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Master's Thesis

# Consumers' use of consumer options as a risk-reduction strategy in a crowdfunding context

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ABSTRACT

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This experimental study handles consumer options as a payment method in a crowdfunding context. In the setting of the study it is assumed that consumer options are used by consumers as a way to mitigate risks and uncertainties involved in making a purchase in crowdfunding platforms. The aim of the study was to see if consumer options were a feasible pricing model for the context of crowdfunding the development of a video game.

The thesis is structured so that after introducing the reader to the context of the study, a wide literature review is given to shed light on the exploratory nature of the experiment itself. Different pricing models are discussed, and risk perception theory is introduced as the driving force of consumer decision making in this context.

In the experiment 252 respondents were randomly assigned to the experimental and control groups which were shown a scenario where a video game is being crowdfunded. The manipulated variable in the experiment was perception of risk: the manipulation was done by having a different developer, a longer release schedule for the product and an explicit note of no refunds in the scenario for the experimental group.

The results were inconclusive due to a failed manipulation, as the levels of perceived risk and, the choices regarding what offered payment method the respondents used, were the same in both groups. However, the findings indicate that consumer options enable the consumers to reduce the related risks. It would seem that the reduced risks are not related to the product itself, however, but on the context of the product: crowdfunding.

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Tämä kokeellinen tutkimus käsittelee kouluttajaoptioiden käyttöä maksutapavaihtoehtona joukkorahoituksen kontekstissa. Tutkimukselle keskeinen hypoteesi on, että kuluttajat käyttävät kuluttajaoptioita tapana vähentää joukkorahoitukseen osallistumiseen liittyviä riskejä. Tutkimuksen tavoitteena on selvittää, onko kuluttajaoptioiden käyttö joukkorahoituskontekstissa hyödyllistä kuluttajan näkökulmasta.

Tämä tutkielma on rakennettu niin, että tutkimuksen kontekstin esittelyn jälkeen käsitellään laaja kirjallisuuskatsaus eri hinnoittelumalleihin. Tämän jälkeen esitellään tarkemmin riskin kokemukseen liittyvää tutkimusta, ja kuluttajan riskienhallinta esitellään tutkimukselle keskeisenä käsitteenä.

Itse tutkimuksen pääkokeessa 252 osallistujaa asetetaan satunnaisesti kokeelliseen ja vertailuryhmään. Kokeessa osallistujille esitetään joukkorahoituskampanjan teksti. Kokeellisen ryhmän tekstissä ollaan manipuloitu tuotteen kehittäjän brändiä, tuotteen julkaisuaikataulua, ja tekstissä on eksplisiittisesti mainittu palautusten mahdottomuus. Tällä tavalla pyritään manipuloimaan osallistujan riskin kokemuksen tasoa.

Tutkimuksesta ja kokeesta ei voida tehdä suoria johtopäätöksiä tutkimusongelmaan liittyen, sillä manipulaatio kokeessa epäonnistui; riskin kokemukset ja kokeessa valitut hinnoittelutavat olivat molemmissa ryhmissä samankaltaisia. Tästä huolimatta tuloksista voidaan sanoa, että kuluttajaoptiot mahdollistavat riskien vähentämisen, vaikka kontekstissa esiintyvät riskit liittyvätkin enemmän joukkorahoituskontekstiin kuin muihin, tuotekohtaisiin riskeihin.

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## 1. Introduction

The video game industry in the recent years has seen an increase in advance selling of products that are going to be released in the near future. This applies to both established developers and publishers as well as to smaller, independent ones and to those developers and publishers who aim to finance their production with crowdfunding. However, especially in crowdfunding campaigns, the pricing of the product in advance selling may be problematic, as the consumers may perceive that the risks of making an advance purchase to be too high compared to the price. In addition, crowdfunding involves risks other than just failure to actually manufacture the product or service campaigned for, such as fraudulent funding campaigns (Baucus & Mitteness 2016).

The main objective of this study is to explore how consumer options may be used to alleviate perceptions of risk for the consumer, i.e. to see how consumer options are used as a risk-reduction strategy from the consumer's point of view. Offering consumer options may be a very potential alternative especially for smaller developers who aim to finance themselves with crowdfunding. The study should be interesting both due to its managerial implications on pricing alternatives in the industry as well as to researchers of consumer options and advance selling. Advance selling can actually be seen as "a special case of consumer options" (Sainam, Balasubramanian & Bayus 2010, 403; Balseiro, Göçmen, Phillips & Gallego 2010), and consumer options is regarded as a somewhat new concept in academic literature even though comparable applications of pricing models have been researched and are used in some industries, for example refundable fares in airline travel (see e.g. Gallego & Şahin 2010).

As the role of consumers expands into investors through crowdfunding, the divide between consumer marketing and equity-investing starts to get muddled, creating an interesting field of research. The point-of-view of perceived risk and risk-reduction was chosen as perceived risk is "powerful at explaining consumers' behaviour since consumers are more often motivated to avoid mistakes than to maximise utility in purchasing" (Mitchell 1999, 163).

This study is limited to the context of the video games industry, focusing on PC games, because of two things. Firstly, the academic research done on consumer options before has

focused on goods that are finite, like ticket sales of sports events or airline travel (see e.g. Sainam et al. 2010), and PC video games are far from finite as they can be copied virtually with very low costs. Secondly, PC game development has very high costs of development for the first copy of the end product, and developers will have little to no income from development before the product is released. As development relies on funding and advance sales, option pricing may prove to be a valid option to obtain income from the product during development.

This study is delimited to reward-based crowdfunding, as equity-based crowdfunding may have different motives for making a payment and involves different types of risks and rewards for the investor/consumer (Griffin 2013). The literature review will however include relevant research that has been done on other crowdfunding types.

**The main research question for this study is**

**RQ1:** ***Does the use of consumer options reduce the perceived risks related to purchasing products in reward-based crowdfunding campaigns?***

**The sub-questions related to the main research question include**

**SQ1:** ***What types of risk are perceived, and how are they relieved?***

**SQ2:** ***What types of pricing models can be used in reward-based crowdfunding?***

**SQ3:** ***How can different pricing models be used as risk-reduction strategies in reward-based crowdfunding?***

the main research questions will be answered through a lab experiment. The experiment itself is discussed more in depth in the later chapters. The data will be analysed quantitatively, and qualitative data is used to support and specify findings. The sub-questions are approached from a theoretical point of view, although contributions to those theories and questions may also be found in the empirical research. The research questions are contrasted to the hypotheses of the study introduced later.

This thesis is structured so that first the concept of crowdfunding is discussed to introduce the context of the study. Then a review of the research relevant to this study is conducted in

order to see how this research relates to that done earlier and to construct a theoretical framework. After discussing a theoretical framework, the relevant theories and models regarding risk perception and consumer behaviour are presented, and hypotheses about the experiment are constructed. After this the methodology of this study is discussed and the data and analysis methods are introduced. In the analysis chapter the relevant findings based on the gathered data are shown and the previously made hypotheses are discussed. In the discussion chapter the academic and managerial implications of the study are presented by discussing the findings of this study. In the concluding section of this thesis points for future research are made, and the study as a whole is discussed.

### 1.1 Crowdfunding

Crowdfunding means the collective funding of the production of goods or services. Belleflamme, Lambert and Schwienbacher (2014, 8) define crowdfunding as "an open call, mostly through the Internet, for the provision of financial resources either in form of donation or in exchange for the future product or some form of reward to support initiatives for specific purposes". Although it has been an attribute of modern internet usage, examples of crowdfunding can be seen in history as well: for example, the Statue of Liberty was funded with donations from thousands of French and American citizens (Gómez-Diago, 2015).

#### 1.1.2 Types of crowdfunding

There are four different types of crowdfunding which differ from each other based on the role of the funder and the fundraiser of the campaign, donation-based crowdfunding, reward-based crowdfunding, equity-based crowdfunding and debt-based crowdfunding. Donation-based crowdfunding relies on the donations of the funders, and the fundraisers may not give the donator anything in return for their donation. In reward-based crowdfunding the fundraiser of the campaign gives a reward in exchange for a donation, for example a t-shirt or the full product after it has been produced. In equity-based crowdfunding the funders are practically investing in the company of the fundraiser: the donators receive shares of the company in exchange for their donations. Debt-based crowdfunding, or peer-to-peer lending, is based on several funders giving smaller loans in order to finance the project. (Gómez-Diago, 2015)

In this study the experiment involves only reward-based crowdfunding. The scenario that is presented to respondents has two types of 'rewards' for the donator: the product or the right to purchase the product. Currently operating websites that offer reward-based crowdfunding include Kickstarter, which has since its establishment in 2009 been used by 10 million people to make pledges totalling to 2,6 billion USD (Kickstarter 2016), and Indiegogo which has had over 11 million contributions and over 950 million USD raised for different projects (Indiegogo 2016)

## 1.2 Literature review

In this chapter some of the earlier research done on the subject area is presented briefly. Firstly, some of the research done on consumer options is reviewed, then research done on advance selling and on the perception of risk in advance selling and consumer options are presented. Risk perception and risk-reduction research is discussed quite extensively in this chapter, as they are both essential to this study and have been studied quite extensively from the 1960s onwards. Advance selling is explored due to its close linkage to consumer options, and advance selling is currently the standard pricing model in the context chosen for this study. Advance selling is also incorporated as an alternative in the experimental design.

### 1.2.1 Consumer options

Consumer options are a relatively new concept introduced by Sainam et al. (2010), who introduced the theoretical concept as well as applied it empirically to show that consumer option pricing can bring the seller higher and steadier incomes than advance or full information sales (when the uncertainties related to the purchase are eliminated). Sainam et al. (2010) used a student sample experiment to investigate whether or not the concept of consumer options was easy to understand and considered as being fair. Their findings showed that for the sample the model was seen as easily understandable, and fair in comparison to the other possible pricing models (Sainam et al. 2010). A pricing model that cannot be easily understood may raise the level of risk experienced in purchasing.

Consumer options or concepts similar to it have been studied based on the research conducted by Sainam et al. (2010). Gallego and Şahin (2010) for example examined the use of partially refundable airline tickets, in practice comparable to consumer options, and found

that they can be used for higher profits than advance or spot selling. Balseiro, Göçmen, Phillips and Gallego (2010) showed that the benefits of consumer option sales grow when the number of possible outcomes grows (number of sports teams competing for a spot in the final for example), if the option can be realised only in the preferred scenario (the preferred team makes it to the final). This is because the event manager can sell one option per competing team per one seat. Balseiro et al. (2010) This benefit would be difficult to reproduce in a context where the products are infinite, unless there is some additional value from purchasing an option instead of purchasing on release, for example exclusive content or access to beta-testing of the product.

It should be noted that research on consumer options have been based on contexts where the available goods are finite, such as airline travel and sports events. In the following chapters some possible reasons for this will be discussed. In addition, these studies have had consumer preferences of outcomes as a divisive factor; a consumer may or may not be willing to use their option if their preferred outcome has not happened. In this study the context of 'infinite' goods or production capacity is used. The possibility of a market for C2C sales of the purchased options has not been widely discussed, but it has been acknowledged as a possibility. C2C sales of consumer options are not included in this study, as this inclusion would further complicate a study which is already quite explorative in nature.

### 1.2.2 Advance selling

As advance selling is an often used model in several industries (such as airline travel) there is a vast amount of research done on advance selling. Advance selling is shown to be a useful tool for price discrimination and obtaining higher profits when consumers have different valuations and uncertainties regarding future consumption. (Shugan & Xie 2005, Shugan & Xie 2001)

Shugan and Xie (2001) posited that advance selling is beneficial for the seller, the consumer and the society through higher utility and higher profits, as do Zeng and Wang (2015). They did, however, raise a point which is highly important for the context of this study: as capacity constraints are removed from the model of advance selling, the seller must be able to convince the consumer that the advance price is lower than what the spot price is going to be (Shugan & Xie 2001). In the context of crowdfunding, this would imply that the

importance of legitimacy for the price, product, project and company are essential.

Shugan and Xie (2001) studied advance selling in different product contexts of capacity constraints and marginal costs, and found that there are five different optimal strategies for advance sales. They proposed that an optimal pricing strategy for a product with unlimited production capacity and low marginal costs, such as a PC video game, would be to have a low advance sales price and a low spot price. This result goes against the hypotheses of this study, and indeed the current industry practices. This discrepancy may be due to the extremely high cost of the first copy of the product in question.

From a consumer behaviour point of view an important aspect of pricing and advance sales in the context of durable goods, such as video games, is forward-looking behaviour. Nari (2007) studied the intertemporal aspect of pricing in the video games industry, and showed that as the demand for video games becomes more elastic over time, firms set lower prices for their products in time, thus using a 'skimming' pricing strategy. On the other hand, Nari (2007) found that knowledgeable consumers strategically wait for the period when prices are lower, cutting the profits of the pricing strategy that had been employed. Nari (2007) made three important points about durable products; firstly, the "durability [of a product] implies that consumers who buy the good today will drop out of the market for the product in subsequent periods" (Nari 2007, 244), which results in a shrinking market. Secondly, consumers that have high valuations of the product purchase at release with the high price. And thirdly, a firm's pricing shapes the future expectations of price levels for the product, which is related to the concept of price legitimacy discussed later. Nari (2007) did not include in the proposed model the possibility of consumer options, but through establishing a legitimate spot price (shaping the expected pricing from the consumer's point of view) and allowing for a discount price to be used after release (already lower than the 'skimming' price) firms may be able to utilize consumer options in lowering the effects of the forward-looking behaviour of consumers.

In research on advance selling, risk has been researched on the basis of how risk-averse consumers are and how this affects advance selling models and successful pricing. Shugan and Xie (2001) found that for advance selling to be profitable a level of risk-aversion is not a necessary condition, i.e. advance selling is a profitable model even if consumers are not

risk averse, although as is discussed later, this may be untrue in a situation where consumers are in fact risk-seeking. Increasing risk aversion is seen to increase the profitability of advance selling, however. (Shugan & Xie 2001) Ng (2007) presented a framework that integrates two types of risk in advance selling of services. Ng (2007) proposed that consumers face acquisition risk, the possibility that they will not be able to obtain the service, and valuation risk, the uncertainty of utility from consumption at the specified point in time, and that advance purchasing is a trade-off between these two valuations: a consumer will need to decide which risk is larger, the risk of not obtaining a product or service at all, or the risk of purchasing a product or service that does not fulfil its purpose. Neither Shugan and Xie's (2001) nor Ng's (2007) frameworks integrated the other types or sources of risk in their models that are discussed in the later chapters. These have not been integrated in any of the consumer options models either, and this study aims to broaden our understanding on what specific risk types can be addressed with certain pricing models.

### 1.2.3 Consumer perception of risk

Consumer's perception of risk is an essential factor when considering the usefulness of consumer options. Purchasing an option instead of committing into purchasing in advance and consuming at a certain time can be seen as risk management from the consumer side, or as a risk-reduction strategy. Consumer perceptions of risk have been studied extensively since Bauer (1960) first presented it as a field of study, and discussed how many aspects of consumption are in fact connected to risk taking and risk-reduction strategies. Bauer's (1960) and other's seminal works are discussed further in the theory section of this study as well. In this chapter some aspects of the definition of risk and perceived risk are discussed in order to clarify the subject further.

In the earliest research on consumer behaviour and risk perception, risk has been defined as the combination of the expectation or probability of risk and the magnitude of the consequences of the unfavourable outcome (Bauer 1960; Taylor 1974). In this study both aspects are discussed, as prices affect the magnitude of financial risks (Kaplan, Szybillo & Jacob 1974), and in the study the subjective assessments of probability of negative or positive outcomes may have an effect on willingness to pay when a specific pricing model is employed.

Taylor's (1974) framework on the effects of risk on consumer behaviour is based on the concept of choice, and how risk, self-esteem and risk-reducing strategies affect the decision to buy. Taylor (1974) proposed that specific self-esteem, or the degree of seeing oneself as capable of making a decision concerning a certain domain, affects the level of anxiety experienced. Since consumers aim to lower the level of anxiety experienced, self-esteem also affects which risk-reducing activities are employed. (Taylor 1974) This may be related to the extent to which involvement, experience and knowledge affect risk perception as is discussed later. Risk-reduction strategies are further discussed in the next chapter.

Cox (1964) studied the perceptions of risk in telephone shopping, and made an important point related to Taylor's (1974) and Bauer's (1960) definitions of risk: Cox (1964, 33) claimed that "the element of risk is often present because before making the purchase the consumer cannot always be certain that the planned purchase will allow her to achieve her buying goals", and that these uncertainties can be related to the product, the brand, the place of purchase and the mode of purchase. It is possible that these uncertainties are relevant still in the crowdfunding context, and they have been studied to some extent in research that is presented later. Both Cox (1964) and Taylor (1974) focused on how these uncertainties are relieved instead of how the magnitude of possible consequences are relieved. This study is essentially about how consumers perceive risk in the crowdfunding context, and how they are choosing to alleviate the consequences through the possible use of consumer options as a risk-reduction strategy.

An important aspect of factors moderating risk perception is the concept of the six dimensions of risk first presented by Kaplan, Szybillo and Jacoby (1974) as a model of five dimensions, financial risk, psychological risk, social risk, physical risk and performance risk that contribute in different magnitudes to the overall perceived risk. Time was later added to the model as a sixth dimension (Stone & Gronhaug 1993, Mitchell 1999). It may be relevant for this study to obtain a picture of the overall risk perceived as a combination of these six dimensions, and specifically it is of interest whether perceptions of financial risk affect which pricing model is preferred.

Bettman (1973) modeled the components and measures of risk, and expanded on the research done by Cunningham (1967) who had measured the probabilities and consequences as

components of risk. Bettman (1973) divided risk into inherent and handled risk, the former including risks that are inherent to the type of product in question, and the latter to risks related to brand choice, claiming that "in a case where a consumer has no information [about the product in question], handled and inherent risk should be the same" (Bettman 1973, 184). Dividing between these two types of risk in the context of this study may reveal whether or not consumer options may be used for reducing both inherent and handled risk, or if this possible risk-reduction strategy is only employed when handled risk is perceived.

Expanding on the work of Bettman (1973), Dowling and Staelin (1994) discussed how different risk mitigation activities are conducted dependent on the type of risk that is being mitigated. They proposed the concepts of product-specific risk (handled risk) and product class risk (inherent risk), the former referring to risks related to brand and product choices made by the consumer, e.g. choosing between Coca-Cola and Pepsi, the latter referring to risks related to the type of product, e.g. a car or a house. In their theoretical model they proposed that acceptable risk is a gatekeeper for further information search as a risk-reduction strategy: if product-specific risk is perceived as higher than acceptable risk, further risk reducing activity is done. The model did not, however, propose a direct connection between the ability to suffer a loss, and the acceptable risk level. They found that the higher the overall risk perceived, the higher the level of intended use of risk-handling activities. (Dowling & Staelin 1994). Dowling and Staelin's (1994) concept of acceptable risk can be seen as related to the concept of trust proposed by Mayer, James and Schoorman (1995): they proposed that if the level of perceived risk is lower than the level of trust, the consumer will perform the task with which the risk is involved, whereas Dowling and Staelin (1994) claimed that when overall perceived risk is lower than the acceptable risk, no further risk-reducing activities are performed and the task is done.

As Bettman (1973), and Dowling and Staelin (1994) had studied the first stages of the consumer buying process, Cunningham, Gerlach, Harper and Young (2005) discussed risk perception and reduction strategies that are present in other stages of the process. They found that risk perception in the airline services context differs between the stages of the consumer buying process, and that risk perception is at its highest in the ‘information gathering’ -stage, and at the ‘evaluation of alternatives’ -stage. (Cunningham et al. 2005)

As risks related to purchases can be mitigated through involvement and increasing knowledge (Dowling & Staelin 1994), it should also be taken into account that increasing knowledge of the product class or the specific product may also affect negatively on the willingness to pay of the consumer in an investing context. If an investor easily understands the risks related to an investment, i.e. has a high level of knowledge regarding the product or product class, activities related to establishing the legitimacy of the venture are less important for the investment decision (Lounsbury & Glynn 2001). This may imply that the relationship between risk and knowledge is not linear: a higher knowledge may result in higher perceived risk and possibly in further use of risk-reduction strategies, for example a consumer with a large amount of experience and knowledge regarding the video games industry and development of video games may in fact perceive a higher level of risk in making a purchase of a product in development when compared to a person with an intermediate or low level of knowledge.

Gierczak, Bretschneider and Leimeister (2014) proposed in a study in progress that studying the perceptions of risk in crowdfunding campaigns through analysing backers who had revoked their pledges may reveal what kinds of risks are perceived in crowdfunding. Based on a literature review Gierczak et al. (2014) distinguished three different types of possible risks related to crowdfunding backing; funding object risk, referring to risks related to the products in development, project initiator risk that is related to the reputation of the initiator of the project, and intermediary risks that refer to the risks related to using the crowdfunding platform. If these risks are compared to Dowling and Staelin's (1994) typology of risks, product class risks are comparable to funding object risk and product-specific risks relate more to project initiator risk.

Ha (2002) found that word-of-mouth and customized information were more powerful at reducing consumer risk perceptions than brand knowledge. Ha's (2002) findings supported Dowling and Staelin's (1999) model of distinguishing between product-specific and product-category risk perception. In future research the effects of the social elements of crowdfunding platforms may shed light on this relationship between WOM, customized information, brands and risk perception in this particular context.

Cases (2002) studied risk perceptions related to online retailing. The results indicated that in

purchasing clothing online the most dominant perceived risks were related to confidentiality, security and credibility of the transaction, and performance risk. These risks are mostly related to the vendor and not the product.

Research on variables that may moderate risk perception has been done by Mitchell and Boustani (2015), and they found that the demographic variables age, gender and social status affected the level of perceived risk in different product categories, as do Kim, Qu and Kim (2009) in the online purchasing context. These and other variables were introduced as control variables in Gierczak et al. (2014). Hirunyawipada and Paswan (2006) found that consumer innovativeness, which could be broadly understood as the affinity and interest for new products, is a moderating variable in perceptions of risk in the adoption of new products. They concluded that domain specific consumer innovativeness, i.e. expertise, affinity and interest in a specific product category, has a greater effect on risk perception than overall consumer innovativeness. Hirunyawipada and Paswan's (2006) concept of consumer innovativeness may be contrasted to that of product involvement, albeit consumer innovativeness being broader by definition.

Similarly to Hirunyawipada and Paswan (2006), Dholakia (2001) found that increasing sustaining involvement with a product class raises the motivation to purchase, i.e. with a higher involvement the perceived risks are lower. On the other hand, Dholakia (2001) also found that if a consumer's involvement in a product class is low "a consumer may not evaluate, and therefore not experience, risk associated with the product class" (Dholakia 2001, 1353), i.e. if a consumer's experience, affinity and level of identifying oneself with that product class are low, the evaluation of risks involved in purchasing in this product class may be difficult. This may result in variation in evaluations of risk in the group with low experience in the product class or with crowdfunding in general. Based on these studies (Mitchell & Boustani 2015, Gierczak et al. 2014, Hirunyawipada & Paswan 2006, Dholakia 2001, Kim et al. 2009) the experiment employed in this study needs to be planned in a way that random assignment eliminates most of the effects of the variables discussed in previous research. Additionally, the findings of Dholakia (2001) may restrict the sampling and the population to which the results of this study can be applied to.

