed

Payoff = $s_i * c$

4.1.2.3 – Crowdlending

In contrast to the founder's payoff, the funder's payoff is very simple to demonstrate. As said before in the literature review, backers will receive interest upon contribution. This interest rate is previously arranged and, in a simple case, is not modified or has no contractual conditions that can modify it.

To simplify even further, we consider the nominal interest rate, meaning that the interest does not suffer from the effects of inflation; also, the interest is a one-time payment at the end of the contract like a simple government bond.

Model 6.2: Crowdlending variable contribution

Payoff = Contribution * (1+ Interest rate)

Payoff = *c*(1+r)*

4.1.2.4 – Equity-based crowdfunding

Equity-based funder's payoff is simple to represent. The only issue to be aware of is the first condition we put when explaining the founder's payoff. The maximum amount a funder can receive in the form of stocks or participation in the company is 50% -1.

It is also disregarded future dividends since they are extremely uncertain and are a long-term goal.

Model 7.2: Equity-based variable contribution

Payoff = (Contribution/Maximum equity) %

Payoff < *c/(0.5*E) %*

4.2 – The motivations parameters

Motivations are not certain, and unlike the donation-based funders' payoff, it cannot be displayed in utility units. To further worsen the situation, motivations are numerous and hard to be classified.

Instead of trying to understand motivations using the mentioned self-determination theory, I opted for a simpler way out. Like Kraus, Richter, Brem, Cheng, and Chang (2016), motivations were divided into two groups, material and immaterial.

Material motivations will result in material compensations; likewise, immaterial motivations will result in immaterial compensations.

To exemplify what is considered material, in these groups are motivations like profits, money, products, and services. For immaterial, we can say altruism, guilt, recognition, and social rewards.

4.2.1 – Reward-based crowdfunding

As described in the literature review, reward-based crowdfunding can sustain both motivation groups for funders. Founders, on the other hand, will most likely fall on the material motivations since their projects will result in products or services that will likely be profitable.

Since there is a lot of subjectivity on this type of crowdfunding, it is expected that there is an exception on both funders and founders, so to give more objectiveness, exceptions, and

outliers will be discarded.With this criterion, we can determine that motivations for funders are both immaterial and material, and founders are material.

4.2.2 – Donation-based crowdfunding

Also described in the literature review and with popular knowledge, donations are expected to be a selfless act with no material compensation for funders; as for founders, the case is not as clear.

Depending on the criteria founder's motivations could be exclusively material or not. If it is believed that the goal of the crowdfunding campaign is to buy products or finance labor to help others, we could consider this as an immaterial motivation since the end compensation is the help of others. On the other hand, with a more short-sighted view, the main objective of crowdfunding is to purchase goods or pay for labor, which is derived from material motivations.

In a more objective way of looking at the problem, crowdfunding would only be possible if the founder had a material motivation. If not, there is no need for the funds to be raised. With this, the short-sighted view is favored and will be used as the parameter.

In the end, the funder's motivations are purely immaterial, and for founders, their immediate motivation to use crowdfunding is material, even though their overall motivations are immaterial.

4.2.3 – Crowdlending

For crowdlending, motivations are very clear; both funders and founders are materially motivated.

A scenario could be made where funders are immaterially motivated, a scenario in which interest rates are below the market value; this case funder would be subsidizing the credit for founders. As this is a very unlikely scenario, it is used the same criteria used in reward-based crowdfunding and stipulate both purely material motivated.

4.2.4 – Equity-based crowdfunding

Despite being similar to crowdlending in motivation, equity-based crowdfunding has more acceptable cases of immaterial motivations.

Undeniably founders will have exclusive material motivations; this is clear when comparing it with the stock market. Companies go public to raise capital for their purposes, in equity-based crowdfunding is the same.

For funders, there is a gray area similar to the start-up ecosystem. There are cases where an investor is altruistic, usually with companies that have purposes other than profits. This could

be translated into the crowdfunding ecosystem; we cannot rule out cases in which funders are being altruistic and helping companies that support causes other than profit.

This argument is compelling enough to give reasonable doubt about the funder's motivations. In this case, we have no choice to attribute then both material and immaterial ones.

4.3 – The marketing opportunities

This concept of marketing opportunities in crowdfunding has not been developed and were adapted from both situations in which crowdfunding is used as a marketing tool.

From the first situation, we have crowdfunding being a sales booster, misevaluate mechanism and futureproofing sales, and from the second, we got it as a way to increase brand image and also futureproofing sales.

With this, we have four possible uses for crowdfunding in marketing: futureproof, misevaluation, sales, and brand image booster. These are going to be the four possible cases of marketing opportunity. If in any model of crowdfunding, marketing is involved but is not inside these, it will not be considered a marketing opportunity. It will also be possible to have many iterations of the same opportunity in a model; those are also counted, but without time as an influence; in other words, the same opportunity is not to be counted twice if repeated by the same mechanism at two different time points.

This definition is very narrow and will change in the future, but since there are so little researches linking crowdfunding and marketing, this is the best possible as of today.

4.3.1 – Reward-based crowdfunding

To determine what are the possible marketing opportunities for both KiA and AoN models of reward-based crowdfunding, we need to trace the flow of information and then search for one of the four possibilities inside this flow.

Since both models are very direct and simple, their information flows will also be, for each information is generated at the founder side, descriptions of the project, development progress, and pledge amount are all available to funders. After this, funders will use this information to decide back or not the project.

The information, however, is not all disclosed; as said by Cumming, Leboeuf, and Schweinbacher (2019), information is asymmetric, and founders have much more information regarding their projects than it is disclosed to funders; this asymmetry is the key point to determine marketing opportunities.

In the KiA model, this asymmetry permits the use of misleading information, creating a possibility of misevaluation by funders. Also, there is a way to increase brand image if certain information is not disclosed, thus rendering the KiA model two marketing opportunities.

On the other hand, on the AoN model, as mentioned by Cumming, Leboeuf, and Schweinbacher (2019), the founder has a major advantage in boosting sales as his project is more believable than the KiA model. With this addition, the AoN model has three marketing opportunities.

It is important to note that the opportunity of brand image is a possibility in both models, but considering that the majority of projects of this type are of unknown brands, the power of this marketing opportunity is diminished and non-relevant.

4.3.2 – Donation-based Crowdfunding

Similar to reward-based crowdfunding, the information flow for the donation-based models is straightforward. The founder has most of the information control and is its generator. The only main discrepancy is the regulation regarding institutions that would use this type of crowdfunding.

In many countries, non-profit institutions that are financed via donations (including donation-based crowdfunding) have specific regulations in what information they must disclose to donators. In a way, this can reduce the power over information but could be the opposite and enforce their power over it.

If regulation reduces power, then the use of misleading information and the informational asymmetry is reduced; in an extreme case where this power is nullified, there would be only one marketing opportunity of boosting the brand image.

In the polar opposite case where power enforcement is absolute, then two marketing opportunities would be possible, boosting the brand image and misevaluation. It is arguable if boosting sales is possible or not in this scenario, and my view is that since sales are not derived by material compensation, the power of this marketing opportunity is very low, thus not being relevant.

4.3.3- Crowdlending

Following the simplicity of previous topics in this type of crowdfunding, crowdlending has only one point of interest regarding marketing opportunities, material compensation. This is the only information required by funders since it is not possible to provide collateral, guarantees, or a financial profile of the founder. In a way, this gives a lot of informational power

to the founder, but it is of no use since there is only one piece of information of importance, and it is compulsory to reveal it.

Like the economic rule of higher interest rates being more attractive to capital, the higher the interest rate offered in crowdlending, the higher the attractiveness of the loan, thus being the sole marketing opportunity of sales-boosting.

4.3.4 – Equity-based crowdfunding

The base that makes this type of work is the same that makes the stock market work, information is paramount to investors, and the more it is disclosed, the more investors will be interested in it.

The information, like all the other types, is generated by the founders, but in this case, there is an incentive to disclose it. This movement leads to a boost in sales and possibly brand image, depending on the case, but it will also nullify the possibility of misevaluation.

In the end, usually, the gain in sales compensates for the loss of misevaluation. This is confirmed by the amount of information that equity-based founders disclose.

5 -- The e-sports cases

E-sports are a recent phenomenon, professionally played dating back to the early 2000s, but they became a big hit when the MOBA`s arrived.

MOBA is the abbreviation for multiplayer online battle arena and is a subgenre of the real-time strategy (RTS) video-games. They require the player to have fast reactions, high adaptability, deep knowledge of the game mechanics, and strategic thinking.

The genre had its origin as a custom map for the original StarCraft called Aeon of Strife (AoS) Minotti (2014); in this first iteration, the map was played by only four human players that took control of a powerful unit to compete with an opposing computer.

The map evolved and took form in another custom map in 2003, this time in Warcraft III: Reign of Chaos and its expansion Warcraft III: Frozen Throne, called Defense of the Ancients (DotA). This custom map defined the basics of modern MOBA`s and was the first to promote tournaments.