Harridge-March (2006) discussed how organisational trust and risk perceptions are balanced

in online buying environments. The research showed that creating a sense of trust for the organisation with marketing communications can alleviate perceptions of risk. Additionally, Harridge-March (2006) made an interesting point supported by Mitchell (1999), that "to study risk would be incomplete without studying trust." (Harridge-March 2006, 750-751), as the concepts of risk and trust can be seen as co-existing by definition, Mitchell (1999, 174) concluded from earlier research that "perceived risk is a necessary antecedent for trust to be operative". Perceptions of risk and trust may prove to be an interesting focus for future research on the subject of pricing models, in particular when the aspect of involvement present in the crowdfunding context is taken into account.

Bhatnagar and Ghose (2004) studied consumer risk perceptions in online retail in comparison to traditional brick-and-mortar shops, and found that in online retailing consumers perceive a higher level of product risk due to the inability to 'test' the product before purchasing it, similar to what was already found by Cox (1964) in the telephone shopping context. This risk perception may be even higher for the crowdfunding context, as the product itself may not even exist yet or might only be at a prototype stage. Pappas (2016) expanded on Bhatnagar and Ghose's (2004) findings by studying consumer risk perceptions and trust in the online retail context. Pappas (2016) found that marketing can reduce perceived price risks, which was defined as the expected probability and magnitude of financial loss, and that, more specifically, branding can reduce perceived product risk. If consumer options are found to be a preferred pricing model in this context, further investigation on how branding and marketing in general affects the preferred model may be conducted.

Kim, Xu and Gupta (2012) studied the effects of trust and price on perceived value and purchase intentions in an online retail context. They found that for potential customers, or customers who had not previously made purchases in that online store, perceived trust had a greater effect on purchase intentions than for repeat customers, as potential first-time customers were more risk-averse. Price, however had a greater influence on the repeat customers. (Kim et al. 2012) Although this research was done in the context of vendor-customer, and the perceived trust or risk was vendor-related, it may be that for 'repeat customers' in the context of this study, the consumers with more experience in crowdfunding, pricing may influence risk perceptions more than for inexperienced consumers, as

experienced consumers may be more knowledgeable on appropriate reward-structures and risks involved in crowdfunding. On the other hand, Forsythe and Shi (2003) found that for heavier users of online retailing services the level of financial risk perceived in online retailing was significantly lower than for those who rarely purchased goods online. They also found that the overall perceived risk level, construed from financial, product performance, psychological and time/convenience risk, was higher for inexperienced online buyers than for those with more experience (Forsythe and Chi 2003).

### 1.2.4 Risk-reduction strategies

Cases (2002) discussed in an extensive literature review the difficulty in comprehensively presenting risk-reduction strategies based on earlier literature. Several studies have had inconclusive or mixed results, and results by other researchers can sometimes be completely overturned by another (Cases 2002). This may be dependent on the research context, product or service used in the study, or even cultural differences (Mitchell & Vassos 1997). This is why reviewing previous research is useful in understanding the concept of risk-reduction strategies that relate to the context of this study.

Roselius (1971) studied the perception of risk and what different risk reduction strategies are preferred in different situations. Roselius (1971) used four different categories of loss to represent the quality of risks faced, time loss, hazard loss, ego loss and money loss. For all of these risk categories, the risk reliever 'money back guarantee' was rated as a slightly unfavourable risk reduction strategy in the sample. This means that providing such a guarantee for customers does not raise the likelihood of them making a purchase. Instead, a familiar brand or otherwise major brand and independent tests were seen as more favourable risk reduction strategies. (Roselius 1971) This implies that it is possible that the pricing model offered may not have a significant effect on willingness to pay. These findings differ from those of Kunze and Mai (2006), and may be due to the different contexts the studies were conducted in: Kunze and Mai (2006) focused on the adoption and sales of new technologies whereas Roselius (1971) focused on products that were not entirely new to the consumers, i.e. in the research done by Kunze and Mai (2006) there may have been higher perceptions of performance risk causing the consumers to choose a different RRS.

Dowling (1984) proposed that risk-reduction happens when a product exceeds the tolerated

amount of risk, which is similar to the concept of acceptable risk (c.f. Dowling & Staelin 1994), and that the ability to compare between the riskiness of alternatives cognitively is essential in consumer behaviour and risk perception. There is an underlying assumption in risk perception theory that if presented with two alternatives, a high-risk and a low-risk one, the consumer will choose the one with lower risk attached to it. On the other hand, Deering and Jacoby (1972) hypothesised that neither low- nor high-risk purchases are preferred by the consumer, and that in fact, if a consumer perceives a low risk, it is possible that a risk-enhancing strategy is employed, e.g. out of boredom, implying that consumers have an acceptable range of perceived risk instead of one threshold as suggested by Dowling (1984) and Dowling and Staelin (1994). Deering and Jacoby's (1972) study supported their hypothesis to some extent, although they found a large amount of variance between subject groups regarding the hypothesis. This finding combined with those of Lee and Stoel (2014) and Hobbs, Grigore and Molesworth (2016) create stress for appropriate pricing model usage in the crowdfunding context: if the price is seen as too low (the consequences of a purchase are not significant) or the return of the investment is seen as too intangible, consumers may opt for the advance sales model instead of purchasing a consumer option.

Hermann and Locander (1977) studied risk-reduction when consumers are faced with an entirely new or innovative product. Hermann and Locander (1977) expanded on Taylor's (1974) framework of how risk-reduction strategies are employed, and found that the level of anxiety experienced and the level of generalized self-confidence do not have a significant effect on which risk-reduction strategies are employed, and that it is indeed domain-specific self-confidence that affects the choice of risk-reduction strategies in the context. This would imply that domain-specific confidence or involvement may prove to be significant in this study.

Lantos (1983) studied different risk-reduction strategies, and presented six strategies that consumers generally use in reducing risks: 1) buying high priced products, as price is an indicator of quality, 2) buy products from known manufacturers, brands indicating quality, 3) buying small size brands, or using trials as risk-reduction, 4) use the evoked set of brands for decision-making, 5) buy a previously bought brand, i.e brand loyalty and 6) increase knowledge of brand selection. Lantos' (1983) study focused mostly on product-specific (Dowling & Staelin 1994), or handled risk (Bettman 1983). Lantos' (1983) findings show

that pricing and brands are important if manufacturers and vendors aim to use risk perceptions and risk-reduction as bases for strategy formulation.

Mitchell and Boustani (1994) proposed that in researching risk perception and risk-reduction strategies, the stage of the decision making process should be taken into account. They hypothesised that the level of perceived risk varies during the process, and that different risk reduction strategies are more efficient than others in different stages, similarly to Cunningham et al. (2005). Defining the decision making process as problem recognition, information search, evaluation of alternatives, purchase decision and post-purchase behaviour, Mitchell and Boustani (1994) had mostly inconclusive results concerning the risk-reduction strategies employed in different stages, although brands, trials, money-back guarantees and free samples were found to be significant risk-reducing strategies in the pre-purchase stages. Mitchell and Boustani (1994) also hypothesised that money-back guarantees would be more significant in the post-purchase stage, as they claim that in the post-purchase stage consumers aim at minimizing the negative consequences of a purchase, but instead they were more important in the pre-purchase stage, showing that the money-back guarantee in the context of their study acted as a certainty increaser instead of loss reliever. (Mitchell & Boustani 1994) Interestingly, Mitchell and Boustani (1994) also point out that studying risk-reduction and risk perception involves the difficulty of subjects possibly denying the effects of certain factors regarding the product, such as endorsements by celebrities, and that the low statistical significances of some risk-reduction strategies may indeed be because the product in the study was a low-risk purchase consequence-wise. It may be necessary to control for this kind of behaviour in the study by identifying for example normal levels of consumption in the product category.

Cases (2002) found that in the online clothes retail context the most useful risk-reduction strategies are related to payment security and viewing the product virtually or physically in a store beforehand, whereas word-of-mouth referrals were not seen as being important. Cases' (2002) study also saw price-related risk-reduction strategies quite high in the rankings for most useful strategy, money-back guarantee ranked second. Cases (2002) also contrasted the risk-reduction strategies to the dimensions of risk, and found that, similarly to van den Poel and Leunis (1996), the money-back guarantee and the possibility to exchange a product were very useful in reducing performance risk of the product. Cases did not find differences

in the usefulness of risk-reduction strategies between different subject groups. (Cases 2002)

Cho and Lee (2006) studied risk and risk-reducing activities, and created a model depicting how risk propensity and risk-perception affect the use of risk-reducing activities. They found that risk-propensity, referring to how often an individual avoids or takes risks in situations that are perceived as risky, moderates risk perception, which in turn affects the volume and quality of risk-reducing activities. Cho and Lee's (2006) definition of risk propensity is in some literature linked to trust, for example Mayer, Davis and Schoorman (1995) defined trust as the willingness to take a risk, and risk as the likelihood of positive and negative outcomes. However, trust inherently requires a relationship, like vendor-consumer, whereas risk does not (Lim 2003). Risk propensity is also more of a personality trait, and trust is based on interpersonal or inter-organisational relationships. Cho and Lee (2006) also took into account self-efficacy and an individual's wealth in their model as factors affecting risk perceptions. Self-efficacy may be related to domain specific involvement and experience and specific self-esteem, which are taken into account in the analysis of this study.

Kunze and Mai (2006) studied ways in which the adaptation and thus sales of new technology can be boosted through addressing risk-reduction strategies or risk relievers. Kunze and Mai (2006) aimed to create a method for segmenting markets based on how and what risks are perceived, and how consumers reduce these risks. Their results showed that in the online music context consumers were most worried about time-loss risks and performance risks, but the risk-reduction strategies employed by consumers were concerned with pricing: consumers chose service providers that had e.g. money-back guarantees or trials. In addition, segmenting in the online music context can be done based on how accustomed the consumers are to downloading music, as lighter users require more risk relievers. (Kunze & Mai 2006)

Kim et al. (2009) studied risk perceptions and risk-reduction strategies in the airline travel context, and found that while demographic factors have an effect on risk perceptions, there are no significant differences in risk-reduction strategies between purchasers and non-purchasers of airline tickets, except for the strategy 'shopping around the web', i.e. using multiple online portals or vendors in evaluation, being more used by purchasers. They also find that experience is important for risk-reduction, and that the risk-reduction strategies

employed most involved vendor reputation and trust. (Kim et al. 2009)

Bruwer, Fond and Saliba (2013) studied the risk-reduction strategies of consumers, and found that those consumers who perceive higher levels of risk related to the purchase used information seeking as a risk-reduction strategy more than those consumers who perceived a lower risk level. They also found that in general those who perceive a higher level of risk will use more risk-reduction strategies than those who perceive a lower level of risk (Saliba et al. 2013). Saliba et al. (2013) also stressed the importance of the purchase context; consumers employ different risk-reduction strategies in different purchasing situations, and they claim that it is important for vendors to acknowledge these strategies and respond to them.

To summarize the literature presented here it can be said that with increasing levels of perceived risks, consumers use more risk-reduction strategies. Which strategies are employed depend on the person in question, and which strategies are useful depend on the context of the purchase. There is little evidence to show that the use of risk-reduction strategies would differ between consumer segments, i.e. segmenting based on the quality of risk-reduction strategies may not be useful.

### 1.2.5 Crowdfunding

Crowdfunding as a financing method has received a lot of interest in academia in the recent years. Research related to alleviating consumer perceptions of risk or uncertainty in the context is still somewhat scarce, however. Moritz, Block and Lutz (2015) studied investor communications in crowdfunding, and found that it is possible for companies seeking funding from crowdfunding sites to lower the perceived information asymmetry through communicating in a pseudo-personal way via the internet. Moritz et al. (2015) additionally found that it was especially the 'soft' attributes of the venture company that affected perceived information asymmetry, for example openness and sympathy. It is possible that these factors moderate risk perception in that the "known brand" vs. "independent developer" setting invokes sympathy and increases willingness to pay for the smaller developers' campaigns.

Ordanini, Miceli, Pizzetti and Parasuraman (2011) used a case-based grounded-theory

approach to investigate why consumers turn into investors and use crowdfunding. They found the motives for this to be dependent on the venture and funding context, for example in funding a technology company in producing software has different motives and purposes than funding a garage band, the motive for the latter being more emotional and about involvement, the motive for the former being more about return on a larger investment. This finding may be however related to the structure of their study; the platforms and case companies that were researched differed greatly in both content and average investment made (Ordanini et al. 2011). Despite the differences in motives, Ordanini et al. (2011) found that consumers use crowdfunding because consumers wished to be "engaged in innovative behavior" (Ordanini et al. 2011, 455), and consumers found the idea of enabling the ventures to realize the project important. They also found that the more a consumer identified with the product or venture, the more likely it was for them to invest into the venture. (Ordanini et al. 2011) This implies that consumer attributes related to the product, product class or company may moderate their willingness to pay in the setting of this study, and may be seen as support for the effect of consumer innovativeness presented by Hirunyawipada and Paswan (2006).

On the other hand, Mollick (2014) found that in crowdfunding consumers are more likely to invest in a project if it seems likely that the project will succeed. This implies that willingness to pay in the crowdfunding context is affected by factors related to the aforementioned likelihood of success, which may consist of perceptions of venture legitimacy. It is interesting to see if consumers react negatively to offering a consumer option, as the pricing alternative may trigger the consumer into thinking about the possibility of failure instead of success.

Frydrych, Bock, Kinder and Koeck (2014) studied what factors create legitimacy (i.e. the perception that a venture is likely to succeed in their goals), and found that appropriate funding targets, reward structures that create a sense of return on investment and narrative legitimacy affect the success of crowdfunding projects. One of their findings is that higher funding targets require larger efforts from the venture to ascertain legitimacy. (Frydrych et al. 2014) On the other hand, Lim (2003) suggested that in an online retailing context the risks related to a vendor can be reduced by obtaining certifications and legitimacy through them.

Hobbs, Grigore and Molesworth (2016) expanded on the work of Frydrych et al. (2014) and Mollick's (2014) research by studying more generally the success factors of crowdfunding campaigns. Hobbs et al. (2016) found that an impression of quality, pitch quality and reasonable reward tier structure and rewards affected campaign success. An interesting and relevant finding for this study is that at the reward tier of $25 the purchaser usually received a tangible reward in successful campaigns, and that often the campaigns that offered rewards that have little value unless the campaign succeeds in creating the end product often failed, i.e. offering 'just' a consumer option or in fact an advance sell may not be appealing to a customer. This was not, however, the case when the campaign initiator was a known person or brand. (Hobbs et al. 2016) A related finding concerning pricing comes from Lee and Stoel (2014) who studied the effects of discounts in online environment. They found that an increasing difference between expected or original price and discounted price in an online environment raised the level of risk perceived in purchasing a product (Lee & Stoel 2014). Although consumer options are not directly a discount, and the pricing model has been seen as easily understandable (Sainam et al. 2010), Lee and Stoel's (2014) results further stress the importance of appropriate pricing, and together with the finding from Hobbs et al. (2016) these findings may shed light on the possible failure of consumer options as a pricing model in the crowdfunding context.

The effects of the social network surrounding crowdfunding campaigns have also seen to have an effect on consumers' intentions to purchase (Moritz et al. 2015). Future research in the context presented in this study may need to take into account the impact of peers on purchase intention in the context, for example in a field experiment design.

Cholakova and Clarysse (2015) studied the differences in motivations and goals for reward- and equity-based crowdfunding, separating between financial and non-financial motives to invest in a campaign and found that those who invested into an equity-based campaign were more likely to additionally keep a pledge in the campaign. Yan, Fong and Huat (2014) examined different types of crowdfunding backers, and found that the likelihood of making a pledge on a crowdfunding campaign depends on which of the four types of consumers the backer belongs to. Yan et al. (2014) also found that the time at which a consumer backs a campaign varies depending on aforementioned consumer type. The temporal aspect of backing may be relevant to this study, as time risk has been seen as a dimension of overall

perceived risk (Mitchell 1999, Stone & Gronhaug 1993) and in future research group identity and the temporal aspect of crowdfunding should be taken into account, as risk perceptions may vary between these groups, and assessments of risk can vary between different stages of the crowdfunding campaign.

As was mentioned earlier, risk and trust can be studied as linked concepts, and this idea has also spun research in the crowdfunding context. Zheng, Hung, Qi and Xu (2016) studied a microfinancing site's campaigning companies and the users of the site and found that as the overall trust in the venture increased the probability of supporting the campaign rose, and found that interaction between the backers and the venture had a larger impact on trust than the historical creditworthiness or success of the venture. This may imply that the social, interactive aspect of crowdfunding would be of more importance than brand recognition. Zheng at al. (2016) do, however, find that the experience of the company in crowdfunding is a moderating factor for success, as the communication between the venture and the backer is done more efficiently. It is possible, that in a static situation where communication between these parties is not established, this experience in communication may be implied by brand recognition.

## 1.3 Theoretical framework

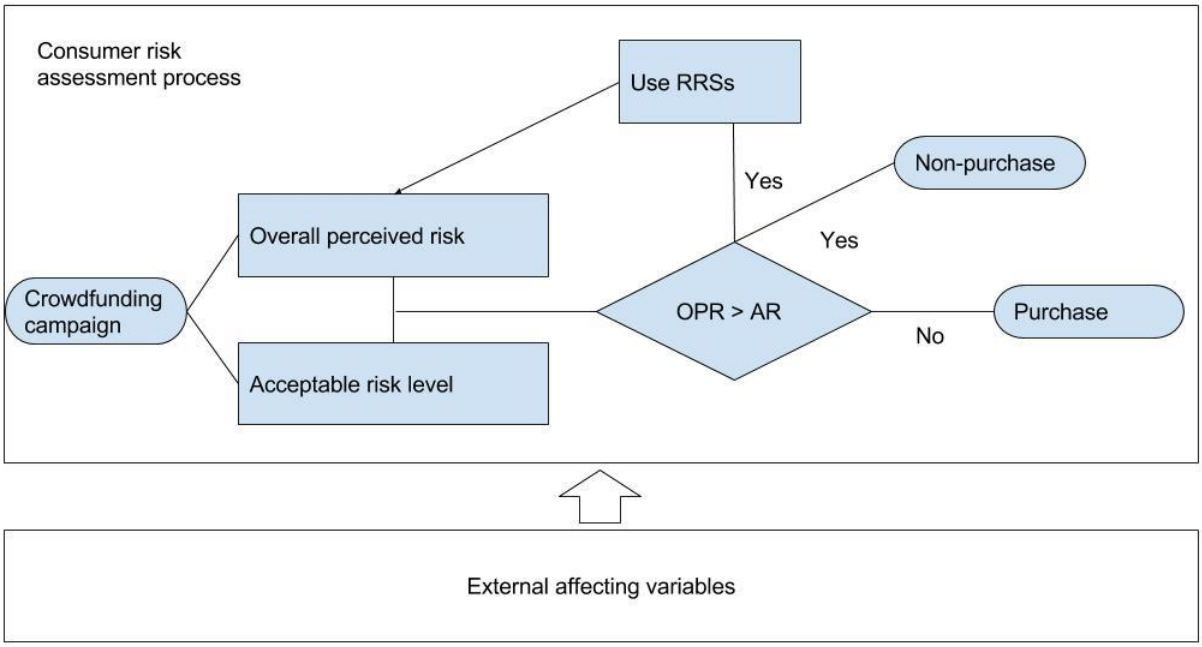



**Figure 1. The theoretical framework**

The theoretical framework in figure 1 shows the relationships between the concepts discussed earlier. The framework is built around the rough outline of the process a consumer goes through while dealing with a purchase related to a crowdfunding campaign. If the level of overall perceived risk (OPR) is higher than the level of acceptable risk, a consumer will end up using a risk-reduction strategy (RRS), or be a non-purchaser. If an RRS is used, the consumer assesses OPR in comparison to acceptable risk, and if OPR is lower than the level of acceptable risk, the purchase is made. External variables that can affect behaviour in a situation like this are numerous. The effects of these variables in the experiment are largely removed by the random assignment to group.

It is important to also take into account, that OPR can be lowered by lowering a single dimension of it, for example by lowering the perceived performance risk. The theoretical framework incorporates the dimensions of risk under the umbrella of OPR. For the purposes of this study, the non-purchase alternative is also eliminated for practical reasons, which is discussed in the empirical section.

### 1.4 Delimitations

There are certain delimitations that affect the applicability and broadness of this study. Firstly, the differences in risk-perception and risk-reduction between the stages of consumer decision making are not taken into account. Offering different pricing options may affect how the stages are conducted. Secondly, the aspects of information-search and the socialness of crowdfunding are not addressed in this study. These have been seen as greatly reducing perceived risks.

This study only concerns crowdfunding of video games. As products that are crowdfunded range from educational material to space travel, the results may not be applied directly to other product types. However, the results can also give insight to how consumers view crowdfunded products and their reasons for partaking in crowdfunding campaigns.

The approach of this study is focused on the consumers' views on risk and their behaviour in a presented scenario. This study does not take into account the crowdfunding companies views on consumer options or their behaviour regarding segmenting based on risk perceptions.

This study is also conducted in a way that makes several assumptions regarding risk perceptions and behaviour of consumers. Firstly, the assumption is that risk perceptions affect behaviour. Secondly, it is assumed that risk perceptions can be affected on a product-specific level. If these assumptions prove to be misguided, the results of the experiment may not reveal sufficiently the entirety of risk perceptions in this context.

### 1.5 Definitions of key concepts

As the terminology related to the study of risk perception is quite fragmented, it is necessary to briefly go through what definitions have been previously used for risk and risk perception in order to have a connection to other research and allow for the replication of this study in the future. In addition, I will discuss the concepts of the pricing models that are discussed in this study.

*Consumer options* are a concept introduced by Sainam et al. (2010). Consumer options allow the consumer to purchase an option which can be realised later into purchasing an actual

product. Consumer options allow the purchaser to avoid risks related to buying the end product in advance.

*Advance selling* is a pricing model in which the consumer can choose to make a purchase before obtaining or consuming the product. There are several alternatives to pricing decisions when using advance selling, as the advance selling price may be higher or lower than that of a released product. (Wang & Zeng 2015).

*Perceived risk* will for the purposes of this study be seen as consisting of the subjective assessment of a probability and magnitude of negative or positive outcomes, as is similarly defined by Bauer (1960) and several others thereafter. The operationalised concepts of overall perceived risk and the dimensions of perceived risk are explained in the theoretical part of this study.

*Risk-reduction strategy* (RRS hereafter) is defined based on Roselius' (1971) work as a method with which a consumer reduces the uncertainties related to a purchase. These RRSs can work in either reducing the probability of a negative outcome or reducing the magnitude of the consequences, or both. Different RRSs are discussed further in the empirical part of this study.