After many years and the aging DotA map, in 2009, two former business students, Brandon “Ryze” Beck and Marc” Tryndamere” Merill, along with a former DotA developer Steve “Guinsoo” Feak, created League of Legends (LoL). Their video-game became very popular due to being noob friendly and a more forgiving learning curve than DotA. Among other innovations, LoL introduced the concept of microtransactions in MOBA`s; this

introduction made it possible for the game to use a freemium style of monetization Rousseau (2011). Units called champions we not all unlocked for free, and people had to either play for a long time or pay to unlock them; also, cosmetic items, which are items that do not affect gameplay but only the appearance of the game, were sold in the in-game store.

Soon after de success of LoL, a competitor called Heroes of Newerth (HoN) Minotti (2014) was launched; this time, along with microtransactions, the game was in beta purchasable and became free-to-play two years after. The game brought innovations like in-game voice communication, statistics, punishments for bad behavior, and further microtransactions like game announcers.

In 2013, Valve Corporation invited DotA developer Ice Frog to help and develop a direct sequel to DotA called Dota 2. This time, with a powerful company behind, the MOBA genre rose to the spotlight, with the first international tournament called The International with a prize pool, fully sponsored by Valve, of a million and six hundred thousand dollars Liquid (2011), thus beginning what is called e-sports today.

With the market saturated with traditional MOBA`s, new games of the genre needed to be creative to capture the attention of possible users; SMITE was launched in 2014 with the proposition of a different camera positioning and a more controlled attack form. After Epic Games, the creator of Fortnite tried to create a MOBA called Paragon but ultimately failing in the process Schreier (2018).

As of today, the MOBA market is dominated by two major games, the highly popular and friendly LoL Heimer (2019) and the more competitive and complex Dota 2. Other MOBA`s still thrive with smaller communities like SMITE.

The three main cases presented in the following pages are major MOBA`s that in one way or another utilized crowdfunding models to promote their international tournaments. With crowdfunding, e-sports tournaments, especially MOBA`s, are not dependent on outside sponsors as the players themselves are the sponsors. These models can revolutionize the way tournaments are made and monetized.

5.1 -- MOBA`s

To understand how crowdfunding affects MOBA`s and their tournaments, first, it is paramount to understand what constitutes a modern MOBA.

In this genre, a few set characteristics became rules of what is a MOBA; the first and most important rule is the objective. There must be a single objective to win the game, and this objective will almost always be located inside the enemy base; it can be to kill a Titan like in

SMITE or to destroy a building like in LoL or Dota 2. After the objective, it is a must to have a set of powerful units from which the player will choose to play, being gods in SMITE, champions in LoL, or heroes in Dota; these units need to be diverse in playing style and approach to keep the game infinitely repayable Rondina (2020).

The teams that will face each other usually are constituted of five players each. However, there are instances of a three-player team. These teams fight alongside AI-controlled units in spaces called lanes, a traditional map has three lanes, the bottom, middle and top, but these can be altered with ease. Usually, in these lanes, there are AI-controlled buildings, towers that try and defend the lane from enemy pushes Minotti (2015).

Killing enemy`s units will grant to your unit experience used to level up you and gold. It will be used to buy a set of items that will empower each player's unit, and these items are the main win condition in MOBA`s.

With these basics, a game is going to be called a MOBA, but there are more characteristics unique to each one used to try and differentiate from the others.

5.2 – League of Legends

League of Legends is still today the most popular video-game on earth, with more than 80 million unique players each month Heimer (2019). Hosted by now multi-billion company Riot Games, the game is known for its lack of balance and very rigid metagame. Its community is viewed as one of the most toxic in video-games, and the game has an innate pay-to-win system where the best champions are easily unlocked by buying but very hard to unlock as a free player.

Within its unique characteristics, we find the use of powerful spells called summoner spells. These have high strategic value in the game and have very long recharge times, the presence of dragons that give permanent buffs to the whole team, brushes that make champions invisible to another outside then, and a rune system the empower your champion in a customizable way. These unique characteristics add to the complexity of the game but still are considered the least complex of the three main MOBA`s.

5.2.1- The monetization

As stated before, LoL follows a freemium monetization model. Players can try the game for free and will receive some weaker and more noob-friendly champions for free, but to receive the full experience the game has to offer, a large amount of money is needed Rho and Hofmann (2019). The majority of champions need to be unlocked, and playing for free would take years to unlock them all, but by paying just seconds away. Other forms of monetization come with

cosmetic items called “skins,” these items do not affect the gameplay but just affect the appearances of champions and other game visual effects.

These two forms of monetization still today create a vast amount of controversies. Riot Games is accused of purposely restricting the metagame to force people to play with newer and more expensive to buy champions; also, cosmetic items that shouldn’t affect gameplay are affecting gameplay by changing the size of hitboxes and messing with champions skills.

Despite the accusations, LoL is enjoyed by millions each day Heimer (2019) and became the most popular game ever played.

5.2.2 – The tournament

League of Legends international tournament is called the Season World Championship and is divided into two rounds Gamepedia (2020). The first round is the group stage; in this round, groups are formed and play against each other in one round matches in the double round-robin ruleset. The top two teams of each group advance to the next stage, the knockout stage; in this stage, the matches are the best of five, and the winner of each match advances.

One main deferential of LoL tournaments is that there is more than one venue where the games are played, usually with four venues Gamepedia (2019).

Despite being the most popular of the three, LoL tournament prize pools are not as impressive as Dota 2[30]; this is due to two main factors: the type of crowdfunding model they use and the average age of players. With LoL being a more friendly game, it attracts more children, and this audience does not contribute as much as an adult one.

The matches played in tournaments reflect the policy Riot Games have regarding a strict metagame. In the last five years, no more than 30% Kelly (2019) of the total champion pool was selected in the same tournament. This statistic with game mechanics that promote snowballing and diminishes comebacks results in matches ending up with the same champions, with predictable results and lack of entertainment.

5.2.3 – The crowdfunding

League of Legends crowdfunding model is very recent and consists of partial contributions to the tournament prize pool, with these contributions being made with in-game purchases. In comparison to the others, it is also the simplest one.

To contribute to the tournament prize pool, a player has only one option; he has to buy one of the two available exclusive skins. With this purchase, a percentual amount of the total cost will be directed to the prize pool, worth the rest being transferred to Riot Games.

Following the parameters designed in this research, we can evaluate LoL`s crowdfunding model.

Model 8.1: LoL crowdfunding

Payoff founder = (1 – the contribution percentage) * The price

The price = fixed contribution

Payoff founder = *(1-t) *c*

With *t* being the contribution margin

Model 8.2: LoL crowdfunding

Payoff funder = Utility gain in contributing + Utility gain in having the item

Payoff funder = *s * c + u * c*

Whereas *u* is the utility multiplier and converter of having an item. We use utility in this case because items cannot be resold after being acquired, so there is no monetary value attached to them.

Regarding motivation for funders, both immaterial in the form of helping the tournament and material in the form of wanting an exclusive item are possible. As for founders, the motivations are exclusively material as it seeks profits.

Looking at marketing opportunities, we see the exclusivity information as an incentive on sales, and since there are two possible exclusive items, there are two sales boosters. In this case, the model presents two marketing opportunities.

5.3 – Dota 2

By being the direct sequel to the original DotA, Dota 2 became an instant hit. And with balancing and improvement made by one of its original developers (IceFrog), the game was always aimed at competitive play.

Dota 2 on the opposite side of SMITE and LoL is completely free to play, with no hidden shackles preventing any player from enjoying its full experience. From the start, all heroes are unlocked, and there are no outside mechanics like the rune system in LoL; it is as simple as entering a match and play however you want. This characteristic is the main advantage of Dota 2 over the other games.

Despite being a sequel, the game is in constant evolution, with fundamental changes being made every couple of months Gampedia (2021); these changes and the all-out free play make the metagame of Dota 2 practically unrestricted, not incurring problems like LoL. Other benefits of constant evolution are player retention (since there are new things to learn every

major patch), constant player feedback (major changes may cause player uproar forcing constant balancing), and less incumbent player advantage.

Dota 2, however, is far from perfect; alongside LoL, it has e toxic community, and its high complexity is a major barrier to new players. Dota 2 unique features are couriers that deliver items from the base to the heroes, teleport scrolls that allows heroes to teleport to allied structure on the map making the game more dynamic and buybacks a mechanic where dead heroes with enough money can buy back into the game giving more possibility of defense and comebacks.

5.3.1 – The monetization

Dota 2`s monetization is based on three aspects: cosmetic items, chests gambling, and Dota Plus subscriptions.

Cosmetic items are the same as in LoL but without the problem of possibly changing gameplay. The true money lies in the other two forms of monetization; in Dota 2, some chests contain a random cosmetic item, with rarer items having chances like 1:2000 or even 1:250000 BruT (2019); these items are often coveted by players and often used as a symbol of status. The last monetization mechanic is the recent Dota Plus subscription, this is a membership subscription that gives the player access to exclusive cosmetic items bought with an exclusive non-buyable currency, seasonal quests to earn said currency, and in-game advantages like real-time damage (for types of damage received and dealt), net worth and k/d/ trackers, self-adapting guides for skill allocation and item builds and win probability statistics.

While not having controversies with cosmetic items, Dota 2 chest gambling was taken to court in Europe and changed, making it easier to acquire rarer items the more you open the same chest O`Connor (2018). Dota Plus, despite granting in-game advantages, did not cause e large uproar, and this may be the consequence of the average player being able to estimate the information that Dota Plus gives.

5.3.2 – The tournament

Dota 2 international tournament is called The International and is in its 10^{th} interaction in 2020. This tournament is often portrayed in specialized news as it has consecutively broken the prize poll record for e-sports and now traditional sports reaching more than $30 million Liquipedia (2019) 2019.

Differently from LoL`s tournament, The International is divided into four rounds. The first round is the qualification in the Dota Pro Circuit, taking the whole year; this round chooses 12 teams in the later versions of the tournament. The second round being the Regional

Qualifiers, whereas one team from each region (China, Southeast Asia, North America, South America, CIS, and Europe) that did not qualify in the Dota Pro Circuit will gain its qualification.

The third round consists of a group stage using the Round Robin format. Teams are divided into two groups and play best of two matches; the last of the group is eliminated, the top four teams go to the upper bracket, and the remaining teams advance to the lower bracket.

The fourth round, called the main event, is played in a double-elimination format, with the first game of the lower bracket being the best of one, all the other rounds except the grand finals being best of 3 and the grand finals a best of five.

Aside from the normal matches, usually, the tournament provides all-star matches, pro-players versus a highly advanced self-learning AI (OpenAI) Liquipedia(2018), and shows a match with public participation.

Tournament matches can range from various styles of playing, from slow split-pushing preferred by Chinese teams to high paced matches of South American teams. Opposing LoL, Dota 2 free metagame offers a great variety of games, with usual hero pool usage of 70-90% Vianna (2019), with a tournament that had every hero picked aside from 3, and a great number of different strategies. Using Dota 2 exclusive mechanics matches tends to be entertaining, and every result is possible to predict, with comebacks not being unusual.

5.3.3 – The crowdfunding

Dota 2 crowdfunding model the oldest of the three, and thus, it has developed and became the most complex one. It is referred to as The Compendium or The Battle Pass, and it uses a more complex battle pass style.

The battle pass style refers to a pass that the player buys and has a limited amount of time to reach the highest level possible, usually until the end of the tournament, with each level or a couple of levels granting a reward Gamepedia (2020). In the case of Dota 2, it steps up and makes the level cap unlimited. The reward ranges from consumables that add entertainment inside the game to cosmetics items non-exclusive to the battle pass, to rare cosmetics exclusive to the battle pass; these often put in higher levels.

To level up the pass, players have the option to buy more levels or to use pass mechanics to slowly increase their levels. Usually, it is not possible to acquire exclusive items without buying levels[44].

This mechanic is the core of the crowdfunding model, but as it evolved, more accessory mechanics were added. Often the pass offers wagering (without the use of real money) in the form of exclusive chests (with exclusive random cosmetics items), betting on matches,

tournament matches with predictions, and players matches with weekly renewed coins. It also offers limited timed events maps, non-MOBA maps that each have a newly made objective, and other activities to do while waiting for the tournament.

In the end, Dota 2`s crowdfunding model is a combination of crowdfunding and added limited timed features to the game that increases the entertainment value of players. It is important to note that some of these features are exclusive to the battle pass holders, and some are free to all the players. As a consequence, giving the incentive to buy the battle pass but not demotivating free players also follows the same percentage contribution as LoL.

Using the parameter Dota 2 crowdfunding model can be evaluated.

Model 9.1: Dota 2 crowdfunding

Payoff founder = (1- the contribution percentage) * Sum of all individual contributions

Payoff founder = $(1- t) * \sum_{x=1}^{i} c_i$

` Model 9.2: Dota 2 crowdfunding

Payoff funder = Utility gain in contributing + Sum of utility gain in having the items

Payoff funder = $(s*c) + (\sum_{in=1}^{j} c_j * \sum_{in=1}^{j} u_j)$

With *in* Being the total number of items acquired by the funder and *j* the identification for each item.

The use of utility in this model can create a long-term problem since, by Valve`s policy, Dota 2 items can be resold on the second-hand market to other players after one year the tournament has finished. In older iterations of the tournament, this is certainly a problem since those items became rare, however in more recent iterations, as the number of items increased, their rarity decreased, achieving insignificant prices on the second-hand market.

Following LoL`s model, motivations are the same. The most important part of this model is the marketing opportunities; the sales boost the major point of the more complex model, while the LoL model only had two marketing opportunities from sales boost; in this model, it can be an infinite amount theoretically.

If each level of the battle pass can represent an exclusive item, then each level will represent a sales boost. In n world with unlimited resources (money), the marketing opportunities would be infinite. However, in the real world, players have a limiting budget curve, and so to make the most of this budget, Valve Corporation needs to reduce the number of exclusive cosmetics to increase the desire to have them. Also, it is important to make them accessible; in other words, put them in the middle levels to incentivize the players to buy and not to demotivate them by putting them in an unreasonably high level.

In the end, the company needs to maximize its profits by balancing the number of exclusives and their position in the battle pass.

5.4 – SMITE

Despite being the smallest of the three, SMITE still has a respectful player base with a yearly international tournament with sizable prizes.

SMITE came later into the MOBA`s market fight, and so it got a smaller piece of the market., but their player base is increasing through the years, reaching more than 30 million players, opposing both LoL and Dota 2 and their very different gameplay is a refreshing start from old MOBA players.

The game is developed by Hi-Rez Studios, a middle-sized agglomerate of video-game studios and publishers that achieved relative success with its various studios and games. The particular studio that develops SMITE is called Titan Forge.

Differently from the other MOBA`s, SMITE does not follow specially developed lore but instead utilizes the Gods thematic to display their lore. In SMITE, you can play a great variety of gods from various mythologies in what they call the Battle Field of the Gods. This thematic is exposed pleasantly by exposing the various details attached to each of the gods, from ancient Egypt to H.P. Lovecraftian gods. SMITE tries to attract the interest of players with history.

Aside from the thematic, SMITE also offers unique features like a third-person camera (instead of the traditional top-down camera) and more controllable targets. Since other MOBA`s use different cameras, targets are controlled in a bidimensional way, whereas in SMITE, it is tridimensional.

5.4.1 – The monetization

Monetization in SMITE is done the same way as it is in LoL, with cosmetics items and unlockable gods. The latter also creates complaints regarding the game balancing with newer, more expensive gods being inside the metagame while older gods not.

5.4.2 – The tournament

SMITE`s international tournament is called the SMITE World Championship and is the smallest of the three, this being a direct result of the smaller player base. With a small format, the tournament only has one round consisting of a single-elimination bracket. Up until the semifinals, the matches are best of three, with the semifinals and the finals being best of five.

It is also interesting to notice that SMITE also makes a second world tournament specific to console players and since they just a fraction of the player bases, the size of the tournament is even smaller.

5.4.3 – The crowdfunding

The crowdfunding model in SMITE falls in the middle between LoL and Dota 2. It is not as simple as the model of LoL but not as complex as Dota`s. SMITE began its crowdfunding model with a limited multipath battle pass that could only be bought and not be leveled up for free.

This pass got the name The Odyssey, and players needed to pay to enter the map and follow one of many paths. These paths lead the player to exclusive cosmetics. In this first iteration, like the other models, a percentage of the price was contributed to the tournament prize pool without upper limits.

On later iterations, The Odyssey began to offer free rewards in the form of daily, weekly, and for the duration of the event quest rewards. On the other hand, the contribution began to face an upper threshold that, when reached, all the money would go to the studio and none to the tournament prize pool.

On even more recent changes, the prize pool was divided between the international tournament and the seasonal competitions; Hi-Rez defended this position as it would be more interesting for players to have more medium reward tournaments than one big reward tournament a year.

This model of crowdfunding breaks the limitations of LoL`s one by creating more and more paths to take but does not reach the limitless capabilities of the Dota 2 model.

Regarding its classification, we have the following:

Model 10.1: SMITE crowdfunding

Payoff founders = (1- contribution percentage) *Sum of all individual contributions capped + Sum of all individual contributions after the cap

Payoff founders = $(1- t) * \sum_{x=1}^{n} c_n + * \sum_{x=n}^{i} c_i$

With *n* being the limit factor of the sum until the cap.

Model 10.2: SMITE crowdfunding

Payoff funder = Utility gain in contributing + Sum of utility gain in having the items

Payoff funder = $(s*c) + (\sum_{in=1}^{j} c_{j} * \sum_{in=1}^{j} u_{j})$

With the only difference from Dota2 that it has a set limit.