*Willingness to pay* is a measurement of to what degree the consumer is willing to make a purchase with either a given price, or with a price that is chosen by the consumer. WTP is often used in the description of advance selling and consumer option pricing models, as it is essential in the theoretical concepts. WTP will be discussed further in the theory section of this thesis. For the purposes of this study, WTP is operationalised as the choice between different payment methods the respondent makes in the experiment

### 1.6 Research Methodology

This study is going to be exploratory in nature, as the phenomenon in question has not been widely researched. The aim is to further our understanding of how well consumer options can be applied to markets where production capacity restrictions are low, and how consumers may react to using this pricing model.

The study will be experimental and it is conducted using the survey tool Qualtrics, and the

respondents for the final experiment were recruited from an online portal called Prolific Academic. The experiment uses a between-subject design in order to avoid learning effects and fatigue. The scenario is constructed based on current and previous campaigns on Kickstarter, an online crowdfunding-platform. As the details regarding the scenario will be the same for both the control and experimental group, the effects of the scenario, other than those related to the manipulation of it, should be eliminated.

In the experiment the control group will be presented with a scenario, where the video game is developed by a well-known brand, Ubisoft Montreal. They are offered three pricing options: buying the product after release (full information pricing, or FIP), making an advance purchase at a discounted price compared to the spot price (advance sales, or AdvS) and purchasing a consumer option (CO), which allows the consumer to purchase the product at any point with the same discount as the advance sales price. The experimental group will be presented with the same pricing options, but in the scenario the developer is an unknown, made-up brand. Due to findings of the pre-testing, the scenario also has a different release schedule for the final product and a mention that refunds are not possible. This manipulation of the scenario is hypothesised to evoke a higher perception of overall risk, as the perceived product-specific risk should be higher. The hypothesis is that the experimental group will opt more for the consumer option pricing model. This is related to it being an RRS for the related risks.

To summarize, the manipulated independent variable in the experiment is risk. The dependent variable is willingness to pay, represented by the use of different pricing models. A manipulation check will confirm whether the change in independent variable indeed had an effect in the participants, and that the manipulation only affected the dependent variable

## 2. Perceived Risk Theory

Research done on perceived risk was discussed extensively in the literature review. In this chapter, the aim is to present in a concise manner the relevant theories and models of risk perception and risk-reduction strategies in order to both support the hypotheses presented in the study and to make the study understandable. The aim is also to clearly point where the academic contribution of this study is by discussing the theoretical concepts more in depth.

Perceived risk can be described as the uncertainty related to the consequences of a purchase (Hollensen 2010, 112), however the previous, simple definition of risk only takes into account one aspect of risk; the consequences. Multiple researchers split risk into two factors: the importance or magnitude of consequences and the probability of the consequences (Bauer 1960, Dowling & Staelin 1994, Mitchell 1999). Researchers like Lim (2003) also differentiate between the sources of risk and the probabilities and consequences of risk. To further create confusion regarding the concept of risk, it has been proposed that if a person is unable to quantify the probabilities of risk, it should be instead referred to as uncertainty (Mitchell 1999). As is pointed out by Cunningham (1967), exactly quantifiable risks are rare in consumer decision making, and it may indeed be difficult for the consumer to assess both the consequences and the probabilities of consequences related to a purchase. For the purpose of this study perceived risk is defined as consisting of the subjective assessment of the probabilities of the negative or positive outcomes of a purchase, and the magnitude of the consequences of a purchase.

In addition, there is debate whether research should be focused on objective risk or subjective risk. Mitchell (1999) pointed out that the measurement of objective risk is very difficult, as consumers may have limited information and experience regarding their purchase, and that it is indeed subjective risk that drives behaviour. This is why in this study the focus is on subjective perceptions of risks. Additionally, it has been under discussion whether measuring risk should be done based on the multiplication or addition of the two aspects of risk perception, probability and magnitude, and it is proposed that both methods should be used in measurement to further validate results (Mitchell 1999). Choices regarding measurements are discussed in this chapter.

## 2.1 Models of risk perception

As was mentioned earlier, risk perception has been a popular field of research since the introduction of the field by Bauer in 1960. Thus, several models and conceptualisations of risk perception have been suggested by researchers, and in this chapter these different models and theories which are relevant to this study are summarized.

Overall perceived risk is a central concept for this study. Overall perceived risk (OPR) means the quantity and quality of the probabilities and consequences of risks related to any action. OPR thus covers all dimensions of risk, whether they are divided by type of risk (time, psychological, social, financial, physical and performance) or by being related to product-category and product-specific risk. Generally speaking, in risk perception and risk-reduction models OPR governs whether or not the action to which the risks are related is going to be taken. (Mitchell 1999)

As was mentioned in the literature review, Dowling and Staelin (1994) proposed that a threshold model should be adopted in assessing risk perception and behaviour. This means that as long as the OPR is greater than acceptable risk, the consumer will use risk-reduction strategies to lower the OPR or abstain from taking action. This model is the theoretical basis of this study; the main hypotheses revolve around the idea of lowering OPR to reach acceptable risk levels. This is discussed in the theoretical framework of this study. Hypotheses regarding this are as follows:

An essential aspect of risk perception for this study are the sources and dimensions of risk. The six dimensions of risk are time, financial, performance, social, physical and psychological risk. The relative importance of these dimensions depends on the context. (Kaplan et al. 1974, Mitchell 1999). In addition, the importance of a dimension in a specific context is independent (Kaplan et al. 1974), which means that however much the perception of a single dimension changes, the perceived quality or quantity of the other dimensions may or may not change. This opens up possibilities for future research in this context, as it may be possible to manipulate the level of a specific dimension of risk instead of just product-specific risk. However, it should be noted that in a video game crowdfunding context these dimensions of risk may be linked, and that the manipulation of risk perception on a product-specific level may cause differences in several risk dimensions.

In all of the six dimensions, risk is a two-fold concept with a consequence and a probability for said consequence. The six different dimensions presented refer to the resource that is lost as a consequence; time risk relates to losing time, or being late because of a purchase, physical risk relates to a loss in physical well-being, social to change in social status or class, psychological to the degree of discomfort resulting from or during the action, performance risk relates to the taken action having the preferred outcome and financial risk to losing financial resources. Together these dimensions form the level of OPR.

As was mentioned in the literature review, product-specific and product category risk were seminally discussed by Bettman (1973) and Dowling and Staelin (1994). The division of these risk types is essential for the purposes of this study, as the experimental design rests on the differences in perceived product-specific risk, and on the assumption that the level of product category risk is the same for both groups on average, meaning that in both the experimental and control groups the average level of product category risk is similar. The manipulations done in the experiment are focused on product-specific risk and perception of it.

### 2.2 Risk-reduction strategies and models

Risk-reduction strategies (RRS) are the methods with which consumers aim to reduce the risks related to certain behaviours. Roselius (1971) construed four general categories of strategies that can be used to solve purchasing situations where the perceived risk is high, 1) reducing the loss related to a risk or the probability of this risk, 2) changing the type of loss to a more tolerable one, 3) postponing the purchase and 4) absorbing the related risks by making a purchase. RRSs are used in the first two strategies, according to Roselius (1971). In this study the important type of risk-reduction is the first strategy, reduction of loss and its probability.

RRSs have been studied extensively, and many findings were discussed in the literature review of this study. Based on the literature review, the relative importance of different RRSs depend on individual preferences and the type of purchase, which dictates the associated losses and probabilities of them. Several RRSs and the determinants of their usage were presented in the literature review.

This study focuses on a single risk-reduction strategy; consumer options. Studying a single risk-reduction strategy poses some challenges and can be criticized, however. As Roselius (1971, 57) points out, "A researcher may spend valuable time studying a certain method of risk relief which has less significance than other methods would have had in the same situation", thus calling for studies which handle several RRSs in a certain context. Focusing on one RRS at a time allows, however, for a deeper understanding of that specific method. Additionally, this research is among the first to focus on this specific RRS from the consumer's point of view, which I believe justifies focusing on just one RRS.

### 2.3 Measurement of risk perception

As was mentioned earlier, the way in which risk should be measured has been under debate for decades. There is a general consensus that risk can be divided into two factors: the loss or consequence of a risk, and the probability of it. However, there are no clear guidelines on how these should be calculated if a mathematical approach is used, and there are two differing views on this, the multiplicative and the additive views. OPR can be defined mathematically as follows:

$$Overall\ perceived\ risk = Probability + Consequence$$

or

$$Overall\ perceived\ risk\ = Probability\ \times Consequence$$

Mitchell (1999) points out that neither of these ways of measuring OPR is necessarily better, and both should be used in the measurement of risk. It should be taken into account, however, that OPR covers several different types of risks regarding the type of loss, thus

$$Overall\ perceived\ risk\ = \sum_{i=1}^{n} Probability_i\ \times Consequence_i$$

where *i* represents the type of risk involved. (Dowling 1986) This mathematical construct is used as a basis for the measurement of OPR in this study. The $'i'$s are the six dimensions of risk, and their sum is the overall perceived risk. It should be noted that while the six dimensions are measured, the changes in the independent variable may only affect or be

significant in certain dimensions. Additionally, pre-testing may reveal that single dimensions are not relevant at all for the context of this study.

For the purposes of this study, perceived risk is measured at low and medium levels of abstraction. This means that the study focuses on product attributes that affect perceived risk, and on the other hand risks related to a product category. To measure risk perceptions at higher levels of abstraction would require the subjects of this study to first be measured for overall risk propensity and tolerance for example, and testing this would require a large amount of resources compared to the effect of it on this research.

## 3. Pricing models in crowdfunding

Reward-based crowdfunding campaigns often utilize a form of advance selling as a pricing model. These campaigns often have different price levels for different content as well. For example, by pledging $30 to a crowdfunding campaign of a video game the consumer can get the product upon release, but by pledging $35 the consumer can also be rewarded with digital or physical additional goods, such as a t-shirt or a copy of the official soundtrack of the video game. Good examples of using advance selling as a pricing model can be found from Kickstarter (2016) or Indiegogo (2016)

In this chapter the theoretical concepts of advance selling and consumer options are discussed. The aim is to explain what is the value of buying in advance or with consumer options, and what other aspects are involved. The concept of consumer options is discussed more as it is a new concept, and since it is central to the purposes of this study. Consumer options are discussed first, and advance selling is presented in relation to consumer options as the dominant pricing model of the industry.

### 3.1 Consumer options as a pricing model

Consumer options are a pricing model that incorporate the basic idea of real options into consumer business. The idea of using consumer options in a B2C context originates from Sainam et al. (2010), and some research has been done in a similar context to their study, e.g. Balseiro et al. (2010) and Berkowitz and Rotthoff (2015). All of these studies utilize the same concept of consumer options: the seller of the option sells the right to purchase a product at a certain price at a certain time. The buyer of the option has the right to decide whether or not to buy the product at said price. Sainam et al. (2010), Balseiro et al. (2010) and Berkowitz and Rotthoff (2015) all use the context of sports events as an application of this pricing model. In these studies, consumer options are used as a strategy to ascertain that the consumer will have a ticket to a match if their favourite team plays in this match, representing preferred outcome.

The seminal study by Sainam et al. (2010) concentrated on sports events, where the available tickets for a final match are limited and the teams playing in the match are unknown at the time of making a purchase, thus creating a context with a finite number of goods for sale and

where the preferences of the consumers differ.

Studying two consumer groups, one where consumers will not attend the match if their favourite team is not playing and one where the consumers will attend even if their team is not playing, in three different pricing contexts, advance selling, full information pricing and consumer options, Sainam et al. (2010) showed that consumer options are the most profitable alternative of these three for the selling party, and the accrued utility for consumers is high. In their study Sainam et al. (2010) also posit that consumer options may be a valid pricing mechanism for markets where the goods are not finite, but where consumers face other types of risks related to the product. Risk perception theory in general proposes that all purchases inherently carry a certain amount of risk (Mitchell 1999). This would imply that in theory, consumer options may be a valid pricing model alternative and a risk-reduction strategy in many purchasing situations.

The concept of consumer options presented by Sainam et al. (2010) is largely based on real options, which are a common investment instrument. The commonalities and differences of real and consumer options are shown in table 1. Although the two concepts are different when the construction of the price of the option is considered, the concepts are similar in use, and their theoretical bases. The important differences regarding this study are that for consumer options, the price of the option is set based on the analysis of consumer behaviour instead of market trends and investment analysis, and that the source of uncertainty against which consumer options are used are based on the quality of the market offering. (Sainam et al. 2010, Balseiro et al. 2010)

| ***Dimensions*** | ***Real options*** | ***Consumer options*** |
|---|---|---|
| ***Decision maker*** | Firm or investor | Firm and consumer |
| ***Source of uncertainty*** | Future price of real asset | Future quality of market offering |
| ***Key assumptions*** | Frictionless financial markets, value for asset follows a random walk, uncertainty evolves | Heterogeneous consumer preferences<br>probabilistic uncertainty about outcome |
| ***Core valuation principle*** | Option price based on expected price of the asset, value based on the flexibility of options | Firms set prices while considering the effects on consumers<br>consumer benefits from flexibility |
| ***Pricing*** | Exercise price is assumed<br>option price set based on financial option models | Option and exercise prices are set simultaneously |
| ***Exercise decision*** | Based on the price of the real asset | Decision after uncertainty regarding the outcome is clarified |

**Table 1. Comparison between real options and consumer options (based on Sainam et al. 2010)**

Regarding consumer options, and options in general, there are two components to pricing an option: the option price and the exercise price. The option price refers to the price which a customer needs to pay for the right to make a purchase. The price which is paid for the actual purchase is called the exercise price. Thus the total price of making a purchase through using consumer options is a combination of option price and exercise price.

According to Sainam et al. (2010) in pricing consumer options, the company pricing an option needs to take into account the probability of different outcomes and the expected value or utility for the consumer. Sainam et al. (2010) provide an extensive analysis of consumer option pricing in different cases but although the model they have proposed is extensive it may not be directly applicable to the context of this study. As was mentioned before when discussing risk and uncertainty, consumers have difficulties in formulating distinct probabilities for risks, resulting in 'uncertainty about uncertainty'. Therefore, pricing a consumer option in this context without researching the consumers' behaviours extensively is difficult. This presents an important pricing dilemma, which needs further research.

All the aforementioned three studies on consumer options acknowledge that the consumer option may be realised even though the outcome is not the preferred one, i.e. the consumer's favourite team is not in the match, but the consumer will still want to attend due to wanting to see the match anyways. Although Sainam et al. (2010) already posit that consumer

valuations of the outcomes (preferred vs. non-preferred) do affect ticket pricing, Balseiro et al. (2010) show that general affection to the product category has an effect on how well consumer options work as a pricing model. This parameter in the sports context is called "love-of-the-game", and the higher this parameter is, the higher the probability that the consumer uses the bought option to purchase the product even if the outcome is not the preferred one. This parameter may be related to a consumer's willingness to participate in a crowdfunding campaign due to feelings of community or belonging. These motivations are further discussed in the next section.

### 3.1.1 Consumer options and decision-making

The consumer faces two decisions that are essential for the concept of consumer options: whether to purchase an option, and whether to exercise the option or not. In figure 2 the decision-making tree for a consumer is shown.

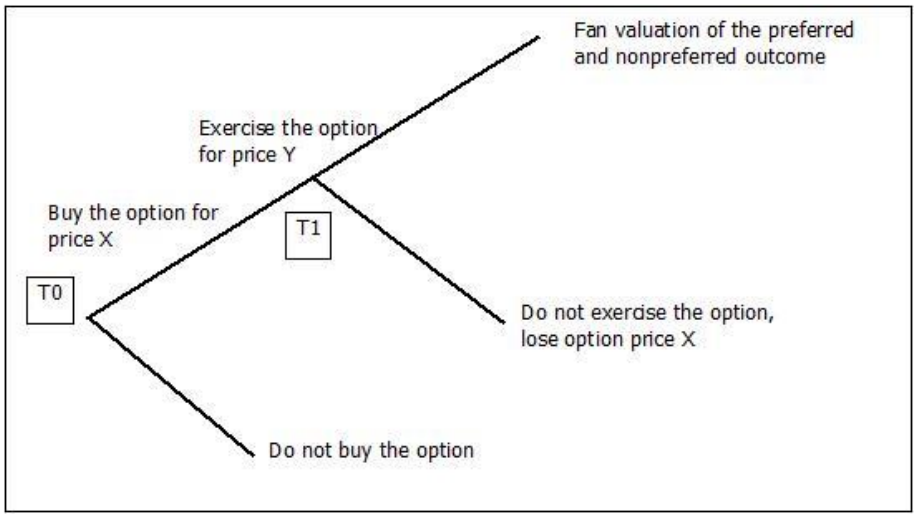



**Figure 2. Decision making tree for consumer options (based on Sainam et al. 2010)**

At time point T0, the consumer is faced with the possibility to either purchase an option or not to purchase an option, leading to non-purchase, AdvS or FIP purchases. In the latter case the consumer will either purchase after the product is released (full information pricing, FIP), or make no purchase at all. If the consumer purchased an option, at time point T1 the consumer will choose whether or not to exercise the option at a given price. If the consumer does not exercise it, the price of the option is lost. If the consumer does exercise the option, the consumer will pay both X and Y for the end product, which implies the valuation of the

preferred and non-preferred outcomes.

### 3.1.2 Value of the consumer option

An important question regarding consumer options is how the value of a consumer option is realized. In the context of finite goods, the value of an option comes from heterogeneous preferences of outcome for the option. These preferences are related to the quality of the outcome. In previous studies the quality of the outcome was binary, and 'simplistic' in that manner. Having two outcome options, the preferred and non-preferred outcome, are a basic tenet of the model proposed by Sainam et al. (2010) and further expanded by Balseiro et al. (2010). These studies formed a theoretical basis for the concept, and they show that having two outcome options provided theoretical proof that consumer options would create at least the same amount of profit as does advance selling. Additionally, Balseiro et al. (2010) show that with a growing number of alternative outcomes the profit accrued from using consumer options rises.

The value a consumer obtains by purchasing a consumer option has thus been the relief of the risk of not being able to make a purchase in case the preferred outcome is realized (Sainam et al. 2010, Balseiro et al. 2010). This could be seen as a time risk, and to some extent a financial risk if resale of the final product is possible like in the case of tickets to a sport event. In the context of infinite goods, however, the value received or perceived from purchasing a consumer option is not as straightforward. Depending on the pricing scheme and product, consumer options may protect the consumer against financial risks, performance risks, or time risks.

The three studies on consumer options that were presented in this chapter have some distinct differences to this study that effect the value of a consumer option. First of all, the outcomes that consumers have had to evaluate have been binary in nature: either their favourite team is or is not in the match which they want to attend. In the context of video game crowdfunding the evaluation of the outcome is far more difficult since the product itself does not exist at the point of purchase and products from the same apparent product category may differ greatly from the product in the crowdfunding campaign.

Secondly, the products that are discussed in earlier literature have been finite in nature.

Sports venues have a certain number of places for viewers, thus creating a supply restriction. This will raise the consumer's uncertainty of being able to attend the venue. In this study, the consumer will be uncertain whether or not the product will be released at all, and will also be uncertain of the performance of the product; what will the final product actually be like.

Thirdly, an important aspect of the theoretical models proposed by Sainam et al. (2010) and Balseiro et al. (2010) does not directly apply to this context. In both of these models, there are two distinct consumer groups: one group that will exercise the option only if the preferred outcome is realized, and one that will exercise the option even when the non-preferred outcome is realized. The question is, what are the preferred and non-preferred outcomes in the context of this study? A rational answer would be that the preferred outcome is to obtain the released product for the indicated price after release. If this is the case, the non-preferred outcome would then be that there is no release. This would imply that the consumers' needs are not in fact heterogeneous, as it can be argued whether or not it would even be possible to exercise an option if the product is not released. In this case, the benefit from using a consumer option is tied to advance sales: the benefit of purchasing a consumer option instead of a full product in advance is that when a product is not released at all, the buyer only loses the option price instead of the supposedly larger advanced sales price.

It can nevertheless be argued that there are heterogeneous preferences for outcomes. As Sainam et al. (2010) point out, heterogeneous preferences rise from the different possibilities for the quality of the outcome. Similarly, Shugan and Xie (2005) posit that pricing in advance selling is affected by the uncertainties a consumer faces regarding the future valuations of a product or service which may depend on a multitude of things. In the context of this study, the quality of the end product is not fully known until the product is released or tested, and may in fact be altered greatly even after release. It is also possible that there are consumers whose affection to PC games and crowdfunding is so high, that they will exercise the option even if the product is not like they would like it to be, but these consumers may possibly choose other payment methods instead.

Fourthly, the context of crowdfunding and consumer options offers a practical usefulness from outside the theoretical benefits of consumer options. Sainam et al. (2010) argue that due to heterogeneous preferences and sensitivity to the alternative outcomes consumer

options offer possibilities for higher profits due to extracting consumer surplus. However, if "[the consumers] have similar preferences, option pricing offers no advantage over advance selling" (Sainam et al. 2010, 403). As was mentioned before, however, it can be argued that from the seller's point of view using consumer options in a context like crowdfunding or product development in general can allow for a steadier stream of income in the development phase.

## 3.2 Advance selling

As was mentioned before, advance selling is the dominant mode of selling in reward-based crowdfunding, but it is also utilized in several different industries as was mentioned in the literature review.

### 3.2.1 The value of advance selling

The value of advance selling from the consumers' point of view is related to price elasticity. According to Zeng and Wang (2015) factors related to both consumers and sellers affect what type of pricing is most beneficial for both parties, e.g. airlines may benefit from using advance discounts for price-sensitive travellers to increase sales and using a higher price for price-insensitive travellers who will book their flights closer to consumption. In theory this type of pricing brings a higher utility to both customer groups than having steady prices (Zeng & Wang 2015), as the price-sensitive buyer will benefit from lower prices, and the price-insensitive travellers due to lower risk of not obtaining a seat on the flight for example.

## 3.3 Pricing in advance selling and consumer options

One of the interesting areas that this study is aiming to research is the use of consumer options when the assets they are based on are not restricted in production capacity, i.e. in the context of this study the end products can be copied infinite times. This is an important aspect when the theoretical bases of both consumer options and pricing are concerned, and these themes are addressed in this chapter.

The pricing options for advance sales are discussed by Xie and Shugan (2001). In their study they create five optimal strategies for pricing products depending on marginal costs and capacity constraints. These five strategies are summarised in figure 3.