The motivations are the same as the other two MOBA`s as expected.

The marketing opportunities are similar to Dota 2, with the biggest difference being the limit by the design of the possible amount.

5.5 – The comparison

When looking at the evaluation of all three e-sports crowdfunding models, we can see the same motivations and the number of marketing opportunities being only different due to the number of times the models create exclusive items.

The biggest difference comes with payoffs. The payoff of founders seems to be a progression, with the difference between Dota`s and SMITE`s being a hard cap on the amount contributed. Following this trend, the payoffs of funders also seem to be a progression from a very small utility gain due to a small number of exclusive items to a great gain when the number of items increases.

These models, however, do not fit the previously evaluated ones. The case of recurring or cyclical mechanisms is not present in previous models; also, those models do not have a component of utility from things other than altruism. In light of these discrepancies, it is fitted to create another crowdfunding type that permeates the models that came with e-sports.

6- The incentive-based crowdfunding

The incentive-based crowdfunding type encompasses all three of the e-sports models. With the main characteristics of this type being the possibility of infinite circular incentives as seen in the DotA 2 model analysis, the ambiguity of the motivation behind funders actions as stated as a possibility in the definition, the introduction of the percentage contribution on all the cases, and the indirect path to funding.

Starting from the simplest model displayed in the League of Legends case, we have the single incentive model (Figure 6).

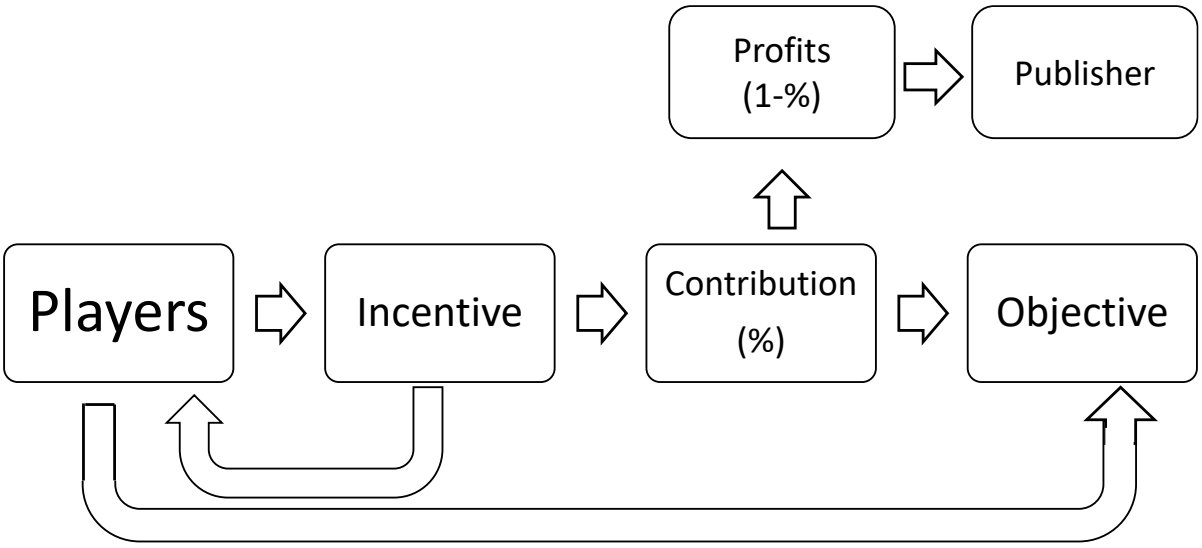

Figure 6 - Single Incentive Model

In this simple model, the main path of contribution is directly derived from a typical reward-based model with adaptations, where the players are the users that directly contribute to the objective. The only difference is the introduction of a percentage contribution instead of a full one. However, this model now proposes a new indirect path caused by the ambiguity of funder (players) motivations; from this case, it is explicit that players can have material compensation in the form of material incentives that are not the final objective. This new path is the visual representation of this; the players now buy an incentive, thus contributing a percentage to the objective.

It is also possible to see the beginning of a cyclical incentive present in the next models. This one cycle, as the players are pushed towards the incentive, and the incentive rewards the players, with a utility gain, is a direct result of the nature of the incentive that brings instant reward for the player. Another result from the case is the introduction of the percentage contribution that by the design of the game publisher will direct part of the contribution to the publisher and part to the tournament prize pool (objective). An important notice is that, opposite to some traditional crowdfunding models, the amount contributed is not variable and is defined by the publisher.

Increasing the complexity of the model using the SMITE case, it is now introduced a great number of cycles, the closed multiple incentives model (Figure 7).

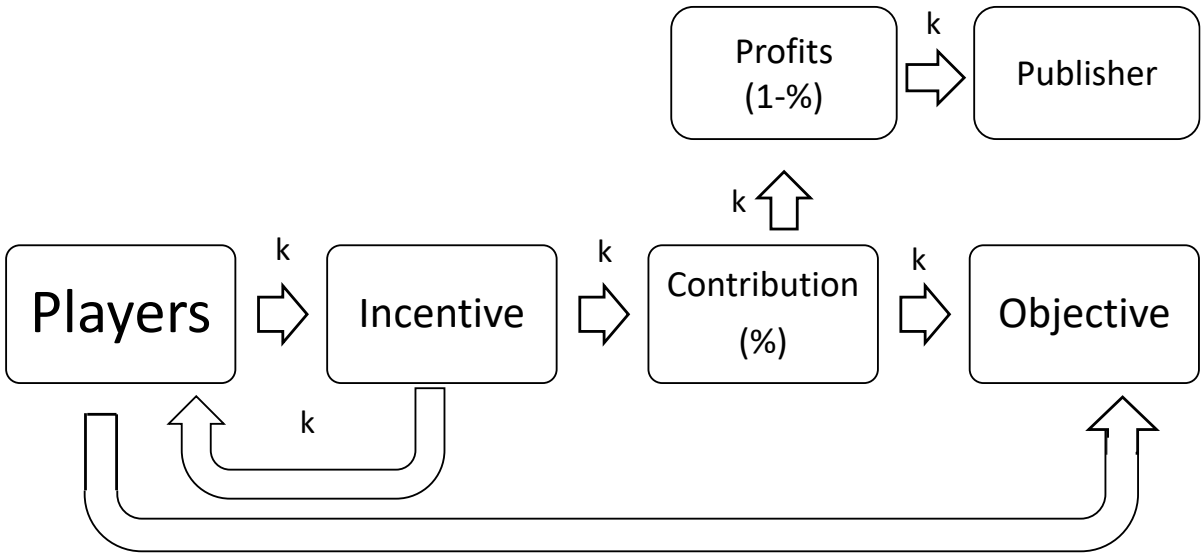

Figure 7 – Closed multiple incentives model

In this model, *k* represents the finite amount of incentives designed by the company to be fulfilled; in this case, each part of the Odyssey described in the case analysis represents one incentive and the total amount of incentives sum to *k*.

Adding more complexity to the model becomes fairly easy to see where the cycle of incentives is created and the propagating effect it makes on both the contribution to the prize pool and profits to the company. This effect is a consequence of the possibility of contributing more than once differently from traditional crowdfunding models in the literature.

It is important to note that the *k* designed incentives are not going to be fulfilled by the total amount x players since it is not expected that all the players have the same available resources.

In this model, the company, as described in the case, does not yet assume the interactive role of creating more incentives as it feels it needs. Another notable thing is that there is no multiplier in the direct way of funding the prize pool; this is the result of one player having only one incentive to do so, as describes in the case analysis.

In this case, the amount of utility gained by altruism is linearly related to the amount contributed; in other words, the effects of the utility gain will not be dependent on what type of altruism since we are considering only one aggregate of all types. This differs when comparing to the multitude of possible utility gain values as exclusive items are not identical.

For the last model, it is important to remember that Dota`s crowdfunding model has much more complexity than the other two and since it has unlimited possibilities for incentives, it is called the open multiple incentives model (Figure 8).

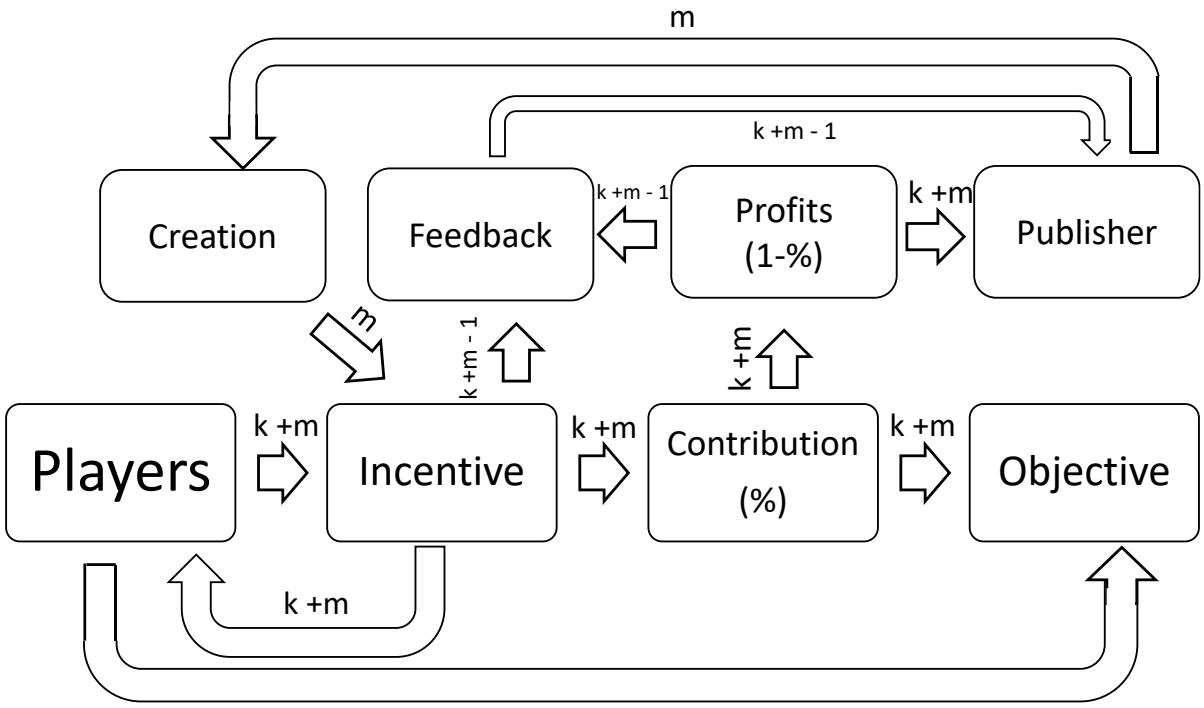

Figure 8 - Open multiple incentives model

With *m* being the amount of possible created incentives by the parent company.

In the full model, the company has a vital part in maintaining the whole system going, an important part is the feedback of the players, and it is not necessarily direct feedback as it can be seen by the company reflect on the number of incentive sales and profits.

In the case of Dota 2, this feedback is both direct and indirect. The direct feedbacks are made through polls of what people desire to be inside a chest and the voting competition for the next big cosmetic item. The indirect is available in two possible ways; the first is the mentioned incentive sales numbers that are acquired through the sales of compendium levels, and the second is the unreleased chests.

These chests are given to players when achieving determined levels on the battle pass, but the content of these chests is not disclosed to the player. The company now has e mechanism to test what the player wants or not. If players start buying levels just to reach said chests, the company will now have the information that that chest is desirable and will try to reproduce this desire on the following chests.

The feedback can only amount to *k+m-1;* this is done by construction since it is impossible to have feedback for a product, in this case, an incentive that is not yet released.

Different from the literature, since the objective or the amount pledged is undefined, the cyclical nature of this model can be reproduced ad infinitum, thus creating the possible *m* new incentives creation. However, as stated before in the case analysis, it is only infinite theoretical possibilities.

In general, as seen in the analysis of the cases, the marketing opportunities are represented in the cyclical part of the models, with the number of cycles representing the number of opportunities since each new cycle is a new incentive, thus a new product.

However, since marketing opportunities can and will affect other variables that are not explicit in the model due to not being in the crowdfunding spectrum, it is better to represent these effects in a separate model.

The following representation (Figure 9) is made to show how marketing will influence the components of the model.

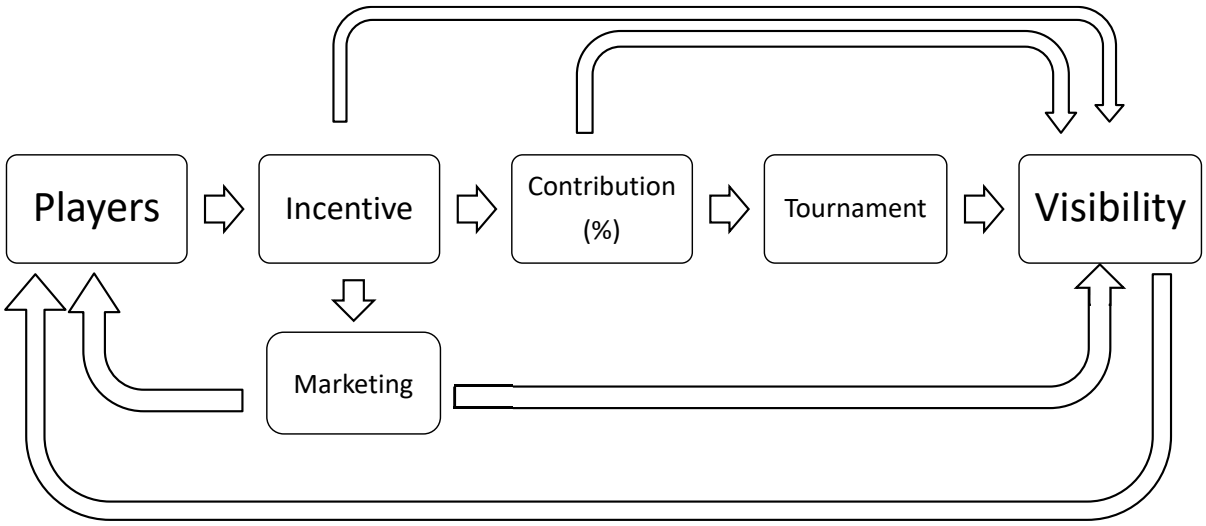

Figure 9 - Marketing relations

The model is just a representation of relations and is not representing the amounts of cycles because marketing will be represented as a single amount. One could argue that marketing is the number of marketing opportunities, in a way that is a true statement since the source of marketing comes from marketing opportunities by definition. However, considering the different ways one could use these opportunities is best to understand marketing as an aggregate of all.

Corroborating with the previous argument, indeed, the source of marketing is the same source of marketing opportunities, the incentives. Marketing, as stated by the literature, is a source of the brand image, thus contributing to the visibility of the game/tournament, and it also contributes to conveying the message of new incentives to players if necessary.

Visibility in this model is the literal sense of the word, the amount of repercussion, news, etc., the game or the tournament has. This is a vague definition but translates the amount of attention the game is gathering. The traditional source of visibility is marketing, however, in the case of e-sports tournaments, incentives, being a source of marketing opportunities, are also a source of visibility, and lastly, the contribution gives the tournament visibility not only for players but for competing teams also.

Lastly, the visibility link to the players is not only to convey messages that marketing could also provide but also to serve as a point of interest for new players. In the best-case scenario, both the marketing the visibility contributing to increase the game's player base and ultimately its lifespan.

The main interest of the study is to validate these models in the cases of e-sports tournaments, with more focus on studying the effects on two result variables: the player base and the profits.

7 – Results

In this section of the research, it is disclosed the data analysis and hypotheses testing. It will be divided into four subsections, initiating with descriptive statics of the data as well as the results of the stationary tests, afterward with a regression each and, as stated before, if a regressor is statistically significant, the relationship it provides will confirm the hypothesis, it is entangled with.

Regarding the quality of the data set, most of its data were gathered from official data banks with the creation of dummies being made by hand using official release dates for incentives and tournament presence. It is noteworthy that the data set only studies the case of Dota 2 and its related crowdfunding model; this is a result of the lack of public data and the company's unwillingness to provide data in the other two cases.

This lack, however, should not interfere with the model validation as the Dota 2 model is the most complex one and has all the relationships that could be validated.

The data set has 733 observations, on a daily basis, from the first years the crowdfunding model is present to today. Also, the data set was treated to present only the days that have a corresponding crowdfunding camping present, excluding all the other days where there is no crowdfunding camping active. After differentiation, the database consists of three variables, Prize_variation, Player and Viewers, and two dummy variables, Incentive and Tournament.

	Mean	Std.Dev.	Obs	Min	1st Qrt	Median	3rd Qrt	Max
Prize_variation	223.496,63	472946,9	732,00	0	78182	115.508,00	185748	6552515
Player	- 219,14	47024,63	732,00	-314064	-21212	-733,00	23933,25	278171
Viewers	88.412,69	127828,4	732,00	0	0	60791	116899	1077725

Table 1 – Data descriptive statistics

The nomenclature for the variables is as follows: Player for the variation of the number of players each day, Prize_variation for the variation of the prize pool each day, Incentive for the dummy of the presence of a crowdfunding incentive on the day, Viewers for the number of twitch viewers on the day and Tournament for the dummy that states a presence of an ongoing tournament on the day. For the lagged variables, the number beside the variable represents the number of the lag it represents.

The VAR model estimated was refined from a 30 lag one to a seven lag one as all the lags after the seventh was not significant.

7.1 –Validity tests

Since the prize pool has a natural tendency, it is clearly not stationary; thus, tests are not needed to take its first difference.