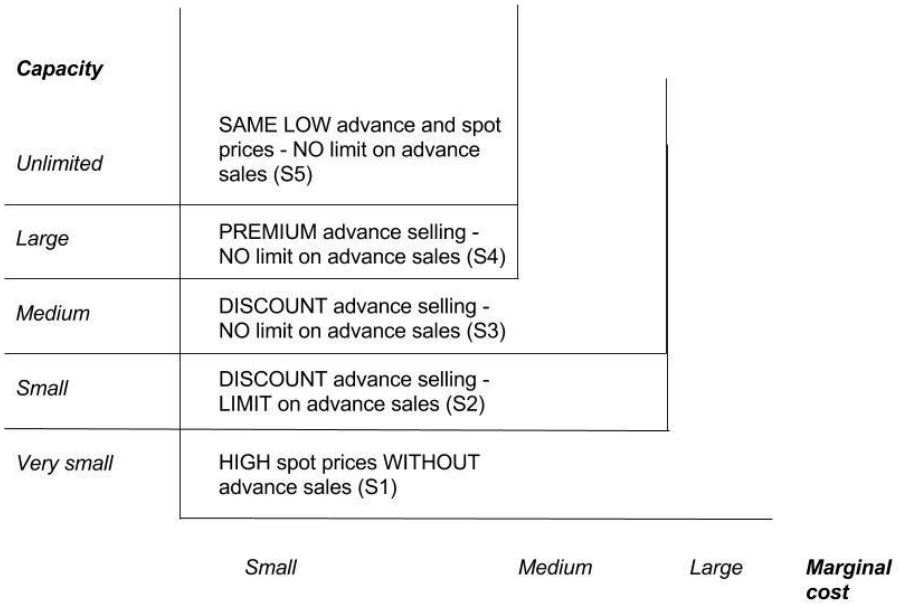



**Figure 3. Optimal strategies for advance selling, based on Xie and Shugan (2001)**

The basic tenet of this categorisation by Xie and Shugan (2001) is that when capacity constraints decrease, with lower marginal costs selling at a premium price (i.e. higher than spot price) during the advance sales period a higher profit can be made. On the other hand, when marginal costs rise, advance selling becomes less beneficial.

Considering the optimal strategies of Xie and Shugan (2001) a PC video game would fall into category S5, where the optimal strategy is to use the same advance and spot prices without limitations to advance selling, i.e the prices at $T_0$ and $T_1$ are the same. The marginal costs of creating an additional copy of a video game are very low due to the possibilities of digital distribution. And as has been mentioned before, the capacity for producing more copies is nearly unlimited. The optimal strategy indicates that "buyers will only advance buy at prices equal to the low spot price" (Xie & Shugan 2001, 223), and that advance selling at this price will not be more profitable than using a spot selling strategy only. However, Xie and Shugan (2001) address the issue of risk aversion from the consumer, and posit that risk aversion increases profits from advance selling due to consumer valuations: if the advance sales price is at a discount compared to the spot price, buyers who advance purchase win the discount if their later valuation of the product or service is high and vice versa. The model of Xie and Shugan does not additionally incorporate the need for steady revenue during the advance sales period, which is one of the benefits of crowdfunding.

## 4. Motivations to participate in crowdfunding

An important aspect to discuss for the theory of crowdfunding are the motivations to use crowdfunding and the risks related to crowdfunding. In this chapter they are briefly presented to shed light on what may affect the respondents' behaviour in the experiment.

Both funders and fundraisers of campaigns have different motives for participating in crowdfunding. Belleflamme and Lambert (2015) point out that the funders of crowdfunding campaigns are not just regular investors or customers that answer a need with a product or service. The funders are interested in community benefits in addition to being compensated with increase in value of their investment or with a new product. These community benefits refer to the funders' feeling of belonging to a group that is special in contributing to the campaign. The benefits can manifest in multiple ways, such as direct access to the developer of a product or an artist for example.

Gómez-Diago (2015, 174) presents a model of three categories for motivations to contribute in crowdfunding campaigns. Intrinsic self-determined motivations include reasons related to entertainment and curiosity. Extrinsic self-determined motivations come from membership in a group, empathy towards the campaign and cause and idealism. Foreign-extrinsic motivations are regarded as the least important, and they include consideration, recognition and responsibility, guilt and subjective norms.

The three categories of motivations do not however differentiate between the types of crowdfunding. Ordanini et al. (2011) found in their study that for reward-, donation- and equity-based crowdfunding the motivations for participating differed. They found that for reward-based crowdfunding the main motivation is active involvement in the development of the product or the feeling of making something possible. For equity-based crowdfunding the main motivation was the monetary return for investment. For donation-based crowdfunding the primary motivation was social participation or the feeling of helping someone out. An important finding of Ordanini et al (2011) is also that across these types of crowdfunding, participants reported that they "like engaging in innovative behaviour" (Ordanini et al. 2011, 455).

### 4.1 Crowdfunding and risk perception

As was mentioned in the literature review, risk perceptions regarding crowdfunding have not been widely researched. To some extent, the risks related to backing a crowdfunding campaign are the same as for a 'normal' consumer: the consumer faces various types and levels of risk which were discussed earlier. On the other hand, a crowdfunder also faces similar risks to those of an investor even in non-equity crowdfunding.

Although Ng (2007) focused on advanced selling and risk perception, not crowdfunding, the two types of risk proposed by the study are very relevant for crowdfunding as well. As was mentioned earlier, consumers who consider purchasing a product in advance, be it in crowdfunding or not, need to consider both acquisition risk, the risk of not obtaining a product at all, and valuation risk, the risk of purchasing a product which does not answer the specific need as well as was intended. (Ng 2007) For the crowdfunding of video games, however, acquisition risk is not that much of an issue since the products are not finite. Thus the risks in this context should in theory be mostly related to valuation risks, as was hypothesised in the previous sections.

Agrawal, Catalini and Goldfarb (2013) discuss the economics of crowdfunding as a phenomenon, and point out some aspects of crowdfunding that mirror the inherent risk of the financing method. Firstly, funding in crowdfunding is skewed and increases with accumulated funding. Most crowdfunding campaigns do not reach their funding goals, but those which do end up gathering a very large amount of funding. Funders become much more likely to invest in a campaign when the campaign has already accrued an amount close to the campaign goal, or more than the goal. (Agrawal et al. 2013) This may imply that perceived risks are lowered through the advocacy of other funders.

Secondly, initial funders and campaign creators are often overly optimistic about the crowdfunding campaign. Through experience many funders and creators have had to lower their expectations on delivery or development time. (Agrawal et al. 2013) Mollick (2014) reports that more than 75% of campaigns in Kickstarter in the design and technology categories are delivered late. This can cause higher levels of time and financial risks.

Belleflamme, Lambert and Schwienbacher (2014) present that the risks related to

crowdfunding also include the product quality and information asymmetries, as the funders are relying often only on a description or promise that the creator of the campaign has given them. They found that providing a prototype of the campaign product or service is necessary in creating successful campaigns when using reward-based crowdfunding because of information asymmetry. Thus the promise given by the campaign creator is not seen as enough assurance for the funder to back the campaign. As for video games there are several ways of providing prototypes or test environments, it may be a valid point for future research to see the effects of combining consumer options and access to testing the product before committing to a full purchase.

## 5. Summary of the theoretical section

Before entering the empirical section of this study, let us discuss the presented theoretical concepts and their relations to each other in order to clarify the empirical part. In table 2 there is a very concise presentation of the three different pricing models of interest in this study, FIP, AdvS and CO. These three pricing models are there related to the four different RRSs proposed by Roselius (1971).

It can be argued that using FIP the consumer will reduce the probability of the risks related to buying in a crowdfunding context by postponing the purchase, for example the probability of performance risk is reduced through possible peer reviews. However, the related losses are not reduced, and it can be argued that for example time loss is increased if the product is not available to all after release, and financial losses can also be increased depending on the price levels chosen by the campaigner.

| **Pricing method** | **reduce the loss** | **reduce the probability** | **change the type of loss** | **postpone the purchase** | **absorb the related risks** |
|---|---|---|---|---|---|
| **FIP** | | x | | x | |
| **AdvS** | x | | | | x |
| **CO** | x | x | x | x | |

**Table 2. RRSs offered by FIP, AdvS and CO**

Advance sales do reduce the financial and time losses, but does not affect the probability of risks involved. In order to use AdvS the consumer must also absorb all the related risks at the time of purchase.

Consumer options on the other hand alleviate the financial losses compared to FIP, and CO also allows the consumer to reduce the probabilities of performance, financial and time risks. CO also changes the type of loss: as the consumer who chooses CO has the right to purchase the product at any time before or after release, time risk turns into financial risk represented by the option price. Compared to AdvS, CO can be said to turn financial risk into performance risk. Both FIP and CO allow the consumer to postpone decision-making, although for CO the decision has already been partially made.

### 5.1 The hypotheses of the study

Based on the theoretical section of this study the following hypotheses were formed:

*H1: When the consumer's perceived risk is high, he/she expresses higher probabilities for using CO or FIP pricing*

*H2: When the consumer's perceived risk is high, he/she favours CO or FIP over AdvS*

*H3: When the consumer's perceived risk is low, he/she expresses higher probabilities for using AdvS pricing*

*H4: When the consumer's perceived risk is low, he/she favours AdvS or FIP*

*H5: Manipulating developer brand, release schedule and the possibility for refunds creates a difference in OPR*

*H6: Risks concerning future valuations regarding the product causes the consumers to choose consumer options over advanced selling*

*H1, H2, H3* and *H4* are based on the discussion of risk perception and the different pricing models. Simply put, when perceived risk is high, the need for RRSs is high, thus increasing the favourability and probability of the consumer choosing CO or FIP. When perceived risk is low, the need for RRSs is low, increasing the probability and favourability of AdvS compared to CO. FIP is the 'default' option to choose, and it can be seen as the alternative for those consumers who are extremely risk-averse. Because of this even in low-risk situations a consumer may choose FIP over AdvS.

The hypotheses are translated into the experimental design as follows: the experimental group is presented with a non-existent developer of the game; thus their valuations of the product are not known to them. This creates a higher level of perceived risk, creating a need for risk-reduction strategies. The control group on the other hand are presented with a real developer brand, which lowers the risks related to future valuations of the product, thus the respondents in the control group find less use of the consumer options. *H5* is related to the manipulation check of the experiment.

The findings of Xie and Shugan (2001) and the risk perception theory findings discussed earlier give basis to *H6.* The hypothesis is formulated based on the finding that firstly valuations for the product are unknown and differ, and secondly that consumer options will allow the risk averse consumer to benefit from a discounted price if and when future valuations are known. This may apply to both the experimental and control groups. If this is the case, it is product category risk which is reduced by using the consumer options as a risk-reduction strategy.

The hypotheses that are related to the concept of crowdfunding are also related to risk perceptions. For *H6* crowdfunding is an important factor, as the concept is part of the time and performance risks related to the future valuation of the products. For the hypotheses *H1, H2, H3 and H4* an important affecting factor is related to prototypes as suggested by Belleflamme et al. (2014). The previous products of a real company can be seen as creating legitimacy and trust in the quality of the finished product, whereas the made-up company does not enjoy the same benefit. As was mentioned by Belleflamme et al. (2014) providing prototypes are important for the willingness to use AdvS.

## 6. Empirical research

In this section the research design is presented and the results of the study are analysed. First the research design is presented and discussed in order to clarify what hypotheses were made and how the experiment approaches them. Additionally, the results of the pre-tests are briefly analysed and the results discussed. This is done to better the functionality of the experiment. In this section there is also a brief chapter on possible criticism towards the experimental design, and the possible fallacies related to it. In the analysis chapter the hypotheses related to the study are tested, and in the next section the results are further discussed in relation to previous literature.

### 6.1 Research design

This study is a lab experiment built around a hypothetical crowdfunding campaign of a video game. In the experiment the aim is to manipulate the perceived risk related to the product in the campaign, and through that manipulation an analysis is done on whether the perceptions of risk the consumers experienced were altered and whether this has an effect on their choice of payment method. A lab experiment is appropriate, as research done with these variables in this context is scarce, and a larger extent of control over the experiment is warranted. Future research should focus on field experiments to further the applicability and generalisability of the research (Lee & Lings 2008).

Experiments are a good research strategy when the relationship between two variables is examined. These two variables are called the independent variable (IV) and dependent variable (DV). The aim is to see how manipulations in the IV alter the DV. Experiments are also characterized the use of control groups and experimental groups and by random assignment to these groups. Experiments also have three requirements for explaining the causal relationship between IV and DV. Consider two phenomena X and Y, such as perception of risk and consumer options as a RRS. First, X must temporally precede Y, therefore a perception of risk precedes the choice of using RRSs, which according to the model presented by Dowling and Staelin (1994) should be the case. Second, if there is X, there is Y; if there is a perception of risk, there is a RRS. This is actually debatable, as it was mentioned that some consumers may in fact be risk-seeking. Nevertheless, there is risk-related activity, as is already proposed by Bauer (1960). Thirdly, X needs to be present for Y

to occur, so a perception of risk is necessary for the use of a RRS, which would seem logical by definition. These three requirements are called the temporal precedence, sufficiency and necessity of the independent variable. (Kirk 2013)

The main experiment is a between-subject design. The flow of the experiment is shown in figure 4.

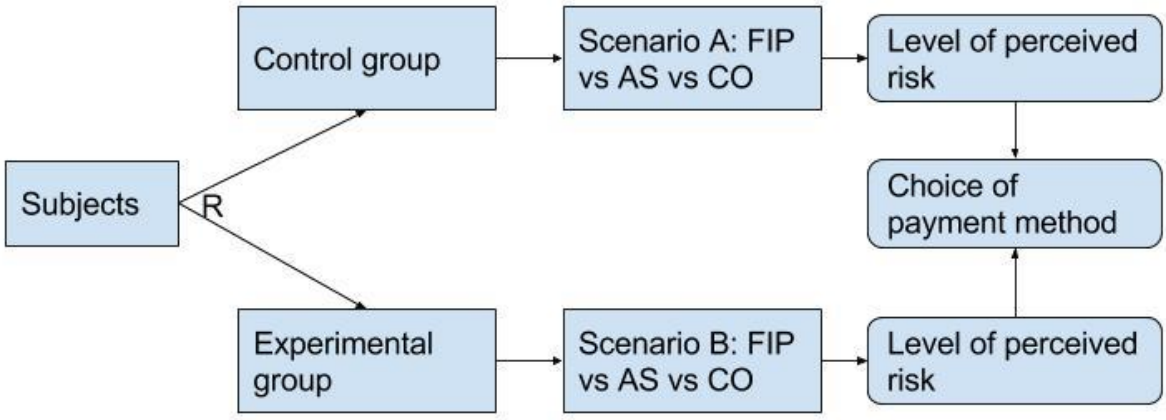



**Figure 4. Experiment flow**

In the experiment subjects are first randomly assigned to two groups, the 'R' in the figure denoting point of randomization. The control group will be presented with a scenario, where the developer of the product is a well-known brand, Ubisoft Montreal. The experimental group will be shown otherwise the same scenario as the control group, but the developer is an unknown, made-up brand.

The changes in the scenario are expected to alter the perceptions of risk, in particular the product-specific risk, related to the purchase. Thus the independent variable which is manipulated is perceived risk. The pre-test, which is discussed later, showed that a differences in OPR were difficult to manipulate. Thus, the scenario that was shown to the experimental group also had alterations to release schedule and availability of refunds. The manipulation of a subject's perception of something can be somewhat tricky, and to affirm that the manipulation is successful, a manipulation check was already conducted in pre-testing, which is discussed later in this chapter. Additionally, in the main study the

manipulation was only partially successful. Because of this further analyses needed to be conducted.

The research could be done with several different designs, e.g. by using two comparable pricing options to the subjects, or by using a within-subject design to see differences in the choice of payment method for one subject. This was done in the pre-tests. However, using a between-subject design as was presented will allow a more holistic comparative analysis of the pricing options, and the within-subject design resulted in a high drop-off rate for the respondents and possibly fatigue.

In this experimental design a 'non-purchase' is not an offered alternative course of action for the respondents. This choice was made due to the nature of the product: buying a video game while it is in crowdfunding is not widely common, and this would have caused several answers from respondents choosing to not buy the product at all. However, waiting until the product is released (FIP) and thus alleviating uncertainties about future valuations is in practice always an alternative course of action, with certain benefits and disadvantages. In this experiment the direct benefit is indeed the affirmation of the quality of the product (although testing the product is not included as a possibility), but the disadvantage is losing the lower price.

The test subjects are asked to answer questions regarding the scenario and their choices. The respondents are made to choose between the three pricing options and asked to clarify their reasoning behind the choice they made These answers are used to clarify any results that emerge. After this several questions regarding the perceived risks and other variables are asked. The data that is gathered is mostly quantitative, and five-step Likert scales are used for most responses.

The aim is to gather data regarding the subjects risk perceptions and their willingness to make a purchase with the provided alternative prices. With this data the following hypotheses that were presented in the previous sections are answered:

*H1: When the consumer's perceived risk is high, he/she expresses higher probabilities for using CO or FIP pricing*

*H2: When the consumer's perceived risk is high, he/she favours CO or FIP over AdvS*

*H3: When the consumer's perceived risk is low, he/she expresses higher probabilities for using AdvS pricing*

*H4: When the consumer's perceived risk is low, he/she favours AdvS or FIP*

*H5: Manipulating developer brand, release schedule and the possibility for refunds creates a difference in OPR*

*H6: Risks concerning future valuations regarding the product causes the consumers to choose consumer options over advanced selling*

These hypotheses are answered in order to find whether or not consumer options are a feasible pricing model for crowdfunding campaigns. Hypothetically this should be the case for the group who are shown the scenario with increased levels of perceived risk.

### 6.1.1 Validity of the experimental design

As the respondents are given the treatment in the experiment only once, multiple threats to internal validity are eliminated, as there cannot be maturation or history effects for example. However, should any effects be present, random assignment to groups and the randomisation in the order of all questions should be adequate to eliminate any threats to internal validity (Lee & Lings 2008) However, some variables are controlled when analysing the data, as high levels of some control variables such as spending or experiences with crowdfunding may skew the results to one way or another. This is further discussed in the analysis section.

The external validity of this research design and experiment can be criticised substantially. As lab experiments can be criticised due to their low generalisability, this experiment can be criticised even more so. As the problem or phenomenon this study addresses concerns mostly risk perception and money, the results of a hypothetical study can only be used as an indicator: the subjects will not use real money in this experiment, and thus their behaviour and perceptions of risk may differ from that of a real situation. The study is exploratory in nature, however, and issues like this should be taken into account in any future research. A field experiment with real products would be a logical next step regarding this issue.

### 6.1.2 Criticism regarding the research design

Criticism other than the threats to internal and external validity should be discussed as well. The research design does make several assumptions that are relevant to address. Firstly, the main underlying assumption is that the consumer is able to cognitively compare and assess the risks related to making a purchase. As was mentioned before, the assessment of the probability of a risk can be difficult if exact probabilities are required. In addition, it is assumed in the experiment that the subject is interested in making a purchase. This may result in disinterested or unrealistic answers from test subjects.

An important aspect that has not been incorporated to this experiment is forward-looking behaviour. As was discussed briefly in the literature review, some consumers opt to not purchase video games at release due to the ongoing development of new products which drives the prices of older products down quite quickly (Nari 2007). This can be seen as a RRS that covers financial and performance risks related to a purchase like this. As forward-looking behaviour is related to pricing and behaviour related to making a purchase in this context, thus having an effect on the feasibility of consumer options as a pricing model in this context, forward-looking behaviour should be addressed in future research.

### 6.1.3 Pre-testing

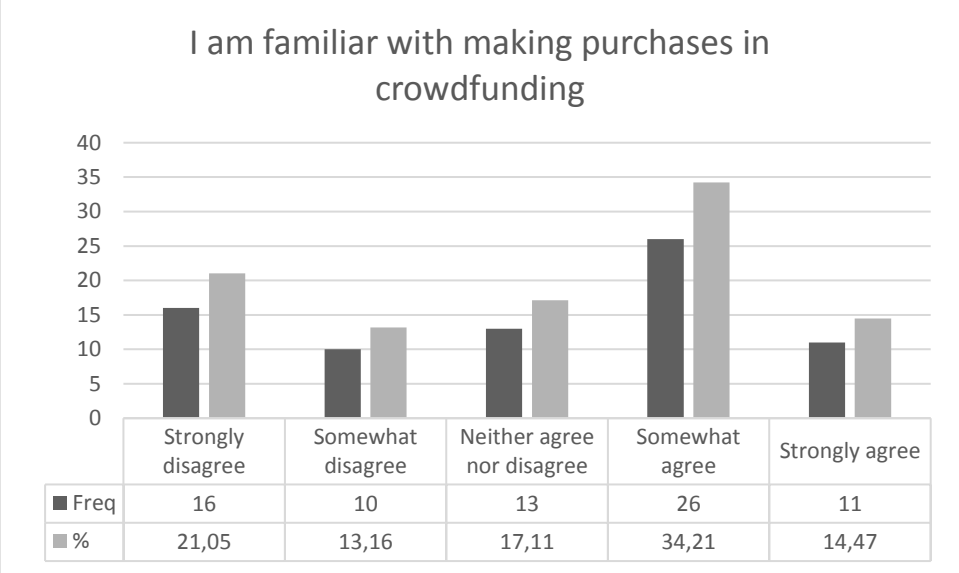
In order to ensure that the final experiment works as intended, some pre-testing was done. With the pre-test the aim was to check that the manipulation works, and that the design for the experiment worked as planned. Additionally, variables that may affect the outcomes of the can be identified through pre-testing to ensure a functioning experiment. In the pre-test open questions were used to allow for the participants to comment on any unclear parts and ideas on what they would like to have taken into account.

The aim of a manipulation check is to see whether or not the changes in the independent variable (Lee & Lings 2008, 195), in this case changes in overall perceived risk through altering the brand of the developer, affect other variables in the experiment. These variables in this study may include familiarity and appeal of the brand, and willingness to pay for the product.

### 6.1.4 Pre-test data description

For the pre-test, a sample of 76 respondents was gathered with a snowball sampling method. The experiment was shared through social media in a survey format. Little restriction was given to who could respond to the survey although the preface of the survey encouraged people with interest or knowledge in the fields of video games and crowdfunding to respond. The respondents also had a possibility to enter a lottery where they could win a gift card to a video game distributor. This prize was chosen to motivate people with interest in the product category to respond to the survey.

The pre-test respondents were asked to describe their stance on crowdfunding campaigns, video games and developers presented in the scenarios. In the following figures the data described with summarizing tables and diagrams.




| | Strongly disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Strongly agree |
|---|---|---|---|---|---|
| Freq | 16 | 10 | 13 | 26 | 11 |
| % | 21,05 | 13,16 | 17,11 | 34,21 | 14,47 |

**Figure 5. Familiarity with crowdfunding**

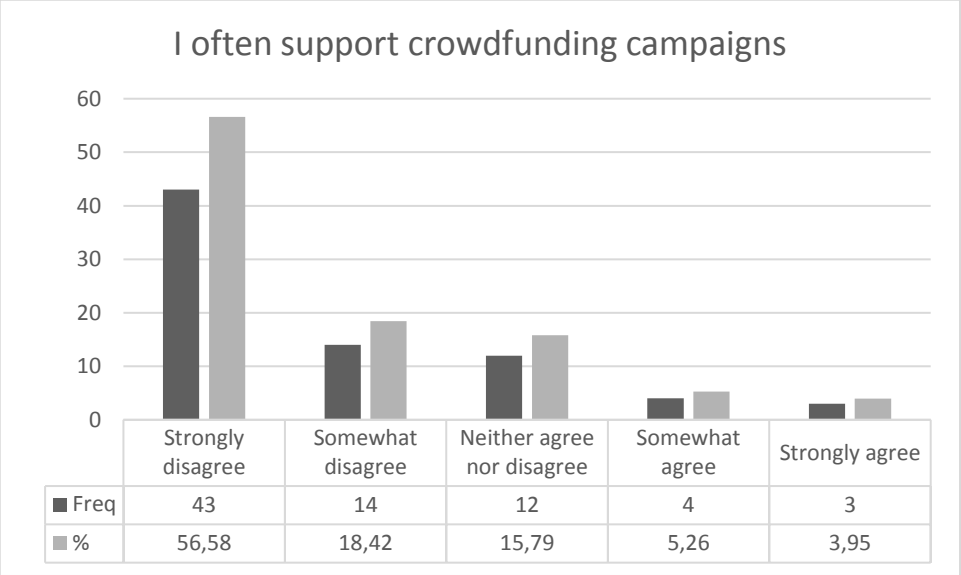



**Figure 6. Use of crowdfunding**

Figures 5 and 6 show that the respondents indicated that they are fairly familiar with crowdfunding in general, but they did not often support crowdfunding campaigns. It may be relevant to find out what is the reason for not supporting campaigns, and to distinguish for positive and negative experience with it.

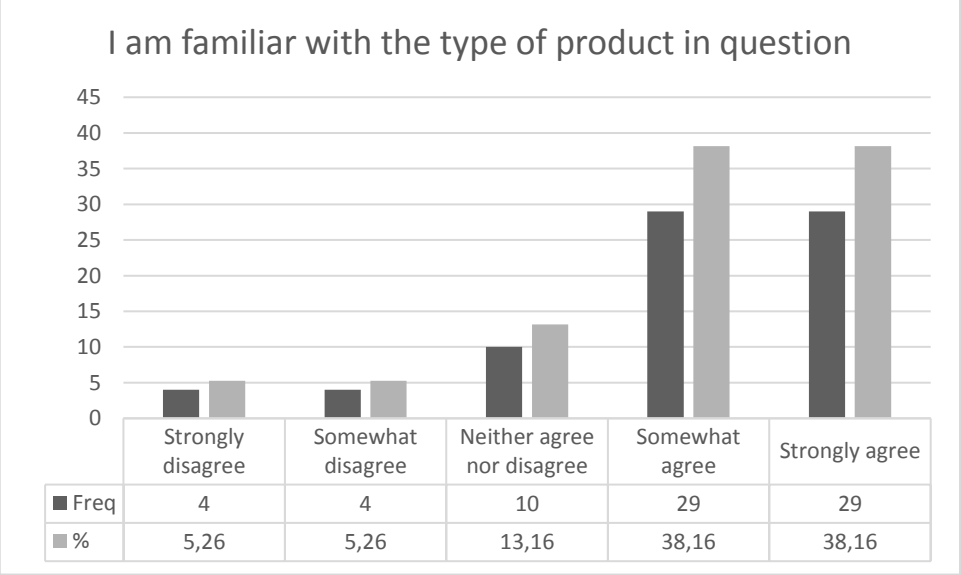



**Figure 7. Familiarity with the product category**

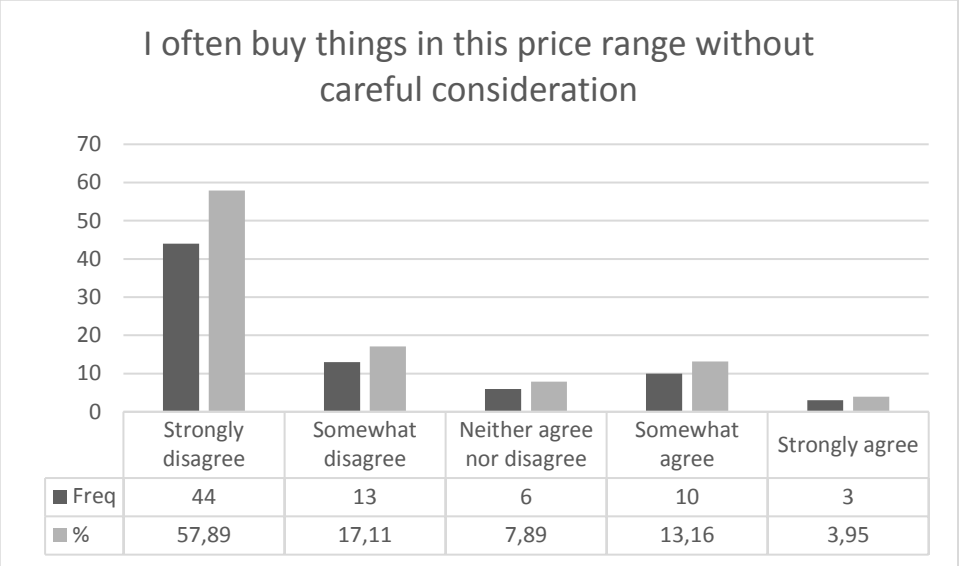



**Figure 8. Impulsiveness of buying behaviour in the price range**

Figures 7 and 8 show that the respondents indicated that they were familiar with the product type and that price range of the product is not one in which they would make impulsive purchases. This may imply that the respondents in reality give longer consideration whether or not to make a purchase in this category, and that they also consider their valuations of the product for some time in their decision-making process.

In addition to describing the respondents, some questions in the pre-test were directed at the scenario and the setup of it. To find issues, the respondents answered questions regarding the pricing options, the described product and the developer brands.

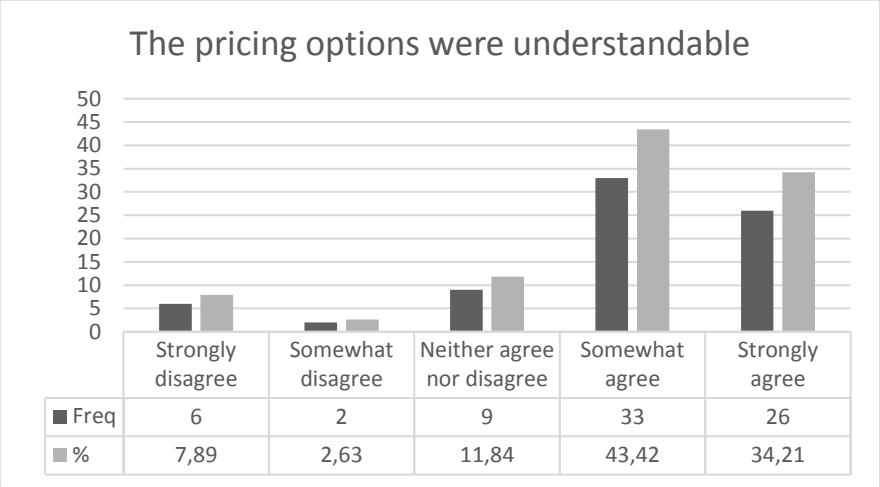



**Figure 9. Understandability of the pricing options**

Figure 9 shows that most respondents reported that the offered payment method alternatives were understandable.

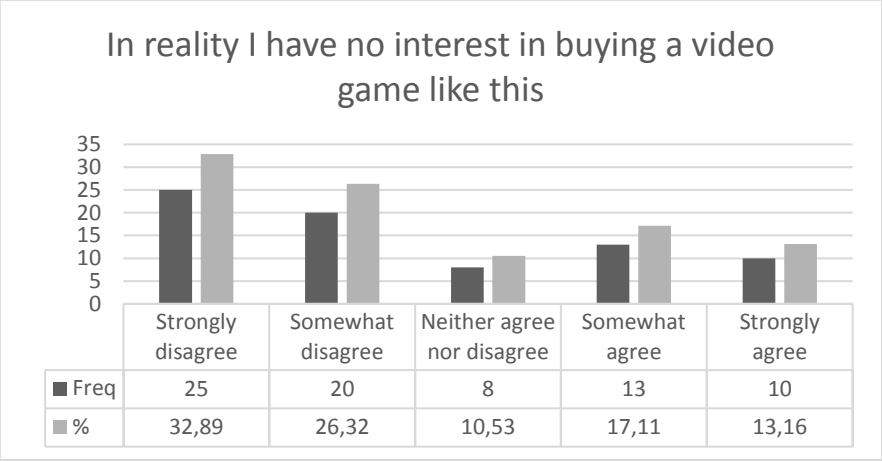



**Figure 10. Credibility of the scenario**

Figure 10 shows that it can be said that the scenario was seen as somewhat credible or likable as most respondents indicated that a game similar to the description was interesting to them.

### 6.1.5 Pre-test analysis and results

As was mentioned, the aims of the pre-test were firstly to validate that the manipulation works, as it is an integral part of the experimental design, and that the test as a whole works as intended. To investigate whether or not the manipulation of risk perception by having a

known brand as the developer versus a made-up brand as the developer of the product worked as intended, the data from the pre-test was put through factor analysis. Additionally, sum variables were created based on the six dimensions of risk that have been presented earlier to see whether or not the separate measures would be statistically reliable.

A principal component factor analysis using orthogonal varimax rotation showed that instead of six factors representing different dimensions of risk, five factors were retained with an eigenvalue higher than 1. The overall MSA for the factor analysis was 0.69. The results of the factor analysis are shown in table 3. The factor analysis showed that most of the measures of perceived risk did not work well in unison, and that the measures needed to be re-shaped. Additionally, the Cronbach's alphas were quite low.

| **Item** | **Factor1** | **Factor2** | **Factor3** | **Factor4** | **Factor5** | **Communalities** | **MSA** |
|---|---|---|---|---|---|---|---|
| Time1 | **0.84150** | | | | | 0.736 | 0.710 |
| Financial2 | **0.82718** | | | | | 0.767 | 0.751 |
| Psychological2 | **0.71897** | | | | | 0.715 | 0.823 |
| Time2 | | **0.75258** | | | | 0.661 | 0.688 |
| Performance2 | | **0.75191** | | | | 0.720 | 0.731 |
| Performance1 | | **0.70212** | | | | 0.612 | 0.738 |
| Social2 | | | **0.88392** | | | 0.814 | 0.582 |
| Social1 | | | **0.75731** | | | 0.650 | 0.638 |
| Physical1 | | | | **0.78286** | | 0.687 | 0.621 |
| Physical2 | | | | **0.77619** | | 0.684 | 0.632 |
| Financial1 | | | | | **0.78576** | 0.776 | 0.624 |
| Psychological1 | | | | | **0.69278** | 0.735 | 0.614 |
| **Cronbach's alpha** | 0.78 | 0.67 | 0.64 | 0.51 | 0.54 | | |

**Table 3. Pre-test factor analysis results for the dimensions of risk**

Additionally, sum variables were created to analyse OPR and its differences between the control and experimental group. First, the individual measures for the six dimensions of risk were put together to form a sum variable for that dimension, resulting in six sum variables. The Cronbach alphas for these six sum variables were analysed to check for the reliability of the measures. The Cronbach alphas for the six sum variables are shown in table 4. The results show that the reliability of the measures is quite low, further accentuating that the measures for the final experiment need to be formulated in a more systematic manner.

| Sum variable | Physical | Psychological | Social | Financial | Performance | Time |
|---|---|---|---|---|---|---|
| **Cronbach's alpha** | 0.51 | 0.56 | 0.64 | 0.40 | 0.68 | 0.44 |

**Table 4. Cronbach's alphas for measures of the dimensions of risk.**

The low Cronbach alphas and the unexpected results from the factor analysis pointed out a weakness in the actual experiment, as the measures that were employed did not systematically take into account the aforementioned duality of risk. As risk perception or risk contains two components, the probability and the magnitude of adverse outcomes, the measures for these two components need to be separate and understandable as separate to the respondents. In the pre-test the measures asked variably for perceptions of probability and magnitude for each dimension, yet sometimes both of the measures could be understood as concerning probability. As sometimes the magnitude of a risk may be low but the probability may be high, straightforwardly summing these two aspects and comparing them is problematic.

In the final experiment, the measures for risk perception are going to be formulated taking into account the construct's duality. Respondents will be asked to specify a level of probability for a risk dimension in addition to evaluating the magnitude of said risk dimension. In analysing the risk dimensions the measures should represent probabilities and magnitudes, and will thus not be summed to create a variable for that risk dimension. Instead the aforementioned mathematical construct will be used as basis for creating the variables. Additionally, the respondents in the pre-tests reported that the questions related to physical risk were confusing and deemed unrelated to making a purchase like this. Physical risk was thus removed from the dimensions of risk that were analysed in the final experiment.

Regarding the manipulation, the differences between mean values for OPR were tested to see if there was a difference between the control and experimental groups with a Mann-Whitney U –test. The same test was done for the individual sum variables depicting the risk dimensions as well. The results of the tests can be seen in table 5.

| **Overall perceived risk** | | **U = -0.53** | **p = 0.30** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 33 | 42.48 | 7.92 | 41.00 | 30.00 | 59.00 |
| **Low-risk scenario** | 43 | 42.63 | 6.28 | 44.00 | 26.00 | 54.00 |

| **Psychological risk** | | **U = 0.03** | **p = 0.49** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 33 | 7.06 | 2.14 | 7.00 | 2.00 | 10.00 |
| **Low-risk scenario** | 43 | 7.07 | 2.06 | 7.00 | 2.00 | 10.00 |

| **Physical risk** | | **U = -0.72** | **p = 0.23** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 33 | 9.12 | 1.41 | 10.00 | 6.00 | 10.00 |
| **Low-risk scenario** | 43 | 9.30 | 1.34 | 10.00 | 6.00 | 10.00 |

| **Performance risk** | | **U = -0.74** | **p = 0.23** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 33 | 5.70 | 1.98 | 6.00 | 3.00 | 10.00 |
| **Low-risk scenario** | 43 | 6.05 | 1.90 | 6.00 | 2.00 | 10.00 |

| **Time risk** | | **U = 1.18** | **p = 0.12** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 33 | 5.82 | 1.98 | 6.00 | 3.00 | 10.00 |
| **Low-risk scenario** | 43 | 5.16 | 1.94 | 5.00 | 2.00 | 9.00 |

| **Social risk** | | **U = -0.48** | **p = 0.32** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 33 | 8.73 | 1.77 | 10.00 | 4.00 | 10.00 |
| **Low-risk scenario** | 43 | 8.88 | 1.76 | 10.00 | 3.00 | 10.00 |

| **Financial risk** | | **U = -0.37** | **p = 0.35** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 33 | 6.06 | 1.92 | 6.00 | 2.00 | 10.00 |
| **Low-risk scenario** | 43 | 6.16 | 1.73 | 6.00 | 2.00 | 10.00 |

**Table 5. Results for pre-test manipulation check with Mann-Whitney –test**

The test showed that there was no difference in OPR and all of the individual dimensions of risk between the two groups. A further investigation on the issue showed, that a control variable measuring the familiarity of the brands showed that the brand which was intended to be a known brand, Obsidian Entertainment, was not familiar enough to the respondents.

A high percentage of the respondents reported that they did not know this brand. As the assumption that altering the brands in the different scenarios would create a difference in OPR rests on the familiarity of the known brand, a new brand was selected based on consumer brand rankings for the final experiment, Ubisoft Montreal.

### 6.2 The main experiment

The respondents for the final experiment were gathered using the Prolific Academic online platform, where researchers can present their online surveys to large pools of potential respondents. The platform offers screening options, which were utilized in this case. The respondents were required to fulfil two requirements: firstly, the respondent needed to be older than 18 years old. Secondly, the respondent needed to play video games for more than 3 hours per week. The second screening requirement was implemented due to the findings the pre-testing that showed that it may be difficult to find brands that are familiar enough for a general population; playing games actively may increase the familiarity of developer brands. These screening options narrow the applicability of the results. The survey ran for a duration of one week, and gathered 252 responses.

As the data was collected in the described non-probabilistic manner, it is necessary to acknowledge that the sample is not representative of the general population. The generalizability is thus further narrowed down to those people who play video games somewhat actively. On the other hand, the collection method is justified due to the fact that the responses of those who know very little of the context may be affected to some extent by variables that cannot be taken into account in this study. Additionally, the population of interest in this study is specifically consumers of video games and similar entertainment.

In the following table 6 the data is characterized based on relevant variables. The descriptive variables are mostly related to use of crowdfunding and buying behaviour of the respondents. The respondents were asked to answer a set of Likert-scale statements ranging from ‘strongly disagree’ to ‘strongly agree’ with the values 1 to 5, and the respondents were also asked to indicate their level of monthly expenditure on video games and similar entertainment, and how many times they had previously used crowdfunding to make purchases. The distributions are also presented as histograms in figures 11 and 12.

| Descriptor statement | N | Mean | Std Dev | Min | Max | Mode |
|---|---|---|---|---|---|---|
| I am familiar with crowdfunding purchases | 252 | 3.6190476 | 1.2230010 | 1 | 5 | 4 |
| I have positive experiences with crowdfunding | 252 | 3.4960317 | 1.0079288 | 1 | 5 | 4 |
| I like crowdfunding as a concept | 252 | 4.2936508 | 0.7581426 | 1 | 5 | 4 |
| I consider purchases thoroughly beforehand | 252 | 4.3611111 | 0.9018328 | 1 | 5 | 5 |
| I often support crowdfunding of video games | 252 | 3.0634921 | 1.2827140 | 1 | 5 | 4 |
| I often purchase unreleased products beforehand | 252 | 2.8809524 | 1.2911414 | 1 | 5 | 4 |
| Spending on video games | 252 | 1.1078844 | 1.1078844 | 1 | 6 | 2 |
| Frequency of use of crowdfunding for purchases | 252 | 1.7835331 | 1.7835331 | 1 | 5 | 2 |

**Table 6. Descriptor statements key figures**

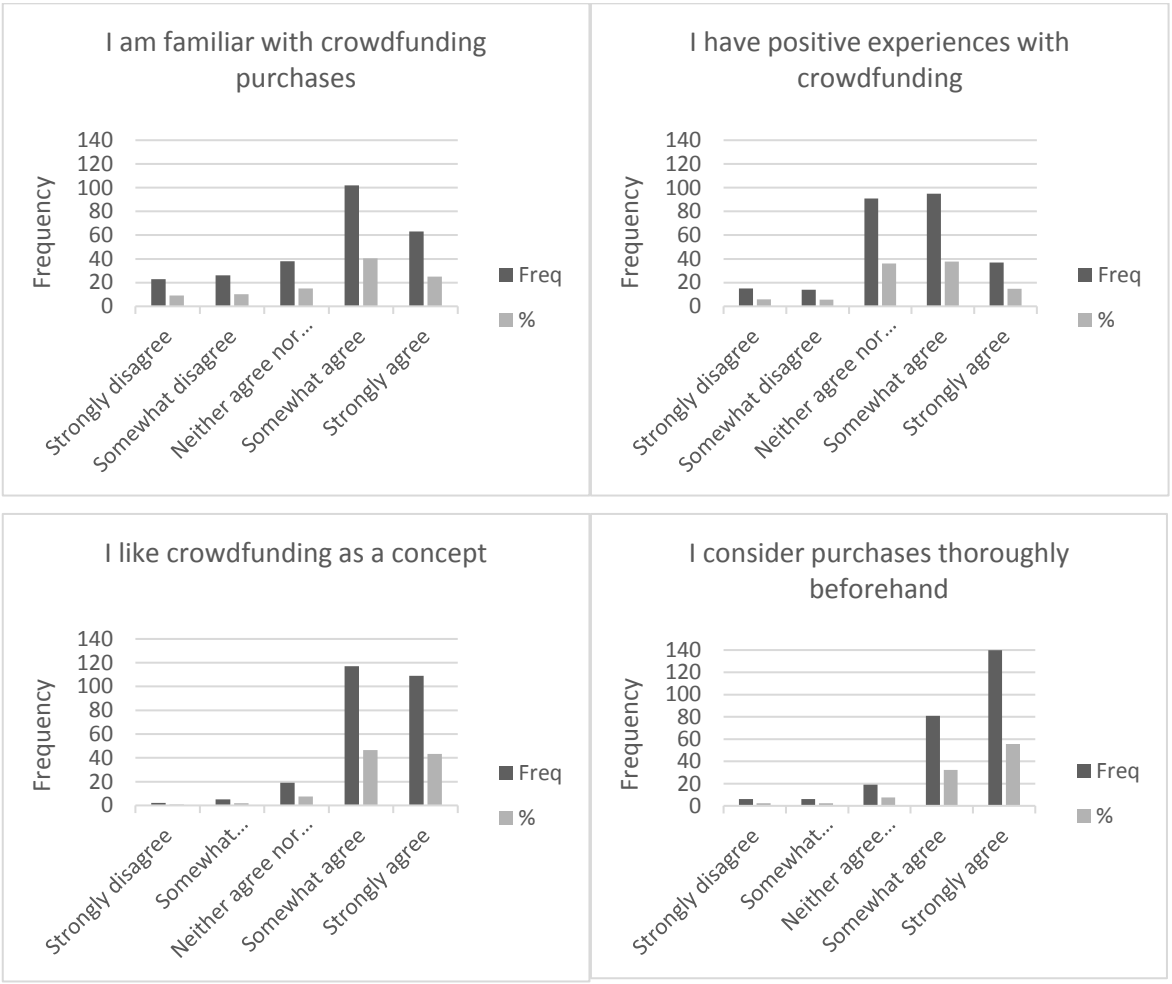



**Figure 11. Distribution histograms for descriptive statements**

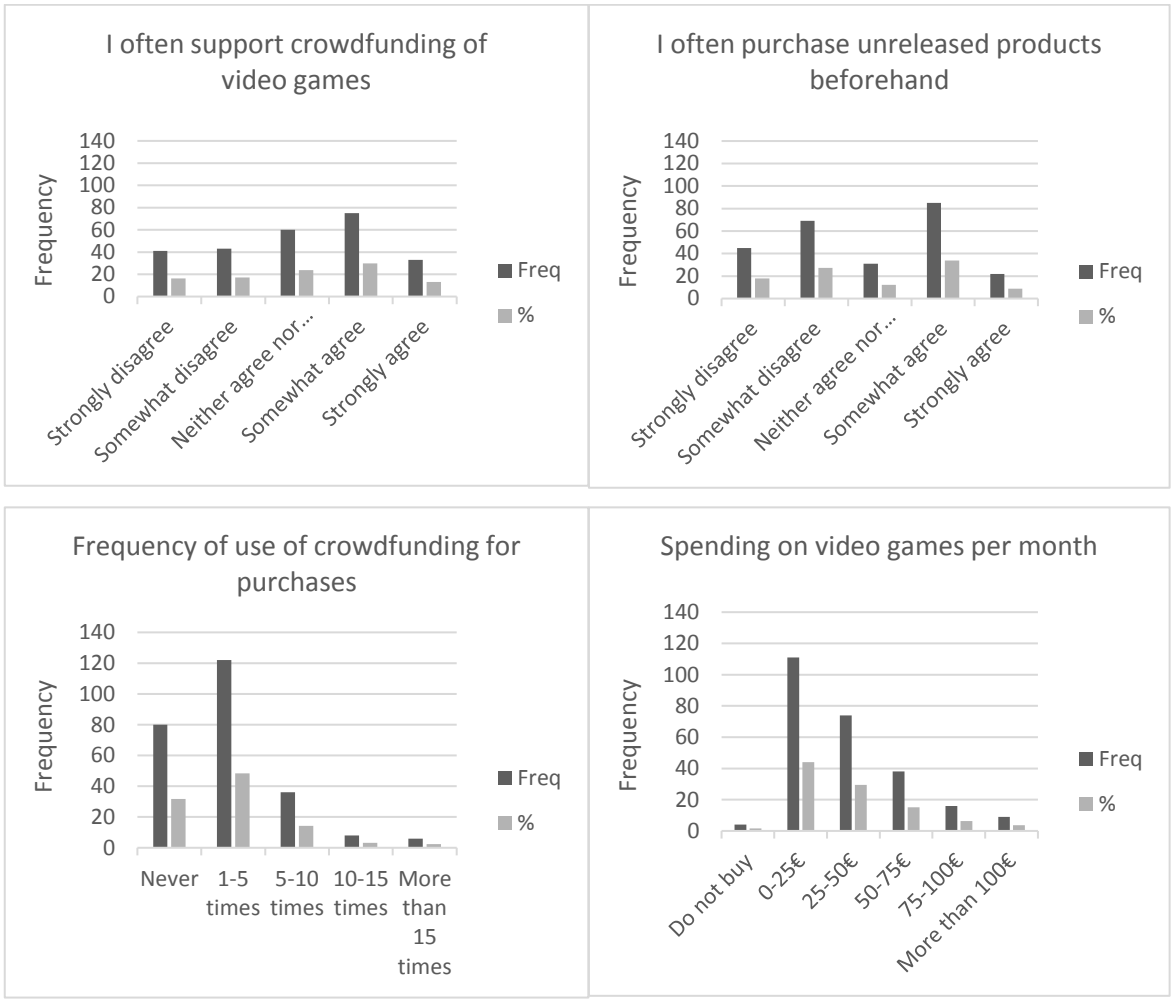



**Figure 12. Distribution histograms for descriptive statements**

As can be seen from the table 6 and the figures 11 and 12, the respondents are familiar and have mostly positive experiences with crowdfunding, although most respondents have only used crowdfunding 5 times or less. Additionally, most respondents are not the heaviest users of video games, as most respondents use 50€ or less per month on video games. The respondents' buying behaviour is also somewhat rational cf. impulsive, although this may be dependent on the price range in which this hypothetical purchase is; at the point when this question was asked the respondent did not know what kind of a price range was in question in the experiment.