After the first tests with the dataset, one additional difference had to be taken the number of players; thus, the hypotheses evaluated will be regarding the variation of the prize pool and the players.

Index	ADF	p-value	KPSS	p-value
Players	-2,9339	0,183	5,8092	0,01
Prize_variation	-8,2758	0,01	0,23134	0,1
Viewers	-5,7018	0,01	3,1341	0,01

Table 2 – ADF/KPSS tests

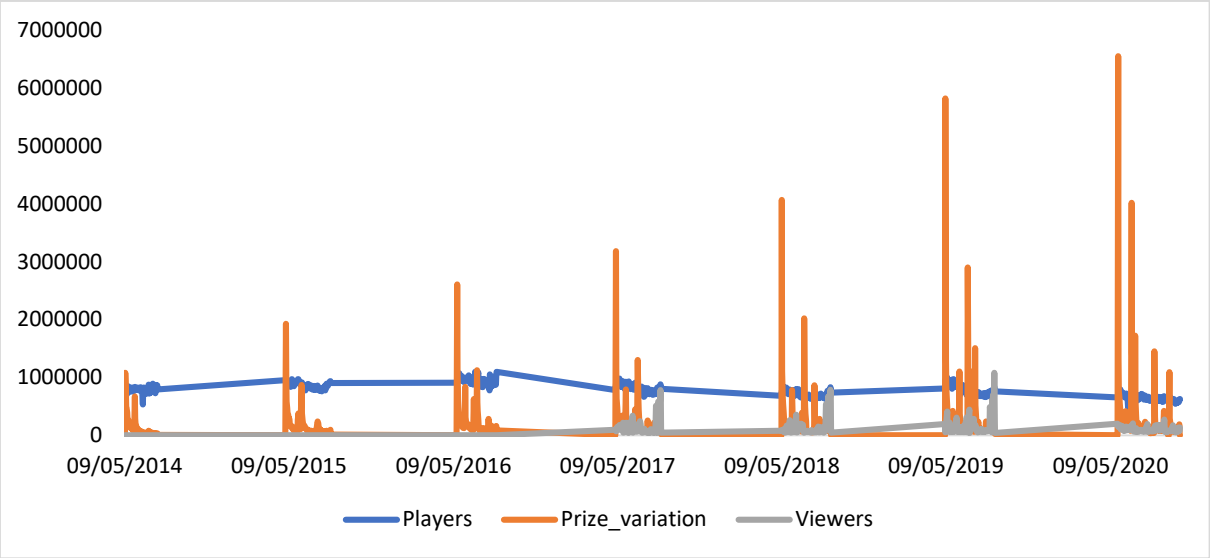

Figure 10 – Variable's series

After taking the differences and performing validity tests on the regressions, two portrayed problems with heteroskedasticity, the H1 equation and the H4/H5/H6 equation, making necessary the use of Withe-corrected equations.

Index	B-P Test	p-value
Prize_variation = β*Player + β*Prize1 + β*Incentive1+β*Tournament1 + β*Viewers2 + β*Viewers3	220,05	0,01
Player = β*Viewers + β*Player1 + β*Player2 + β*Player3 + β*Player4 + β*Player5 + β*Player6 + β*Incentive1	13,288	0,1023
Viewers = β*Tournament + β*Viewers1 + β*Viewers5 + β*Viewers6 + β*Prize3 + β*Incentive2	180,17	0,01

Table 3 – Heteroskedasticity tests

After correcting all the errors, the final equations and regressions follow.

7.2 – The prize pool hypothesis

To test H1 first, it is going to be applied a VAR model to discover the relevant lags of the prize pool delta itself, crowdfunding incentives, twitch viewers, players, and the presence of the tournament (Table 7).

This first test resulted in six relevant lags. First lag of the prize pool and the crowdfunding incentives, second and third lag of the twitch viewers and the tournament dummy.

Reintroducing the non-lagged variables of players and incentive to the regression (Table 8), it is possible to see that the third tournament lag became non-significant; this is a result of both a robust error regression. The variation in the number of players became relevant, and this was expected as it is trivial to see that the more players in the game, the more contribution should occur.

Elimination of the non-significant variables, we reach the following final model (Table 4).

Regression results using Prize_variation as the criterion

Predictor	b	95% CI	$t(726)$	p
Intercept	63,405.04	[27,926.44, 98,883.65]	3.51	< .001
Player	0.72	[0.16, 1.29]	2.52	.012
Prize1	0.30	[0.24, 0.35]	10.63	< .001
Incentive1	588,573.33	[496,082.88, 681,063.79]	12.49	< .001
Tournament1	-93,503.58	[−185,953.54, −1,053.63]	-1.99	.047
Viewers2	-1.91	[−2.23, −1.59]	-11.68	< .001
Viewers3	2.46	[2.15, 2.78]	15.35	< .001

Table 4 – Refined Prize_variation regression

Given the presence of a statistically significant first lag for the crowdfunding incentives, we cannot reject the first hypotheses. This result is the center point of the incentive-based crowdfunding model as if the incentive did not bring more crowdfunding results, it would not be effective, and the model's purpose is lost.

The presence of an ongoing tournament also implicates more crowdfunding pledges, a consequence of more fan engagement in bigger events. The significant visibility lags are a surprise as visibility should not affect the prize pool directly, but its presence could be explained as a measure of the quality of the event by viewers and players. As stated, the majority of the viewers are players and lowers quality matches could implicate a lesser contribution amount, and higher quality games could implicate more engagement and thus higher contributions.

7.3 – The players' hypotheses

Using the same steps for the previous hypothesis, the variation in the number of players is affected by the first lag of the variation itself and the presence of a crowdfunding incentive, also affected by the second, third, fourth, fifth, and sixth lag of the variation of the players (Table 7).

Reintroducing the non-lagged variables for the visibility proxy in Twitch. Viewers and the Incentive there is a surprising result that despite the lags not being relevant, the non-lagged visibility variable is significant (Table 9). After eliminating non-significant variables, we get the following result.

Regression results using Player as the criterion

Predictor	b	95% CI	$t(724)$	p
Intercept	-5,899.90	$[-9{,}447.41, -2{,}352.40]$	-3.27	.001
Viewers	0.03	$[0.01, 0.05]$	2.64	.008
Player1	-0.41	$[-0.48, -0.34]$	-11.53	< .001
Player2	-0.47	$[-0.53, -0.40]$	-13.24	< .001
Player3	-0.45	$[-0.52, -0.38]$	-12.34	< .001
Player4	-0.37	$[-0.44, -0.30]$	-10.15	< .001
Player5	-0.42	$[-0.49, -0.35]$	-11.94	< .001
Player6	-0.24	$[-0.31, -0.17]$	-6.72	< .001
Incentive1	26,351.55	$[16{,}527.38, 36{,}175.73]$	5.27	< .001

Table 5 – Refined Player regression

It is interesting to see a significant negative intercept portraying a negative trend in the number of players, but for the purposes of non-rejection of both H2 and H3, we see that both the presence of a crowdfunding incentive and the visibility increase the number of players.

The players lag affecting the variation of players should not be a surprise as this is a team video game. The lack of companions on previous days should affect the motivation of players to play the game or not. The negative result also confirms the negative trend in the total number of players.

7.4 – The visibility hypotheses

Using the same procedure for visibility hypotheses was found the most diverse relevant lags. First, second, fifth, and sixth lags for the number of viewers, first and fifth lags for the presence of a tournament, second and third lags for the presence of a crowdfunding incentive, and the third lag for the variation in prize pool (Table 7).

However, when introducing the non-lagged variables, some of the present's lags lose significance (Table 10). Cleaning the regression, the following result is presented.

Regression results using Viewers as the criterion

Predictor	b	95% CI	$t(726)$	p
Intercept	2,361.51	[−5,258.92, 9,981.94]	0.61	.543
Tournament	84,326.75	[64,732.95, 103,920.56]	8.45	< .001
Viewers1	0.61	[0.56, 0.67]	21.46	< .001
Viewers5	0.33	[0.26, 0.41]	9.06	< .001
Viewers6	-0.17	[−0.25, −0.10]	-4.45	< .001
Prize3	0.03	[0.02, 0.04]	4.35	< .001
Incentive2	36,555.08	[17,626.38, 55,483.77]	3.79	< .001

Table 6 – Refined Visibility regression

As predicted, the amount of visibility given by the proxy on the number of twitch viewers has a positive relationship with the presence of a tournament, thus non-rejection H6. To a lesser degree, the launch of a new crowdfunding incentive also increases the amount of visibility the game has, as well as the variation in the prize pool, thus non-rejection of both H4 and H5.

The presence of lags itself is not a surprise as more viewers should influence the embedded website search engine and, as a consequence, attract more viewers.

8 – Conclusion

This research reached three main theoretical contributions.