### 6.2.1 Development of measures

The measures that were employed in the final experiment were based on the theories

developed by authors like Dowling (1996) and Kaplan et al. (1974). The theoretical basis was explained in detail in the theory chapter of this study. In addition to the theoretical foundations, the findings of the pre-test were employed in developing measures for risk perception.

Risk perception was operationalized as a two-component construct. First the respondents were asked to indicate how likely they consider certain outcomes from this purchase. Secondly they were asked to indicate the importance of the dimensions of risk perception regarding this type of a purchase.

To analyse the operationalized measures, the variables handling the importance or magnitude of a dimension of risk perception were put through a factor analysis. An overall MSA of 0.677 is mediocre, showing that there are partial correlations between the variables. The principal component analysis was done by using an orthogonal varimax rotation. All factors that have an eigenvalue higher than 1 were retained in the factor analysis. Additionally, the items in the three factors can be somewhat logically bundled into psychosocial risks, product risks and time risk. The results of this factor analysis are shown in table 7.

| **Item** | **Factor1** | **Factor2** | **Factor3** | **Communalities** | **MSA** |
|---|---|---|---|---|---|
| Psychological1 | **0.88725** | | | 0.794 | 0.687 |
| Social1 | **0.82696** | | | 0.688 | 0.720 |
| Social2 | **0.82146** | | | 0.688 | 0.659 |
| Psychological2 | **0.80883** | | | 0.66 | 0.659 |
| Financial1 | | **0.78833** | | 0.643 | 0.661 |
| Financial2 | | **0.71832** | | 0.547 | 0.667 |
| Performance1 | | **0.59755** | | 0.526 | 0.710 |
| Performance2 | | **0.55900** | | 0.382 | 0.700 |
| Time1 | | | **0.86372** | 0.75 | 0.616 |
| Time2 | | | **0.77508** | 0.663 | 0.665 |
| **Cronbach's alpha** | 0.85 | 0.64 | 0.71 | | |

**Table 7. Factor analysis results**

However, due to two issues another factor analysis was done on the dimensions of risk. As it seems logical that some dimensions of risk and their measures may have correlations an oblique rotation would be more suitable for this situation. Additionally, the aim was to find latent variables instead of composites of variables, so principal component analysis was

discarded as the factoring method (Fabrigar, Wegener, MacCallum & Strahan 1999).

In this second factor analysis an iterated principal factor analysis was employed. The factor analysis was done by using an oblique promax rotation. All factors that had an eigenvalue higher than 1 were retained. The results can be seen in table 8. The three factors can be thought of as psychosocial risks, investment risks, as it is a combination of risks related to time and money, and performance risks.

| **Item** | **Factor1** | **Factor2** | **Factor3** | **Communalities** | **MSA** |
|---|---|---|---|---|---|
| Social1 | **0.82370** | | | 0.714 | 0.658 |
| Social2 | **0.76357** | | | 0.629 | 0.600 |
| Psychological1 | **0.92583** | | | 0.841 | 0.638 |
| Psychological2 | **0.79895** | | | 0.625 | 0.579 |
| Time1 | | **0.83887** | | 0.688 | 0.705 |
| Time2 | | **0.82534** | | 0.693 | 0.708 |
| Financial1 | | **0.76837** | | 0.673 | 0.710 |
| Financial2 | | **0.76967** | | 0.673 | 0.709 |
| Performance1 | | | **0.87618** | 0.870 | 0.673 |
| Performance2 | | | **0.92363** | 0.891 | 0.646 |
| **Cronbach's alpha** | 0.88 | 0.89 | 0.94 | | |

**Table 8. Factor analysis results for the second factor analysis**

The results of the latter factor analysis were validated with a 50/50 split random sample. The validation shows that for the first half, the measures have similar loadings as in the analysis forming three factors with the same measures bundling together. The second half, on the other hand, has more variation due to the measures of financial risk having weak loadings close to 0.40 for two retained factors. This may imply that financial risks have commonalities with both performance and time, and this implication is further strengthened by the results of the previous principal component factor analysis. In further research more measures for the risk dimensions should be created so that these commonalities are made more visible.

Sum variables were created based on the three retained factors. Descriptive statistics for the sum variables can be seen in table 9. The following figures 13, 14 and 15 show the distributions of the sum variables. A Kolmogorov-Smirnov test for normal distribution showed that for psychosocial risk ($D = 0.28$, $p < 0.01$), investment risk ($D = 0.11$, $p < 0.01$) and performance risk ($D = 0.07$, $p < 0.01$) the distributions differ from normal distribution.

A graphical analysis of the variables would however suggest that investment risk and performance risk may be considered normally distributed with low skewness and kurtosis. Psychosocial risk is more cleary skewed.

| Item | N | Mean | Std Dev | Min | Max | Median | Lower 95% CL for Mean | Upper 95% CL for Mean | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|---|
| **Psychosocial risk** | 252 | 1.15 | 1.98 | 0 | 11.44 | 0.20 | 0.90 | 1.40 | 2.45 | 6.51 |
| **Investment risk** | 252 | 5.66 | 3.60 | 0 | 18.00 | 5.18 | 5.22 | 6.11 | 0.88 | 0.72 |
| **Performance risk** | 252 | 3.92 | 2.26 | 0 | 10.00 | 4.00 | 3.64 | 4.20 | 0.44 | -0.13 |

**Table 9. Summary statistics for sum variables depicting dimensions of risk perception**

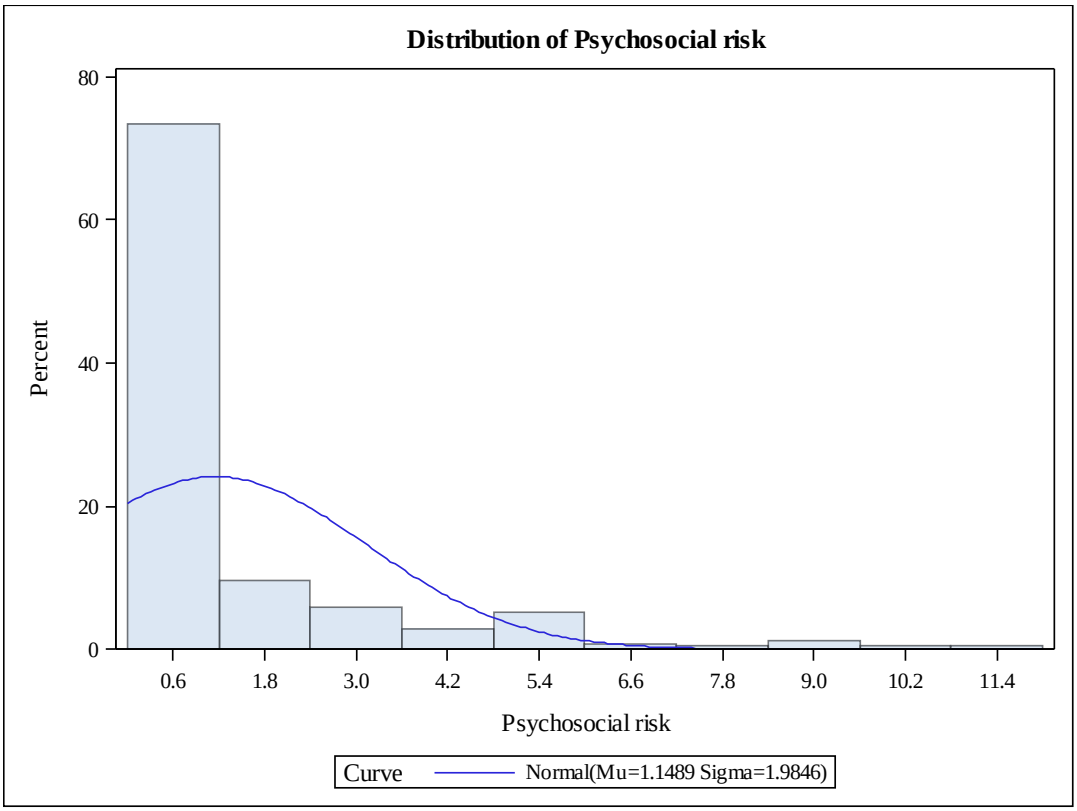



**Figure 13. Distribution of Psychosocial risk**

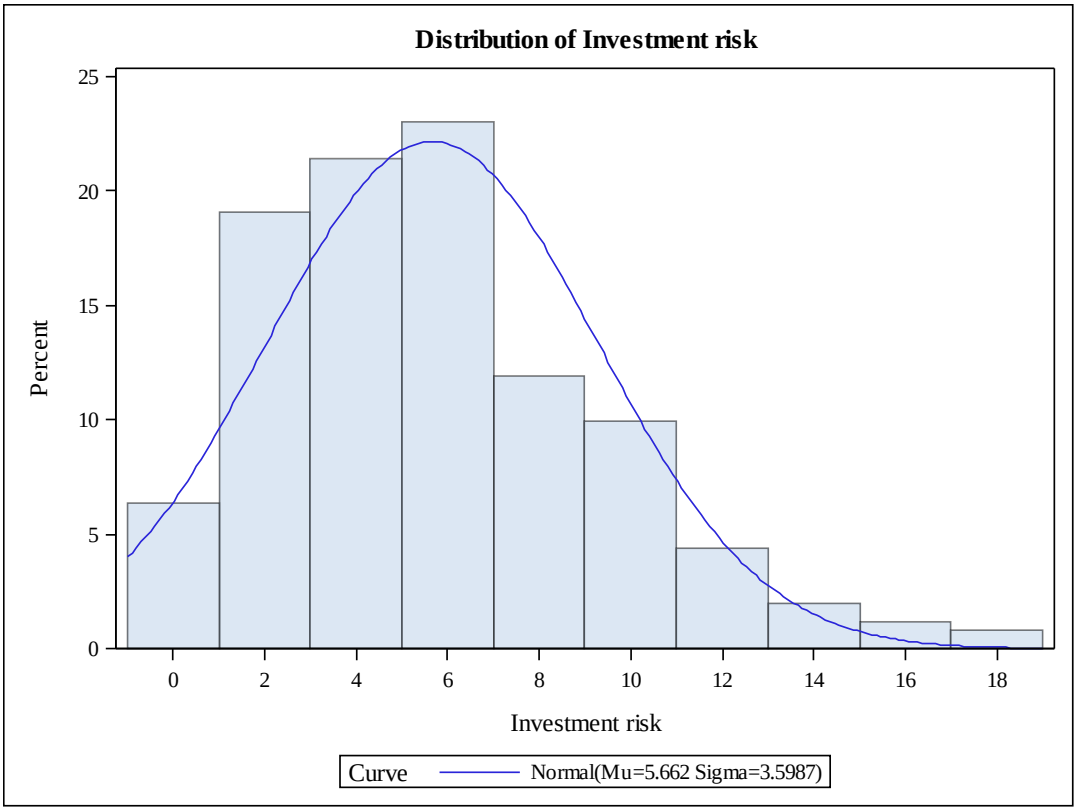



**Figure 14. Distribution of Investment risk**

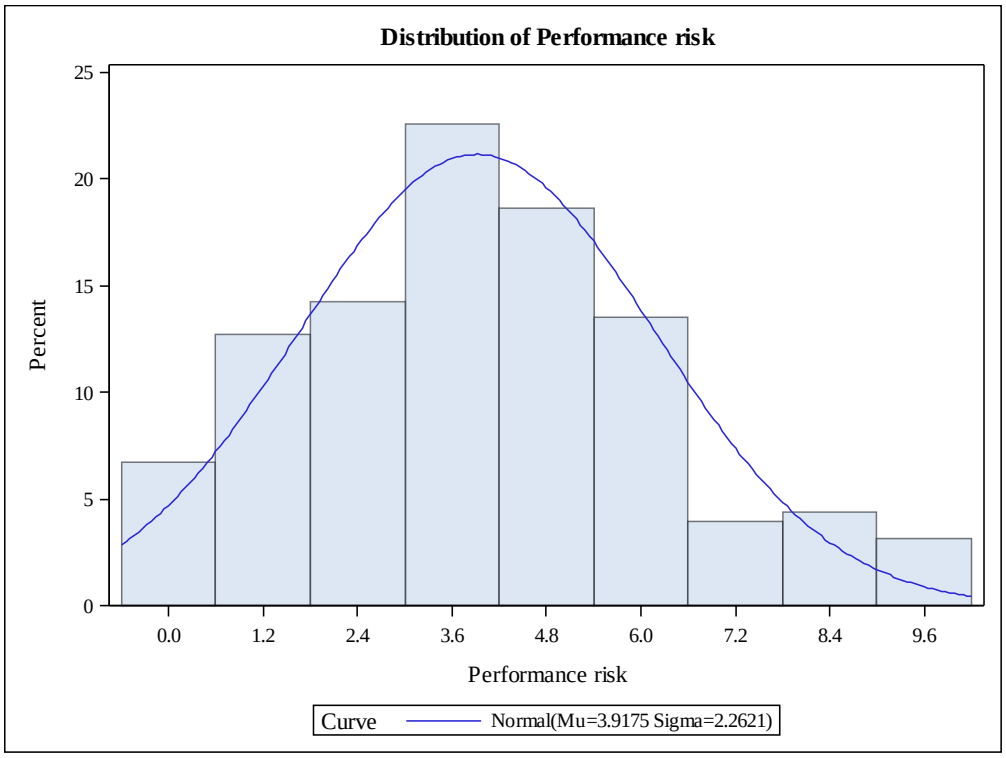



**Figure 15. Distribution of Performance risk**

### 6.2.2 Assessment of the experimental design

In order to assess whether the experimental design functioned as intended, the respondents were asked additionally to indicate how familiar they were with the brand of the developer, whether they liked the product, how understandable the scenario was to them and how easy it was to decide between the different payment methods. The findings are briefly presented in this chapter to shed light on any problems in the design. An important aspect in assessing the functionality of the design is of course the manipulation which is analysed later in this chapter.

In this study it was assumed that having a two different developer brands, one brand which is known and one unknown to the public, in the scenarios would result in change in the level of perceived risk. An important aspect of this is the actual familiarity of the brand for the respondents. The respondents were asked to indicate on a 1-5 Likert scale how much they agreed with the statement "I am familiar with the brand of the developer". The frequencies of the responses can be seen in tables 10 and 11 and figure 16. The frequencies suggest that there is a difference in the level of brand recognition between the groups. This was also confirmed by doing a Mann-Whitney test. The test indicated that the familiarity of the brand was greater for the brand that was presumed to be the known brand, Ubisoft Montreal (median = 5) than for the unknown, made-up brand MountainBay Studios (median = 2), $U = -11.87$, $p < 0.0001$.

| High-risk scenario - Familiarity | **Frequency** | **%** | **Cumulative freq.** | **Cumulative %** |
|---|---|---|---|---|
| **Strongly disagree** | 51 | 40.48 | 51 | 40.48 |
| **Somewhat disagree** | 36 | 28.57 | 87 | 69.05 |
| **Neither agree nor disagree** | 26 | 20.63 | 113 | 89.68 |
| **Somewhat agree** | 10 | 7.94 | 123 | 97.62 |
| **Strongly agree** | 3 | 2.38 | 126 | 100 |

**Table 10. Frequencies for the statement "I am familiar with the brand of the developer" for the made-up brand**

| Low-risk scenario - Familiarity | **Frequency** | **%** | **Cumulative freq.** | **Cumulative %** |
|---|---|---|---|---|
| **Strongly disagree** | 3 | 2.38 | 3 | 2.38 |
| **Somewhat disagree** | 7 | 5.56 | 10 | 7.94 |
| **Neither agree nor disagree** | 6 | 4.76 | 16 | 12.70 |
| **Somewhat agree** | 35 | 27.78 | 51 | 40.48 |
| **Strongly agree** | 75 | 59.52 | 126 | 100.00 |

**Table 11. Frequencies for the statement "I am familiar with the brand of the developer" for the real brand**

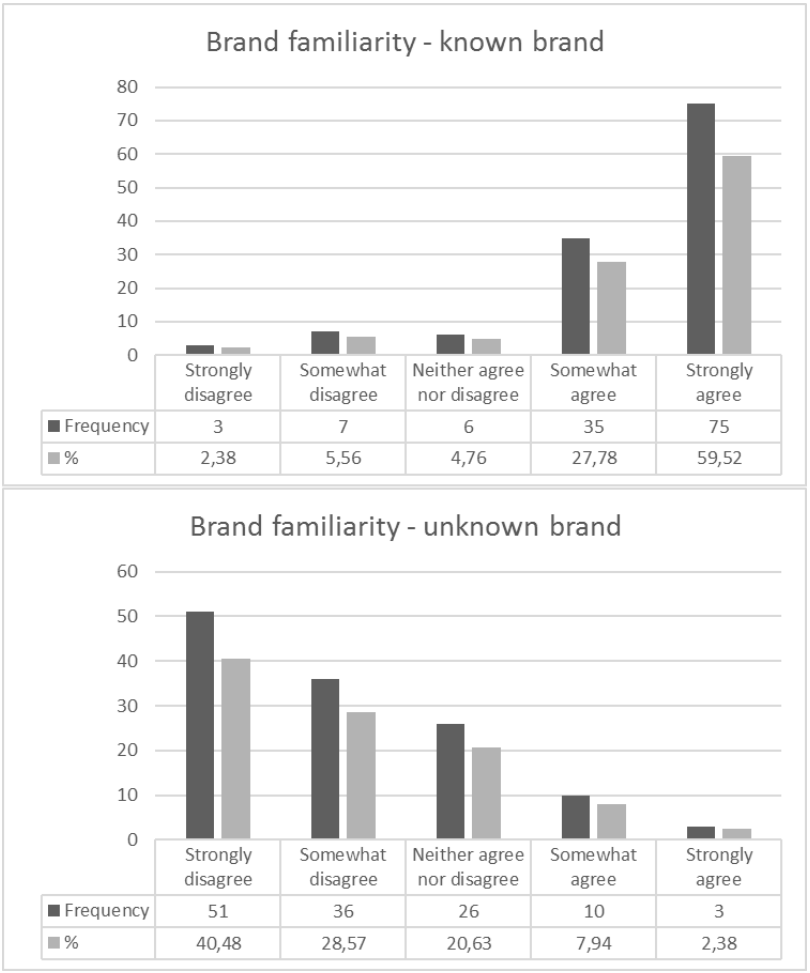



**Figure 16. Distributions for brand familiarity for the experimental and control groups**

### 6.2.3 Manipulation check

A central assumption in this study was that different risk perception levels caused by different developer brands result in a difference in the choice of payment mode. To see if the manipulation of risk perceptions worked as it was assumed, the levels of risk perception for

the control and experimental groups were compared. The manipulation check effectually tests if

*H5: Manipulating developer brand, release schedule and the possibility for refunds creates a difference in OPR*

is true or not.

Sum variables were created based on the second factor analysis discussed earlier. Due to non-normal distributions the three sum variables were compared between the control and experimental groups with a Mann-Whitney U test, where the null hypothesis states that the distributions of these variables are equal in the two populations. The results of the analysis can be seen in table 12.

| **Psychosocial risk** | | **U = -0.78** | **p = 0.21** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 1.05 | 1.92 | 0.20 | 0 | 10.42 |
| **Low-risk scenario** | 126 | 1.24 | 2.05 | 0.20 | 0 | 11.44 |

| **Investment risk** | | **U = 1.56** | **p = 0.06** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 5.95 | 3.63 | 5.50 | 0 | 16.50 |
| **Low-risk scenario** | 126 | 5.37 | 3.56 | 4.64 | 0 | 18.00 |

| **Performance risk** | | **U = -0.39** | **p = 0.35** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 3.85 | 2.18 | 3.89 | 0 | 10.00 |
| **Low-risk scenario** | 126 | 3.99 | 2.34 | 4.00 | 0 | 10.00 |

**Table 12. Mann-Whitney test results for the dimensions of risk**

The results show that for all three variables the null hypotheses are retained. For all three sum variables the distributions between the populations are equal. However, the variable where the null hypothesis is closest to being rejected is the 'investment risk' variable; if $\alpha = 0.10$, there would be a significant difference in investment risk. The results imply that the manipulation did not work fully as intended, as there is no significant difference in distributions between the two groups in risk perceptions.