The first contribution is linked to the definition of crowdfunding. This topic is still a fierce battlefield in the literature; following Mollick`s (2014) critique and definition, the definition used in this study was made broad enough to encapsulate all the well-established crowdfunding models but narrow enough to not include false models. It also contributed by incorporating the self-determination theory in the definition, making it plausible for use in all areas that traditionally study crowdfunding. This inclusion also developed the self-determination theory as it is not being used to derive a definition but is part of a previously made definition.

The second contribution was a possible solution for the debate in the literature regarding which tool to be used to evaluate crowdfunding models. The tools developed in this study were taken from the various areas of crowdfunding literature, from finance and economics with payoffs, through psychology with motives and marketing with a new construct called marketing opportunities. They were made with the intention of broad use and shallow understanding to create the possibility of a generalized use for categorization but not suitable for deep study.

The last contribution is the new crowdfunding model itself, as its discovery and proposition was a clear gap in the infant literature. Its proposition is now entangled with the business models used by each of the cases studied, thus making it not being a purely theoretical model providing a further gap in the literature.

Following the analytical part of the study, two main conclusions were drawn. First, all of the hypotheses as stated were confirmed for the Dota 2 case. The presence of incentives, amount of visibility, and variation of players, positively influence the variation of the prize pool. As for the player hypotheses, the presence of incentives and visibility do increase the number of players in the game. Finally, for the visibility regression, the presence of a tournament greatly increases visibility, with visibility itself, the presence of incentives, and the prize pool moderately influencing the visibility.

Second, however, failing expectations, the relationship between the incentive variable and the variation of players is static, meaning that only the first lag of the incentive influences the variation in the number of players. The theory behind the model would put that the incentive would present more lags since it is not plausible that all the players enter the game to purchase the incentive on the following day it is released. The same effect is also counter-intuitive when looking at the relationship between the incentive and the variation of the prize pool.

There is also a managerial takeaway. All three models presented are the same, varying in complexity. The more complex model should be used in situations that have high user data availability to create optimal incentives as well as enough budget to make all the engines inside it work; the least complex model, on the other hand, should be used in the opposite situation when there is little to no information available and not enough budget. Regarding theoretical profitability, the more incentives present, the more profitable the model is; however, execution is, in practice, a source of great variability.

It worth noting that analytical results are specific to one particular case due to data availability and the choice of criteria to select cases, thus creating a huge gap in the literature regarding the model proposed.

9 – Topics for debate

This research has many possible points to be debated.

From a theoretical perspective, the whole conciliation of crowdfunding categorization is still a debate in the area and should be questioned if the tool created in this research is proper or complete.

Linked to it, the existence of the new incentive base crowdfunding category opens the debate of it being a crowdfunding model or a sales model with a crowdfunding side-effect. This is mainly a derivative of the definition of crowdfunding debate in the area, as there is no well-accepted definition; every crowdfunding model can be questioned if it is or not crowdfunding.

Another possible debate regarding the new model is the distinction it has from the reward-based crowdfunding model; one could argue that the incentive-based model is just a sequence of reward-based ones.

Looking at the analytical part, its fragility and the methodology applied could be questioned. As it was made as simple as possible to facilitate understanding and to reduce problems inherit from more complex analytical methods, it may not be the best one to validate the new model.

10 – Further research

Given the criticism of this research, further research could be made to fill the gaps and deepen this research.

The theoretical part could be studied in depth with more crowdfunding categorization tools being studied and integrated into the tool developed in this research, and also, the theoretical model derived from the cases could be improved by using other cases not confined in the e-sports scenario.

The same could be done for validation of the model by using more diverse data gathered outside this scenario. Another point in the analytical section is the future diversity of methodology that could be applied to confirm or deny the validation present in this research.

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Appendix

Table 7 - The VAR model

VAR Estimation Results

Estimation results for equation Players

Estimate	Std.	Error	t	value	Pr(>|t|)
Players.l1	-424	38	-11247	<0	***
Prize_variation.l1	8	4	2026	0.04313	*
Incentive.l1	28440000	5060000	5620	2.77e-08	***
Viewers.l1	20	20	0.999	0.31817	
Tournament.l1	23850000	12030000	1982	0.04787	*
Players.l2	-444	40	-11018	<0	***
Prize_variation.l2	0	4	-0.116	0.90752	
Incentive.l2	7562000	5705000	1326	0.18543	
Viewers.l2	-36	23	-1569	0.11699	
Tournament.l2	7380000	16490000	0.448	0.65460	
Players.l3	-419	41	-10097	<0	***
Prize_variation.l3	6	4	1430	0.15313	
Incentive.l3	9105000	5763000	1580	0.11461	
Viewers.l3	46	23	1963	0.05008	.
Tournament.l3	-16600000	16530000	-1004	0.31571	
Players.l4	-309	42	-7309	7.49e-13	***
Prize_variation.l4	0	4	0.019	0.98514	
Incentive.l4	-1080000	5729000	-0.189	0.85048	
Viewers.l4	-30	25	-1204	0.22909	
Tournament.l4	2286000	16600000	0.138	0.89050	
Players.l5	-360	41	-8792	<0	***
Prize_variation.l5	2	4	0.580	0.56204	
Incentive.l5	-8937000	5737000	-1558	0.11971	
Viewers.l5	-4	25	-0.153	0.87834	
Tournament.l5	6322000	16560000	0.382	0.70275	
Players.l6	-198	40	-4947	9.49e-07	***
Prize_variation.l6	-2	4	-0.540	0.58933	
Incentive.l6	-9196000	5706000	-1612	0.10750	
Viewers.l6	-20	26	-0.776	0.43829	
Tournament.l6	-3238000	16770000	-0.193	0.84692	
Players.l7	155	37	4138	3.93e-05	***
Prize_variation.l7	-6	3	-1716	0.08664	.
Incentive.l7	4098000	5636000	0.727	0.46747	
Viewers.l7	22	22	0.962	0.33620	
Tournament.l7	5367000	12670000	0.424	0.67187	
const	-7544000	2578000	-2926	0.00354	**

Estimation results for equation Prize_variation

Estimate	Std.	Error	t	value	Pr(>|t|)
Players.l1	-394	342	-1153	0.24918	
Prize_variation.l1	195	38	5146	3.47e-07	***
Incentive.l1	587900000	45890000	12812	<0	***
Viewers.l1	114	184	0.618	0.53689	
Tournament.l1	-340000000	109100000	-3115	0.00191	**
Players.l2	205	366	0.562	0.57457	
Prize_variation.l2	41	39	1050	0.29422	
Incentive.l2	65520000	51740000	1266	0.20582	
Viewers.l2	-2185	206	-10625	<0	***
Tournament.l2	361100000	149500000	2415	0.01601	*
Players.l3	-115	376	-0.306	0.75963	
Prize_variation.l3	1	38	0.014	0.98845	
Incentive.l3	-24460000	52270000	-0.468	0.63996	
Viewers.l3	2288	211	10853	<0	***
Tournament.l3	-477800000	150000000	-3187	0.00150	**
Players.l4	537	384	1399	0.16224	
Prize_variation.l4	7	38	0.191	0.84843	
Incentive.l4	73830000	51960000	1421	0.15584	
Viewers.l4	217	229	0.951	0.34205	
Tournament.l4	133800000	150600000	0.889	0.37453	
Players.l5	357	371	0.961	0.33668	
Prize_variation.l5	31	34	0.923	0.35653	
Incentive.l5	-62430000	52030000	-1200	0.23053	
Viewers.l5	-393	229	-1720	0.08596	.
Tournament.l5	352600000	150200000	2348	0.01917	*
Players.l6	235	364	0.645	0.51918	
Prize_variation.l6	-6	32	-0.171	0.86412	
Incentive.l6	-47400000	51750000	-0.916	0.35996	
Viewers.l6	245	234	1051	0.29375	
Tournament.l6	-235600000	152100000	-1550	0.12171	
Players.l7	751	340	2208	0.02760	*
Prize_variation.l7	-28	29	-0.952	0.34122	
Incentive.l7	-4851000	51120000	-0.095	0.92442	
Viewers.l7	210	203	1035	0.30098	
Tournament.l7	326500000	114900000	2843	0.00461	**
const	59910000	23380000	2562	0.01060	*

Estimation Results for equation Incentive

Estimate	Std.	Error	t	value	Pr(>|t|)
Players.l1	0	0	-1070	0.2852	
Prize_variation.l1	0	0	-1098	0.2727	
Incentive.l1	-89	38	-2325	0.0204	*
Viewers.l1	0	0	-1720	0.0860	.
Tournament.l1	-34	91	-0.377	0.7059	
Players.l2	0	0	0.168	0.8667	
Prize_variation.l2	0	0	-1595	0.1112	
Incentive.l2	-42	43	-0.975	0.3298	
Viewers.l2	0	0	2196	0.0284	*
Tournament.l2	-144	124	-1154	0.2488	
Players.l3	0	0	-0.865	0.3873	
Prize_variation.l3	0	0	0.375	0.7076	
Incentive.l3	-22	43	-0.498	0.6185	
Viewers.l3	0	0	0.658	0.5106	
Tournament.l3	150	125	1202	0.2298	
Players.l4	0	0	-0.225	0.8221	
Prize_variation.l4	0	0	-0.204	0.8383	
Incentive.l4	-36	43	-0.834	0.4044	
Viewers.l4	0	0	-1282	0.2003	
Tournament.l4	-83	125	-0.659	0.5103	
Players.l5	0	0	0.480	0.6316	
Prize_variation.l5	0	0	-0.016	0.9873	
Incentive.l5	-65	43	-1511	0.1313	
Viewers.l5	0	0	1409	0.1593	
Tournament.l5	-5	125	-0.038	0.9699	
Players.l6	0	0	1259	0.2084	
Prize_variation.l6	0	0	-0.974	0.3303	
Incentive.l6	-26	43	-0.605	0.5455	
Viewers.l6	0	0	-0.132	0.8954	
Tournament.l6	145	127	1143	0.2533	
Players.l7	0	0	1008	0.3138	
Prize_variation.l7	0	0	0.207	0.8365	
Incentive.l7	14	43	0.324	0.7463	
Viewers.l7	0	0	0.043	0.9658	
Tournament.l7	-74	96	-0.777	0.4376	
const	120	19	6165	1.2e-09	***

Estimation Results for equation Viewers

Estimate	Std.	Error	t	value	Pr(>|t|)
Players.l1	-4	73	-0.049	0.960983	
Prize_variation.l1	-7	8	-0.873	0.382932	
Incentive.l1	-3004000	9807000	-0.306	0.759503	
Viewers.l1	534	39	13594	<0	***
Tournament.l1	144400000	23320000	6191	1.03e-09	***

Players.l2	-218	78	-2789	0.005428	**
Prize_variation.l2	-9	8	-1087	0.277276	
Incentive.l2	36790000	11060000	3327	0.000925	***
Viewers.l2	119	44	2702	0.007059	**
Tournament.l2	-68070000	31960000	-2130	0.033541	*
Players.l3	-142	80	-1767	0.077634	.
Prize_variation.l3	35	8	4264	2.29e-05	***
Incentive.l3	25620000	11170000	2293	0.022153	*
Viewers.l3	93	45	2060	0.039752	*
Tournament.l3	-34660000	32050000	-1081	0.279940	
Players.l4	-63	82	-0.774	0.439407	
Prize_variation.l4	-23	8	-2763	0.005888	**
Incentive.l4	-4663000	11110000	-0.420	0.674737	
Viewers.l4	-55	49	-1131	0.258508	
Tournament.l4	-42710000	32180000	-1327	0.184859	
Players.l5	-153	79	-1928	0.054267	.
Prize_variation.l5	9	7	1317	0.188248	
Incentive.l5	19760000	11120000	1777	0.076033	.
Viewers.l5	284	49	5815	9.30e-09	***
Tournament.l5	108200000	32100000	3371	0.000790	***
Players.l6	-112	78	-1440	0.150263	
Prize_variation.l6	-7	7	-1032	0.302446	
Incentive.l6	-17120000	11060000	-1547	0.122218	
Viewers.l6	-267	50	-5356	1.16e-07	***
Tournament.l6	-34980000	32500000	-1076	0.282140	
Players.l7	107	73	1470	0.141926	
Prize_variation.l7	3	6	0.486	0.627078	
Incentive.l7	7252000	10930000	0.664	0.507047	
Viewers.l7	159	43	3678	0.000254	***
Tournament.l7	-39340000	24550000	-1602	0.109565	
const	2605000	4997000	0.521	0.602344	

Estimation results for equation Tournament

Estimate	Std.	Error	t	value	Pr(>|t|)
Players.l1	0	0	-0.831	0.406216	
Prize_variation.l1	0	0	0.205	0.838007	
Incentive.l1	3	16	0.190	0.848994	
Viewers.l1	0	0	-2050	0.040698	*
Tournament.l1	964	39	24782	<0	***
Players.l2	0	0	-1656	0.098219	.
Prize_variation.l2	0	0	1173	0.241167	
Incentive.l2	13	18	0.704	0.481970	
Viewers.l2	0	0	0.847	0.397070	
Tournament.l2	14	53	0.259	0.795686	

Players.l3	0	0	-0.271	0.786673	
Prize_variation.l3	0	0	0.829	0.407185	
Incentive.l3	8	19	0.431	0.666599	
Viewers.l3	0	0	0.043	0.965646	
Tournament.l3	-19	53	-0.362	0.717466	
Players.l4	0	0	2489	0.013057	*
Prize_variation.l4	0	0	-2130	0.033566	*
Incentive.l4	-7	19	-0.381	0.703231	
Viewers.l4	0	0	-0.404	0.686595	
Tournament.l4	11	54	0.199	0.842359	
Players.l5	0	0	0.182	0.855916	
Prize_variation.l5	0	0	0.577	0.563802	
Incentive.l5	-25	19	-1367	0.171925	
Viewers.l5	0	0	-0.462	0.644014	
Tournament.l5	-32	54	-0.601	0.548032	
Players.l6	0	0	0.263	0.792911	
Prize_variation.l6	0	0	-1000	0.317829	
Incentive.l6	14	18	0.751	0.453192	
Viewers.l6	0	0	-3547	0.000416	***
Tournament.l6	102	54	1873	0.061501	.
Players.l7	0	0	1703	0.088963	.
Prize_variation.l7	0	0	-0.241	0.809589	
Incentive.l7	10	18	0.561	0.574751	
Viewers.l7	0	0	5125	3.86e-07	***
Tournament.l7	-153	41	-3747	0.000194	***
const	17	8	2056	0.040200	*
Signif. Codes : 0 *** 0,001 ** 0,05* 0,1 .					

Table 8 - Unrefined prize_variation regression

Regression results using Prize_variation as the criterion

Predictor	b	95% CI	$t(723)$	p
Intercept	70,302.68	[33,740.73, 106,864.63]	3.78	< .001
Player	0.77	[0.20, 1.33]	2.67	.008
Incentive	-22,750.86	[−112,733.17, 67,231.46]	-0.50	.620
Prize1	0.30	[0.25, 0.36]	10.70	< .001
Incentive1	575,011.75	[482,583.14, 667,440.36]	12.21	< .001
Tournament1	-429,702.08	[−638,316.38, −221,087.77]	-4.04	< .001
Tournament2	387,941.25	[89,729.97, 686,152.53]	2.55	.011
Tournament3	-3,056.90	[−223,040.28, 216,926.48]	-0.03	.978
Viewers2	-2.03	[−2.37, −1.70]	-11.97	< .001
Viewers3	2.49	[2.16, 2.82]	14.71	< .001

Table 9 – Unrefined Player regression

Regression results using Player as the criterion

Predictor	b	95% CI	$t(723)$	p
Intercept	-5,525.16	[−9,201.70, −1,848.61]	-2.95	.003
Incentive	-3,835.61	[−13,679.18, 6,007.96]	-0.76	.445
Viewers	0.03	[0.01, 0.05]	2.64	.008
Player1	-0.41	[−0.48, −0.34]	-11.54	< .001
Player2	-0.47	[−0.54, −0.40]	-13.25	< .001
Player3	-0.45	[−0.53, −0.38]	-12.36	< .001
Player4	-0.37	[−0.45, −0.30]	-10.17	< .001
Player5	-0.42	[−0.49, −0.35]	-11.95	< .001
Player6	-0.24	[−0.31, −0.17]	-6.70	< .001
Incentive1	26,068.86	[16,215.10, 35,922.61]	5.19	< .001

Table 10 – Unrefined Visibility regression

Regression results using Viewers as the criterion

Predictor	b	95% CI	$t(720)$	p
Intercept	261.08	$[-7{,}923.70, 8{,}445.85]$	0.06	.950
Incentive	-1,038.05	$[-19{,}712.37, 17{,}636.28]$	-0.11	.913
Tournament	173,055.74	$[129{,}766.58, 216{,}344.90]$	7.85	< .001
Prize variation	-0.01	$[-0.02, 0.01]$	-0.81	.416
Viewers1	0.56	$[0.49, 0.64]$	15.32	< .001
Viewers2	0.12	$[0.05, 0.19]$	3.23	.001
Viewers5	0.31	$[0.24, 0.39]$	8.06	< .001
Viewers6	-0.16	$[-0.24, -0.09]$	-4.19	< .001
Tournament1	-94,355.70	$[-143{,}851.43, -44{,}859.97]$	-3.74	< .001
Tournament5	-17,633.48	$[-44{,}292.33, 9{,}025.36]$	-1.30	.194
Prize3	0.03	$[0.01, 0.04]$	4.04	< .001
Incentive2	36,807.95	$[18{,}104.41, 55{,}511.49]$	3.86	< .001
Incentive3	11,241.71	$[-7{,}541.06, 30{,}024.48]$	1.18	.240