An additional test was done to see if there were differences in distributions of only the probabilities of perceived risk. An independent measures t-test was conducted to compare the probabilities of perceived risk between the experimental and control groups. A one-tailed testing is done based on the assumption that the mean level of perceived risk is higher for the experimental group. The results are shown in table 13. The results show that there is a statistical difference between financial and time risks probabilities between the two groups when $\alpha = 0.05$.

| **Psychological risk** | | **t = -0.96** | **p = 0.17** | **DF = 250** | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Std. Err.** | **Min** | **Max** |
| **High-risk scenario** | 126 | 14.10 | 20.98 | 0.20 | 0 | 100.0 |
| **Low-risk scenario** | 126 | 16.79 | 23.32 | 0.20 | 0 | 86.0000 |

| **Social risk** | | **t = 1.25** | **p = 0.11** | **DF = 250** | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Std. Err.** | **Min** | **Max** |
| **High-risk scenario** | 126 | 9.3651 | 16.0627 | 1.4310 | 0 | 83.0000 |
| **Low-risk scenario** | 126 | 7.0159 | 13.5776 | 1.2096 | 0 | 100.0 |

| **Performance risk** | | **t = 0.17** | **p = 0.44** | **DF = 250** | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Std. Err.** | **Min** | **Max** |
| **High-risk scenario** | 126 | 48.4048 | 23.6674 | 2.1085 | 0 | 100.0 |
| **Low-risk scenario** | 126 | 47.8889 | 24.4531 | 2.1785 | 0 | 100.0 |

| **Time risk** | | **t = 2.15** | **p = 0.02** | **DF = 250** | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Std. Err.** | **Min** | **Max** |
| **High-risk scenario** | 126 | 41.1508 | 26.0756 | 2.3230 | 0 | 100.0 |
| **Low-risk scenario** | 126 | 34.1825 | 25.2806 | 2.2522 | 0 | 100.0 |

| **Financial risk** | | **t = 1.74** | **p = 0.04** | **DF = 250** | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Std. Err.** | **Min** | **Max** |
| **High-risk scenario** | 126 | 33.9286 | 25.6840 | 2.2881 | 0 | 100.0 |
| **Low-risk scenario** | 126 | 28.3651 | 24.9664 | 2.2242 | 0 | 100.0 |

**Table 13. T-test results for probabilities of risk dimensions.**

To conclude, these two approaches show that *H5 can be only partially supported*: for the majority of the risk dimensions there were no significant differences between the two groups. Due to this finding, regression analyses were employed to see how well risk perceptions explained the choices the respondents made in the experiment in the whole data set.

### 6.2.4 Confound checks

In the experiment the respondents were also asked to tell how easy they thought it was to decide between the payment methods, how understandable the payment methods were, and further questions about the developer and the game. Confound checks were done on these variables to see whether or not the manipulation affected variables other than risk perception dimensions. The confound checks were done with Mann-Whitney U tests, as the variables were measured on Likert-scales and the comparisons are done based on assignment to the experimental or control group. The results of the confound checks can be seen in table 14. The results show that there are no statistical differences between the experimental and control groups regarding the confounding variables when $\alpha = 0.05$. If $\alpha = 0.10$, both reported understandability of the payment methods and how much the respondent liked to product differ between the experimental and control groups.

| **Liking the product** | | **U = 1.39** | **p = 0.08** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 3.66 | 0.90 | 4.00 | 1 | 5 |
| **Low-risk scenario** | 126 | 3.45 | 1.05 | 4.00 | 1 | 5 |

| **Easy to decide** | | **U = -0.82** | **p = 0.21** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 3.93 | 1.00 | 4.00 | 1 | 5 |
| **Low-risk scenario** | 126 | 4.00 | 1.05 | 4.00 | 1 | 5 |

| **Understandability** | | **U = 1.37** | **p = 0.09** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 3.85 | 0.93 | 4.00 | 1 | 5 |
| **Low-risk scenario** | 126 | 3.64 | 1.09 | 4.00 | 1 | 5 |

**Table 14. Mann-Whitney test results for the confound variables**

As the manipulation in the experiment had failed to work as was intended, and because some confound bias could be detected in the experiment, regression models were used to study what effects both the risk dimensions constructed earlier and the control variables had on the choices the respondents made.

## 6.3 Results

In the following two sections the data is analysed in two ways. First, the data is analysed so that the choices made regarding the payment method are discussed as if the manipulation had been successful: both the chosen, or favoured, payment method is analysed, and then the reported probabilities of using the payment methods are analysed. This is done in order to test hypotheses *H1, H2, H3* and *H4* as was intended in the experimental design.

Afterwards both linear and logistic regression models are created to see if different risk dimensions can explain the favourability or probability of using a payment method. This testing is done to the whole sample, i.e. the division between high-risk and low-risk scenarios is not taken into account.

### 6.3.1 Analysis of the choice of payment method

The respondents were asked to answer to three questions regarding the scenario and how they would act in this scenario. First, the respondents were asked to choose between buying the product after it is released, called full-information pricing (FIP), buying the product in advance (AdvS) and buying the right to purchase the product at a lowered price at any point before or after release, an application of consumer options (CO). The FIP price was 50€, AdvS price was 40€ and the prices for CO were 5€ for the option and 35€ realisation price totalling to 40€. Second, the respondents were asked to describe briefly the reasoning behind this choice. Third, the respondents were asked to give a probability for how likely it was for the respondent to choose FIP, AdvS and CO as the payment method in a situation like this, ranging from 0 (impossible) to 100 (certain). A choice like this denotes relative preference between the methods.

According to the aforementioned central assumption of this study, there should be a difference between the two groups in the experiment regarding their choice of payment method. As it was assumed that when risk perceptions are high, the respondents choose CO as the payment method over advance sales, and when risk perceptions are low vice versa. A chi-squared test was employed to see if there was a dependence between assignment to the control and experimental groups and the choice of payment method. No significant dependence was found ($X^2$ (2) = 3.11, p = 0.21). There was no statistically significant

dependence between placement in groups and choice of payment method. The frequencies and percentages for the payment method choices are presented in figure 17. Both for the experimental and control groups the frequencies of FIP and CO are quite high. The results of the chi-squared test indicate that the hypotheses

*H2: When the consumer's perceived risk is high, he/she favours CO or FIP over AdvS,* and

*H4: When the consumer's perceived risk is low, he/she favours AdvS or FIP*

are not retained.

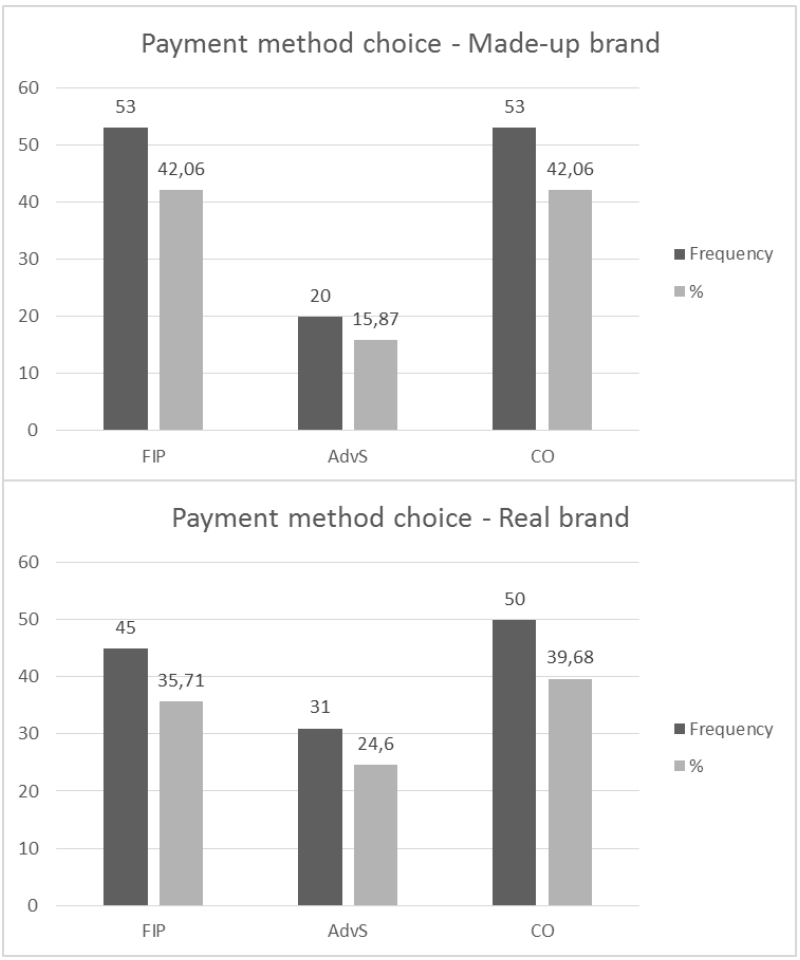



**Figure 17. Frequencies and percentages for payment method choices**

Additionally, a Mann-Whitney U test was done on the reported probabilities for using different payment methods. The key figures for these variables and the results of the test can be seen in table 15. The results show that there is no significant difference in the reported

likelihoods for payment methods between the experimental and control groups. This result shows that the hypotheses

*H1: When the consumer's perceived risk is high, he/she expresses higher probabilities for using CO or FIP pricing,* and

*H3: When the consumer's perceived risk is low, he/she expresses higher probabilities for using AdvS pricing*

are not retained, although if $\alpha = 0.10$, then it could be said that there is some support for *H3*: AdvS seems to be favoured more in a low-risk scenario.

| **FIP** | | **U = 1.09** | **p = 0.14** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 53.34 | 34.89 | 60.00 | 0 | 100 |
| **Low-risk scenario** | 126 | 48.67 | 34.02 | 50.00 | 0 | 100 |

| **AdvS** | | **U = -1.42** | **p = 0.08** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 32.92 | 31.32 | 23.00 | 0 | 100 |
| **Low-risk scenario** | 126 | 39.3 | 33.73 | 30.50 | 0 | 100 |

| **CO** | | **U = 0.15** | **p = 0.44** | | | |
|---|---|---|---|---|---|---|
| | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** |
| **High-risk scenario** | 126 | 45.85 | 34.74 | 41.00 | 0 | 100 |
| **Low-risk scenario** | 126 | 45.13 | 35.44 | 44.00 | 0 | 100 |

**Table 15. Mann-Whitney test results for payment method choice probabilities**

As the two tests described here showed that there was indeed no statistically significant difference between the two groups, a further analysis of the provided open answers regarding the respondent's reasoning behind their choices was conducted. A content analysis approach was taken to analyse the qualitative data provided by the respondents. The content analysis reports findings on hypothesis *H6: Risks concerning future valuations regarding the product causes the consumers to choose consumer options over advanced selling***.**

For the control group, who were shown a scenario with a real, presumably known, brand Ubisoft Montreal as the developer of the game, the responses for the reasoning behind the

payment choice were not surprising. Those who chose to wait and buy the game when it was released (FIP) responded that they only bought full, functioning products and wanted to wait for reviews. This pricing method to them represented the least amount of risk present. Additionally, some reported that they had had bad experiences with purchasing video games in advance, and some reported that they usually waited until the price of the game dropped, indicating forward-looking behaviour. Those who chose to buy in advance (AdvS) reported that they wanted to fully support the development of an interesting game. They thought the payment method was more straightforward compared to CO, and that it was also cheaper. This would imply that the involvement aspect of crowdfunding is more important to some than the risks involved. Those respondents who chose the CO method reported that they wanted to help the development of the product with a low cost, that the risks involved were lower and that this method allows for some flexibility in payment as it allows the buyer to save up for the actual purchase later. Some also reported that they had had bad experiences with AdvS, and that CO was a good intermediate alternative regarding pricing and waiting for reviews.

For the experimental group who were shown the made-up developer MountainBay Studios in the scenario, the responses were quite similar compared to the control group. Those who chose FIP wanted to wait for reviews and buy full products, and were worried about no indicated release schedule and no possibility for refunds. Some also indicated that they wanted further information on the game and the developer before buying. Those who chose AdvS wanted to be involved in the development of the game, and found the payment method to be the simplest one. Those who chose CO reported that this would allow them to wait for reviews and to find out more about the game and the developer before committing. They also wanted to support the project but found CO to be financially safer than AdvS.

The responses to the open answers shows further that there are no large differences between the control and experimental groups regarding their choice of payment method. The frequencies of payment method choice and the open answers would imply, however, that there are certain risks that the consumers face and which they would like to avoid. Based on these responses it could be said that the hypothesis

*H6: Risks concerning future valuations regarding the product causes the consumers to*

*choose consumer options over advanced selling*

cannot be supported: the reasoning behind the choices the respondents made do not widely differ in regards of future valuations of the product. To further test *H6*, tests were made to see how the perceptions of risk related to crowdfunding in general affected the choices of payment method in the experiment.

In the experiment the respondents were also asked to rate on a Likert-scale from 1 to 5 how much they agreed with statements that indicated that making purchases in crowdfunding is risky, and that buying video games from crowdfunding campaigns is risky. As a further analysis, a Kruskal-Wallis test was employed to see if there were differences in these responses depending on the choice of payment method. The results can be seen in table 16.

The results of these test show that for both crowdfunding in general and for crowdfunding of video games the self-reported perception of risk related to them does have a statistically significant effect on the choice of payment method. Those who perceive crowdfunding in general or the crowdfunding of video games as risky tend to choose FIP over CO and CO over AdvS. The perceptions of risk related to buying video games in general did not have a significant effect on the choice of payment method.

| **Crowdfunding in general** | | **$X^2$ = 19.10** | **p < 0.0001** | **DF = 2** | | | |
|---|---|---|---|---|---|---|---|
| **Payment method** | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** | **Mean Score** |
| **CO** | 103 | 3.18 | 0.99 | 3.00 | 1.00 | 5.00 | 120.47 |
| **FIP** | 98 | 3.61 | 1.07 | 4.00 | 1.00 | 5.00 | 148.24 |
| **AdvS** | 51 | 2.80 | 1.22 | 2.00 | 1.00 | 5.00 | 96.89 |

| **Crowdfunding of games** | | **$X^2$ = 19.58** | **p < 0.0001** | **DF = 2** | | | |
|---|---|---|---|---|---|---|---|
| **Payment method** | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** | **Mean Score** |
| **CO** | 103 | 3.28 | 1.05 | 3.00 | 1.00 | 5.00 | 120.72 |
| **FIP** | 98 | 3.71 | 1.06 | 4.00 | 1.00 | 5.00 | 148.32 |
| **AdvS** | 51 | 2.84 | 1.22 | 3.00 | 1.00 | 5.00 | 96.2 |

| **Video games in general** | | **$X^2$ = 3.03** | **p = 0.212** | **DF = 2** | | | |
|---|---|---|---|---|---|---|---|
| **Payment method** | **N** | **Mean** | **Std. Dev.** | **Median** | **Min** | **Max** | **Mean Score** |
| **CO** | 103 | 2.75 | 1.15 | 3.00 | 1.00 | 5.00 | 131.36 |
| **FIP** | 98 | 2.70 | 1.15 | 3.00 | 1.00 | 5.00 | 129.34 |
| **AdvS** | 51 | 2.43 | 1.19 | 2.00 | 1.00 | 5.00 | 111.21 |

**Table 16. Kruskal-Wallis test results for other risk variables**

### 6.3.2 Regression models regarding risk perception and payment methods

As the manipulation check showed that there had not been significant differences between the choices of payment method, the entire data set was analysed to see what variables would explain the choices of payment method the participants made. In order to shed light on this a linear regression analysis was done on the reported probabilities of using a payment method, and a multinomial logistic regression was done on the indicated choices.

The variables that were predicted to possibly have an effect on the choices can be seen in appendix 1 where descriptive statistics are given on the variables. Variables with high correlations with each other were eliminated by first doing a promax rotation factor analysis. Variables were eliminated from the factor analysis based on loadings and communalities. The results of this factor analysis can also be seen in appendix 2. Through the factor analysis two sum variables were created to lower multicollinearity, the highest inter-item correlation among the explanatory variables was 0.70 between investment risk and performance risk. A

White test was used for checking homoskedasticity for each linear regression. Each test used OLS as the estimation method. For each test $\alpha = 0.05$. Nevertheless, the variables that are significant at $\alpha = 0.10$ are also discussed, and marked in the resulting tables with a *.

The results for the linear regression analysis of the reported probability to use AdvS as the payment method can be seen in table 17. Tests for homoscedasticity did not indicate any problems. A graphical analysis for the distribution of the residuals showed a distribution close to normal distribution. The model fit figures show that even though the model is statistically significant, it only explains 23.18% of the variance in the dependent variable. Furthermore, only four explanatory variables explained variation statistically significantly. The model indicates that a higher perception of psychosocial risk, a higher perception of the understandability of the payment methods and higher spending increase the probability of choosing AdvS. Perceptions of risks related to crowdfunding and video games in general lower the probability of choosing AdvS. The results support *H3 When the consumer's perceived risk is low, he/she expresses higher probabilities for using AdvS pricing,* as with high perceived risks the probability of choosing AdvS is lowered.

| | **Dependent variable** | | | |
|---|---|---|---|---|
| | **AdvS probability** | | | |
| **Explanatory variables** | **Parameter estimate** | **Standard error** | **t value** | **Pr > \|t\|** |
| **Intercept** | 13.26137 | 17.78645 | 0.75 | 0.4566 |
| **Experience with CF and AdvS** | 3.16585 | 2.28705 | 1.38 | 0.1676 |
| **Risk perception of CF and video games** | -5.68726 | 2.22214 | -2.56 | **0.0111** |
| **Psychosocial risk** | 2.94518 | 0.98636 | 2.99 | **0.0031** |
| **Investment risk** | -0.39506 | 0.75859 | -0.52 | 0.6030 |
| **Performance risk** | -1.25976 | 1.19814 | -1.05 | 0.2941 |
| **Liking the product** | 0.72672 | 2.19916 | 0.33 | 0.7413 |
| **It was easy to decide between payment methods** | -2.44272 | 1.98420 | -1.23 | 0.2195 |
| **Understandability** | 4.99313 | 2.01049 | 2.48 | **0.0137** |
| **Liking CF** | 1.12017 | 2.64224 | 0.42 | 0.6720 |
| **Considerate buying behaviour** | -0.50626 | 2.23485 | -0.23 | 0.8210 |
| **Spending on video games and similar entertainment** | 6.77342 | 1.81028 | 3.74 | **0.0002** |
| **Model fit** | **R Square** | **Adj. R sq** | **F (d.f.)** | **Pr > F** |
| | 0.2318 | 0.1966 | 6.58 | <.0001 |

**Table 17. Linear regression results for AdvS probability**

For the probability of choosing FIP as the payment method the tests for pre-requisites did not indicate need for adjustments. The results for the probability of choosing FIP as the payment method were similar to those of AdvS in that the model was statistically significant, but the model explained only 17.07% of the variance of the dependent variable. The results of the linear regression model can be seen in table 18. Single explanatory variables that were statistically significant include the respondent's level of experience with CF and advance buying, which lowered the probability of choosing FIP, and perception of risks related to crowdfunding and video games in general, perceptions of performance risk, liking the product and spending on video games and similar entertainment which increased the probability of choosing FIP as the payment method. The results support hypothesis *H1: When the consumer's perceived risk is high, he/she expresses higher probabilities for using CO or FIP pricing,* performance risk and risks perceived in crowdfunding and video games in general increase the likelihood of choosing FIP.

| | **Dependent variable** | | | |
|---|---|---|---|---|
| | **FIP probability** | | | |
| **Explanatory variables** | **Parameter estimate** | **Standard error** | **t value** | **Pr > \|t\|** |
| **Intercept** | 19.01447 | 19.51803 | 0.97 | 0.3309 |
| **Experience with CF and AdvS** | -6.43320 | 2.50970 | -2.56 | **0.0110** |
| **Risk perception of CF and video games** | 4.89996 | 2.43848 | 2.01 | **0.0456** |
| **Psychosocial risk** | 0.52113 | 1.08239 | 0.48 | 0.6306 |
| **Investment risk** | -0.88514 | 0.83245 | -1.06 | 0.2887 |
| **Performance risk** | 4.34480 | 1.31478 | 3.30 | **0.0011** |
| **Liking the product** | 6.11300 | 2.41326 | 2.53 | **0.0119** |
| **It was easy to decide between payment methods** | 6.31969 | 2.17737 | 2.90 | **0.0040** |
| **Understandability** | 0.16352 | 2.20622 | 0.07 | 0.9410 |
| **Liking CF** | -6.23623 | 2.89947 | -2.15 | **0.0325** |
| **Considerate buying behaviour** | -1.59850 | 2.45242 | -0.65 | 0.5151 |
| **Spending on video games and similar entertainment** | 3.96183 | 1.98652 | 1.99 | **0.0472** |
| **Model fit** | **R Square** | **Adj. R sq** | **F (d.f.)** | **Pr > F** |
| | 0.1707 | 0.1327 | 4.49 | <.0001 |

**Table 18. Linear regression results for FIP probability**

Lastly, a linear regression analysis was done on the probability of choosing CO as the payment method. The results can be seen in table 19. Tests for pre-requisites did not show any need for adjustments to be made in the model. The results show that for this model, as for the earlier two, despite being statistically significant the explanatory power of the model is very low: only 11.99%. Additionally, only one variable was statistically significant in the model, the indicated level of liking the product increased the probability of choosing CO. At a $\alpha = 0.10$ also the level of perceived psychosocial risk and experience with crowdfunding and advance sales increase the likelihood of choosing CO. Regarding *H1: When the consumer's perceived risk is high, he/she expresses higher probabilities for using CO or FIP pricing,* the results regarding CO are more inconclusive: the probability of choosing CO is only increased through an increasing psychosocial risk. The other variables are not directly related to risks.

| | Dependent variable<br>CO probability | | | |
|---|---|---|---|---|
| **Explanatory variables** | **Parameter estimate** | **Standard error** | **t value** | **Pr > \|t\|** |
| **Intercept** | -1.68143 | 20.42851 | -0.08 | 0.9345 |
| **Experience with CF and AdvS** | 5.06608 | 2.62677 | 1.93 | **0.0550*** |
| **Risk perception of CF and video games** | -0.33167 | 2.55223 | -0.13 | 0.8967 |
| **Psychosocial risk** | 1.96624 | 1.13288 | 1.74 | **0.0839*** |
| **Investment risk** | 0.07242 | 0.87128 | 0.08 | 0.9338 |
| **Performance risk** | -1.19657 | 1.37611 | -0.87 | 0.3854 |
| **Liking the product** | 6.80744 | 2.52583 | 2.70 | **0.0075** |
| **It was easy to decide between payment methods** | 0.83238 | 2.27894 | 0.37 | 0.7152 |
| **Understandability** | 0.08767 | 2.30913 | 0.04 | 0.9697 |
| **Liking CF** | 4.28564 | 3.03472 | 1.41 | 0.1592 |
| **Considerate buying behaviour** | -1.58281 | 2.56682 | -0.62 | 0.5381 |
| **Spending on video games and similar entertainment** | -1.94131 | 2.07919 | -0.93 | 0.3514 |
| **Model fit** | **R Square** | **Adj. R sq** | **F (d.f.)** | **Pr > F** |
| | 0.1199 | 0.0796 | 2.97 | 0.0010 |

**Table 19. Linear regression results for CO probability**

Finally, a logistic regression analyses were done with the same explanatory variables, and the dependent variable was the nominal choice between payment methods. Two generalized logit models were created using FIP and AdvS as the bases of comparison. The results of the multinomial logistic regression can be seen in the following tables. For both models $\alpha = 0.05$, but variables which were significant at $\alpha = 0.10$ are marked with a *. The results show that although the model is statistically significant, it is not very precise in its ability to forecast probabilities of a respondent choosing the payment methods. Table 20 shows that only four items increased the goodness-of-fit of the model, experiences with crowdfunding and buying in advance, the perceptions of risk related to crowdfunding and video games, liking the product and, interestingly, psychosocial risk.

| Type 3 Analysis of effects | Dependent variable | | |
|---|---|---|---|
| | Payment method choice | | |
| **Explanatory variable** | **DF** | **Wald Chi-Sq** | **Pr > Chi-Sq** |
| **Experience with CF and AdvS** | 2 | 8.1375 | **0.0171** |
| **RP of CF and video games** | 2 | 8.0516 | **0.0178** |
| **Psychosocial risk** | 2 | 5.4532 | **0.0654*** |
| **Investment risk** | 2 | 0.0577 | 0.9716 |
| **Performance risk** | 2 | 1.1066 | 0.5751 |
| **Liking the product** | 2 | 5.3818 | **0.0678*** |
| **It was easy to decide between payment methods** | 2 | 3.9712 | 0.1373 |
| **Understandability** | 2 | 2.3592 | 0.3074 |
| **Liking CF** | 2 | 0.9755 | 0.6140 |
| **Considerate buying behaviour** | 2 | 2.4570 | 0.2927 |
| **Spending on video games and similar entertainment** | 2 | 2.3111 | 0.3149 |

**Table 20. Type 3 Analysis of effects for logistic regression on pricing method choice**

From table 21 it can be seen that few variables in fact explain differences in the log odds of choosing between FIP (reference group) and AdvS or CO. Variables that increased the log odds of choosing AdvS over FIP include experience with crowdfunding and advance selling, liking the product and psychosocial risk (but only when $\alpha = 0.10$). This finding contradicts to some extent with *H2,* as higher psychosocial risks are related to choosing AdvS over FIP. Risk perceptions related to crowdfunding and video games and the easiness of deciding between the payment methods (only when $\alpha = 0.10$) decrease the log odds of choosing AdvS over FIP, which supports *H2*. The results show that CO is chosen over FIP when the respondent liked the product and with increasing experience with crowdfunding, although this has a lower parameter estimate than with AdvS.

Table 22 shows the results when AdvS is chosen as the reference group. The results show that similarly the variables increasing the log odds of choosing CO over AdvS include risk perception of crowdfunding in general and psychosocial risk. These results support the findings of the Kruskal-Wallis test done earlier (results in table 15) regarding the effects of other measured risk variables on the choice of payment method. The results also give support to *H2: When the consumer's perceived risk is high, he/she favours CO or FIP over AdvS*

The regression models that were created based on the gathered data did not explain reliably what payment methods consumers choose. The explanatory powers for all regression models were very low, implying either that these are not the drivers for choosing specific payment methods or that in-group variation is too high.

The results of the regression models can be used to shed some light on the hypotheses that were presented earlier. The regressions in general show that the variables that had an effect on the choice and reported probability of using the payment methods were generally not the risk dimensions that were discussed in the previous tests. On the contrary it would seem that the variables that have a larger effect are the experiences consumers have on crowdfunding, their risk perceptions related to crowdfunding and video games and the product that is proposed in the crowdfunding campaing.

| **Analysis of Maximum Likelihood Estimates** | **Dependent variable** | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Payment method choice** | **DF** | **Estimate** | **Std Error** | **Wald Chi-Sq** | **Pr > Chi-Sq** |
| **Intercept** | AdvS | 1 | 1.8477 | 1.7390 | 1.1290 | 0.2880 |
| **Intercept** | CO | 1 | -0.2493 | 1.4809 | 0.0283 | 0.8663 |
| **Experience with CF and AdvS** | AdvS | 1 | 0.5672 | 0.2491 | 5.1845 | **0.0228** |
| **Experience with CF and AdvS** | CO | 1 | 0.4613 | 0.1864 | 6.1258 | **0.0133** |
| **RP of CF and video games** | AdvS | 1 | -0.6459 | 0.2345 | 7.5886 | **0.0059** |
| **RP of CF and video games** | CO | 1 | -0.1051 | 0.1819 | 0.3335 | 0.5636 |
| **Psychosocial risk** | AdvS | 1 | 0.1638 | 0.0949 | 2.9828 | **0.0842*** |
| **Psychosocial risk** | CO | 1 | -0.0410 | 0.0899 | 0.2081 | 0.6483 |
| **Investment risk** | AdvS | 1 | -0.0170 | 0.0838 | 0.0411 | 0.8393 |
| **Investment risk** | CO | 1 | 0.00239 | 0.0597 | 0.0016 | 0.9681 |
| **Performance risk** | AdvS | 1 | -0.0680 | 0.1225 | 0.3079 | 0.5790 |
| **Performance risk** | CO | 1 | -0.1013 | 0.0969 | 1.0925 | 0.2959 |
| **Liking the product** | AdvS | 1 | 0.1563 | 0.2282 | 0.4690 | 0.4935 |
| **Liking the product** | CO | 1 | 0.4307 | 0.1869 | 5.3086 | **0.0212** |
| **It was easy to decide between payment methods** | AdvS | 1 | -0.4002 | 0.2073 | 3.7268 | **0.0535*** |
| **It was easy to decide between payment methods** | CO | 1 | -0.2114 | 0.1625 | 1.6916 | 0.1934 |
| **Understandability** | AdvS | 1 | -0.0408 | 0.2142 | 0.0363 | 0.8488 |
| **Understandability** | CO | 1 | -0.2405 | 0.1684 | 2.0397 | 0.1532 |
| **Liking CF** | AdvS | 1 | 0.0599 | 0.2681 | 0.0499 | 0.8233 |
| **Liking CF** | CO | 1 | 0.2107 | 0.2175 | 0.9385 | 0.3327 |
| **Considerate buying behaviour** | AdvS | 1 | -0.3334 | 0.2136 | 2.4359 | 0.1186 |
| **Considerate buying behaviour** | CO | 1 | -0.1196 | 0.1898 | 0.3971 | 0.5286 |
| **Spending on video games and similar entertainment** | AdvS | 1 | 0.0225 | 0.1761 | 0.0163 | 0.8985 |
| **Spending on video games and similar entertainment** | CO | 1 | -0.1957 | 0.1516 | 1.6676 | 0.1966 |
| **Model fit** | **R Square** | **Max. Rescaled R Square** | **Wald Chi-Sq** | **Wald Pr > Chi-Sq** | | |
| | 0.1979 | 0.2252 | 44.9592 | 0.0027 | | |

**Table 21. Results for the logistic regression for FIP as reference group**

| **Analysis of Maximum Likelihood Estimates** | **Dependent variable** | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Pricing option choice** | **DF** | **Estimate** | **Std Error** | **Wald Chi-Sq** | **Pr > Chi-Sq** |
| **Intercept** | FIP | 1 | -1.8477 | 1.7390 | 1.1290 | 0.2880 |
| **Intercept** | CO | 1 | -2.0971 | 1.6864 | 1.5463 | 0.2137 |
| **Experience with CF and AdvS** | FIP | 1 | -0.5672 | 0.2491 | 5.1845 | **0.0228** |
| **Experience with CF and AdvS** | CO | 1 | -0.1059 | 0.2456 | 0.1860 | 0.6662 |
| **RP of CF and video games** | FIP | 1 | 0.6459 | 0.2345 | 7.5886 | **0.0059** |
| **RP of CF and video games** | CO | 1 | 0.5408 | 0.2262 | 5.7147 | **0.0168** |
| **Psychosocial risk** | FIP | 1 | -0.1638 | 0.0949 | 2.9828 | **0.0842*** |
| **Psychosocial risk** | CO | 1 | -0.2048 | 0.0910 | 5.0648 | **0.0244** |
| **Investment risk** | FIP | 1 | 0.0170 | 0.0838 | 0.0411 | 0.8393 |
| **Investment risk** | CO | 1 | 0.0194 | 0.0819 | 0.0560 | 0.8129 |
| **Performance risk** | FIP | 1 | 0.0680 | 0.1225 | 0.3079 | 0.5790 |
| **Performance risk** | CO | 1 | -0.0334 | 0.1193 | 0.0783 | 0.7796 |
| **Liking the product** | FIP | 1 | -0.1563 | 0.2282 | 0.4690 | 0.4935 |
| **Liking the product** | CO | 1 | 0.2744 | 0.2291 | 1.4341 | 0.2311 |
| **It was easy to decide between payment methods** | FIP | 1 | 0.4002 | 0.2073 | 3.7268 | **0.0535*** |
| **It was easy to decide between payment methods** | CO | 1 | 0.1888 | 0.1986 | 0.9037 | 0.3418 |
| **Understandability** | FIP | 1 | 0.0408 | 0.2142 | 0.0363 | 0.8488 |
| **Understandability** | CO | 1 | -0.1997 | 0.1990 | 1.0071 | 0.3156 |
| **Liking CF** | FIP | 1 | -0.0599 | 0.2681 | 0.0499 | 0.8233 |
| **Liking CF** | CO | 1 | 0.1508 | 0.2668 | 0.3195 | 0.5719 |
| **Considerate buying behaviour** | FIP | 1 | 0.3334 | 0.2136 | 2.4359 | 0.1186 |
| **Considerate buying behaviour** | CO | 1 | 0.2138 | 0.2057 | 1.0801 | 0.2987 |
| **Spending on video games and similar entertainment** | FIP | 1 | -0.0225 | 0.1761 | 0.0163 | 0.8985 |
| **Spending on video games and similar entertainment** | CO | 1 | -0.2182 | 0.1724 | 1.6018 | 0.2057 |
| **Model fit** | **R Square** | **Max. Rescaled R Square** | **Wald Chi-Sq** | **Wald Pr > Chi-Sq** | | |
| | 0.1979 | 0.2252 | 44.9592 | 0.0027 | | |

**Table 22. Results for the logistic regression for AdvS as reference group**

## 7. Discussion

In this chapter the results of the study are discussed in relation to both the research questions and earlier research done on the subject. The aim is to provide an answer to the main research question and give proposals for further research and discuss the managerial implications of the study.

The results showed that unlike was hypothesised, there were no differences between risk perceptions and no differences between preferred payment methods, although theory implied that the manipulation of brand, release schedule and refunds should result in differences. However, the experiment is not without result despite the manipulation not working as intended. In this chapter a discussion of the results is presented to relate the findings on previous research.

An important topic to discuss are other possibilities for the reason behind the results of the experiment. Although the experimental setting did not work as intended, and no significant difference emerged from the analysis, CO was equally favoured when compared to FIP for both the control and experimental groups. This finding may have two implications: firstly, consumer options may be a decent way to counter forward-looking behaviour reported by Nari (2007). As video game developers have need of funding for development before release, obtaining a large pool of consumers investing in the development can be beneficial for the developer. The benefits obtained depend on the pricing choices the seller of the CO makes for the option and the realization price. This pricing dilemma is a relevant field for future research on the subject.

The second implication of this finding is that video game development and crowdfunding campaigns are indeed perceived as somewhat risky. The high frequency of CO compared to AdvS combined to there being no significant difference between the two groups in risk perceptions show that there is risk involved in purchases in crowdfunding campaigns. These risks, however, are not on the product specific level but on the product category level. CO may be a RRS for the product category of video games or crowdfunding campaigns instead of video games by developer A vs. developer B.

### 7.1 Feasibility of consumer options as a pricing model for video game crowdfunding

The main objective of this study was to discuss how feasible consumer option pricing is in the context of video game crowdfunding. The primary research question was

**RQ1:** ***Does the use of consumer options reduce the perceived risks related to purchasing products in reward-based crowdfunding campaigns?***

To answer this question, an experiment was set up with different scenarios that offered consumer options, advanced selling and full information pricing as the alternatives for making a purchase. The feasibility of this is directly related to consumer options as being a RRS, thus making it possible for video game developers to obtain more income from CO than from AdvS as risk perceptions are lowered. In this chapter, hypotheses related to the main research question are discussed.

The hypotheses related to the choice of payment method were

*H1: When the consumer's perceived risk is high, he/she expresses higher probabilities for using CO or FIP pricing*

*H2: When the consumer's perceived risk is high, he/she favours CO or FIP over AdvS*

*H3: When the consumer's perceived risk is low, he/she expresses higher probabilities for using AdvS pricing*

*H4: When the consumer's perceived risk is low, he/she favours AdvS or FIP*

*H6: Risks concerning future valuations regarding the product causes the consumers to choose consumer options over advanced selling*

The experiment set out to discuss the hypotheses in relation to the discussed dimensions of risk. However, the results showed that the hypotheses cannot be widely supported through the analysis of the dimensions of risk. When the high- and low-risk scenarios were discussed, the choices of payment methods were not dependent on which scenario had been shown to the respondent. Additionally, the reported probabilities for using a payment method did not differ between the two groups. In that respect the hypotheses *H1, H2, H3* and *H4* cannot be

supported conclusively.

However, further analyses showed that instead, there are risk perceptions related to crowdfunding and the product category which do have an effect on the choice of payment method and the probability of choosing a payment method. Although the results were inconclusive due to the low explanatory power of the models, the regression models showed some support to the first four hypotheses in that risk perceptions related to crowdfunding and video games in general increased the favourability of FIP and CO over AdvS, supporting *H2*. Additionally, the factors explaining the probability of choosing FIP and CO included risk perception related to crowdfunding and video games, performance risk and to some extent psychosocial risk, supporting *H1*.

For *H1* the hypothesis is true, in that the frequencies of CO and FIP are higher for the group who were shown a made-up brand. However, for *H2* the respondents did not favour AdvS over CO: instead, this group too had CO and FIP as the most frequent options. It is important to note however, that in an inter-group comparison AdvS is the preferred alternative for 31 respondents for the group who were shown a real brand, or a low-risk scenario, whereas only 20 of those who were presented with a made-up brand chose AdvS. However, there is no statistically significant dependence between assignment to experimental or control group and choosing AdvS or another alternative ($X^2$ (1, N=252) = 2.97, p = 0.08).

The results of the study can be reflected on the theoretical framework as well. Especially the results from the qualitative answers the respondents gave for the reasoning behind their choices reflects that risk is a central part of decision-making in a context like this. Many respondents in both the experimental and control group opted for FIP due to it being the best possible risk-reduction strategy, whereas those who chose AdvS or CO often reported willingness to be involved in the development of the product and lower price, which can also be seen as a RRS even if it is not as powerful as using FIP in reducing risks.

The results of this study have some interesting implications for the research on consumer options. Firstly, it is relevant to contrast the findings of the qualitative analysis to those of Balseiro et al. (2010) who found that there is a parameter called ‘love-of-the-game’ which translated in the context of this study into a willingness to participate in the development of the video game. Balseiro et al. (2010) found that as a consumer’s ‘love-of-the-game’ rose,

the benefit of offering a consumer option were lowered due to the rising probability of realising the option no matter what the outcome was. A relevant outcome of this study is that those who chose AdvS or CO in both the experimental and control groups reported that the reason for choosing those payment methods was that they wanted to be involved in the development of a product they were interested in. The moderating effects of the consumers' willingness to participate in crowdfunding campaigns should be taken into consideration to a larger extent in future research.

The results of the experiment are similar to that of Balseiro et al. (2010) in that the benefits of offering consumer options are lower if the willingness to be involved in the development of the product is high. It should be noted that the flexibility consumer options offer to consumers does have a rather high utility nevertheless, and that this finding does not explicitly lower the feasibility of using consumer options in crowdfunding.

Considering the limitations for the use of consumer options proposed by Sainam et al. (2010), that if "[the consumers] have similar preferences, option pricing offers no advantage over advance selling" (Sainam et al. 2010, 403), it would seem that the results of the study support this claim. As the consumers did not differ largely in their perceptions of risk related to the brand of the product, their preferences can be said to have been similar in the context of this study, and thus option pricing in general did not offer an advantage over AdvS in this respect. However, the preferences of the respondents differed on the level of risk perceptions related to crowdfunding as a concept, thus there being a usefulness for CO from that point of view.

Some emphasis should also be given to the qualitative answers of the respondents regarding the choices they made in the experiment. As was mentioned in the analysis chapter, the reasoning for respondents in both groups were similar. The reasons for choosing consumer options were related to partaking in the development of the product, the offered flexibility and lowered risk compared to AdvS. These were some of the assumed reasons for choosing CO over the other payment methods, and they reflect time, financial and performance risks. It was erroneously presumed, however, that these were related to the product-specific level of risk perception.

Although the results of the study were inconclusive, based on this study it would seem that

consumer options can be used to reduce the risks involved in crowdfunding campaigns from the consumer's point of view. Further research into the use of CO is required, but as an exploratory study this research has opened discussion for the use of CO in contexts that have a close to infinite number of goods and without clear distinctions between consumer preferences.

### 7.2 Discussion on the experimental design

As was presented in the analysis section of this study, the experimental design did not function as was planned. The manipulation of the perceptions of risk did not work as was intended, and there were no differences between the experimental and control groups regarding their choice of pricing model. There are several possible explanations to this, one of which is the most prominent one regarding future research.

As was mentioned by Bettman (1973) and later by Dowling and Staelin (1994), making purchases of goods have two levels of perceived risk: the product category level and the product-specific level. In this study it was assumed that by manipulating product-specific risks such as the brand of the developer, a difference in risk perceptions could be created. As was seen in the analysis, this was not the case. Further testing revealed, that there was a difference between the view on the riskiness of crowdfunding a respondent had and the choice of pricing model: Those who saw crowdfunding as very risky more often chose FIP or CO. This would imply that a manipulation of the product category related risks would have an effect on the choice of pricing model.

Mitchell and Boustani (1994) studied RRSs with inconclusive results, and hypothesised that the low statistical significances of RRSs in their study may have been due to the low magnitude of the consequences that were present in their study. This is very much a possibility in this study as well. As was mentioned in the empirical section, the experiment utilized made up scenarios where no real money or transactions were made. It is possible that this results in very low perceptions of risk, as the respondent is probably very aware of the experiment being unrealistic.

Another possibility for why the experimental design failed is related to the duality of the construct of perceived risk. In the experiment the manipulation of the brand, release schedule

and the ability to get a refund were all related to the probability of the risks that were involved. However, the action the respondent could take in the experiment was related to the magnitude of the risk: either you lose 0 with FIP, lose 40 with AdvS or lose 10 with CO in the case that the product is never released. It can be argued that it cannot be assumed that manipulating the probability related to a situation results in reducing the magnitude of risk related to said situation. In future experiments this should be considered when constructing the experimental design.

It is important to notice that the regression models that were presented in the analysis chapter had very low explanatory powers over the dependent variables. Additionally, it was often not the presumed perceptions of risk that affected payment method choice. This would suggest that the assumption that risk perceptions are driving behaviour in this context is false, or that there are moderating variables in play which were not identified in this study. It is probable that these moderating variables are connected to the social nature of crowdfunding and community benefits, which were discussed in the theory section.

The results of the study are limited in their generalizability. The experiment had pre-screening attributes that limited the population to those who actively play video games. It can be argued that a certain level of experience regarding the product category was thus assumed. As was discussed in the literature review, several previous studies have found that domain-specific knowledge or experience affects risk perception (Dowling & Staelin 1994, Lounsbury & Glynn 2001), although the connection may not be linear. In future research the effects of involvement and domain-specific knowledge should be taken more into account in the research design.

Additionally, in future experiments the aspect of pricing should be further taken into consideration, since as was mentioned earlier, a price that is perceived as low may not instigate perceptions of risk. It is possible to contrast the price levels to the consumption of the respondent, as it is possible that consumption levels moderate the perceived risks related to the pricing. If the threshold model presented as the theoretical framework is considered, there may be varying price thresholds for risk perception, and this can be especially important in finding statistically significant differences in perceptions of risk.

### 7.3 Proposals for further research

Using an experimental design in studying crowdfunding and different pricing alternatives is a widely untapped subject when risk perceptions is incorporated to the subject. With different designs further light can be shed on the subject. For example, using a within-subject design similar to the one employed in the pre-test can show more comparatively how different pricing alternatives are chosen when only two alternative prices are given to the respondents. It was not considered in the research design, but it is possible that the respondents were behaving as in the studies of Ariely (2008, 20) regarding decoys, or alternatives that are only there to steer behaviour. Additionally, it should be taken into consideration that the price levels of the product in question can be thought of as being quite low depending on the monthly consumption for example. For this reason, in future research different products with different price levels should be used in order to further discuss the theoretical framework presented in this study, and the models of risk perception presented by e.g. Dowling and Staelin's (1994) to better understand the risk-averse and risk-seeking behaviour and thresholds for acceptable risk in the context of crowdfunding.

The possibilities of variations in this context are multiple. Different aspects of a similar experiment can be manipulated to further analyse the feasibility of consumer options. Manipulation of different price levels can be done to see how potential CO is in financing the development of products. A more expensive product could be chosen to further increase possible perceived risks. In a lab experiment different crowdfunding platforms could be employed to see if risks related to the platform have an effect on the choices respondents make and so forth.

As the results of this test were dwarfed by the failed manipulation of risk perception, there is a need for a qualitative approach to identifying the perceived risks in a situation like was presented in the experiment. Another interesting possibility for future research is to employ a real experiment instead of a lab experiment, which may eliminate the aforementioned reason for failure in the manipulation of perception of risk.

Combining the findings of Dholakia (2001) regarding involvement and risk perceptions to the results of this study it would seem a highly relevant field of future research to combine consumer options as a tool for enabling both risk-reduction and consumer involvement. As

earlier research had already proposed that involvement and experience (cf. Lounsbury & Glynn 2001) in the product category generally lower perceived risks it would be highly interesting to see the effects of involvement to payment method choice in a crowdfunding context, or vice versa. Another aspect of future research which is related to risk perception in crowdfunding contexts is to incorporate the social media aspect of crowdfunding, as was studied by Moritz et al. (2015). An interesting aspect for research is risk perception related to campaigns that differ in how close to being finished they are both in the sense of how close to reaching a funding target they are and how close to finishing the product they are.

As this study focused on consumer options as a risk-reduction strategy, further research could incorporate several RRSs into one study. For example, it is possible that offering consumer options as a payment method may lower the need for information gathering regarding the purchase.

An interesting aspect to consider in future research is also the approach taken by Lim (2003). It is important to identify the sources of risk when examining the possible utilization of a risk-reduction strategy. In this study the source of risk was not the developer of the product, as was expected, but the context of crowdfunding.

### 7.4 Managerial implications

As the study failed to conclusively answer the main research question, the managerial implications are also not conclusive, and in order to provide more conclusive guidelines for companies wishing to participate in crowdfunding more research needs to be done on the subject. However, some indications can be discussed related to crowdfunding, risk perceptions and pricing.

Firstly, the study would indicate that for both unknown developers and established brands, consumer options may provide a good alternative for pricing products in the campaign. As the respondents reported lowered risks, offering CO as an alternative may help risk-averse consumers to partake in crowdfunding. An important dilemma is to decide which price levels are used in order to maximise the trade-off between reduced risks and required capital: for this study those who chose CO brought less income than those who chose AdvS even though choosing CO was more frequent than choosing AdvS.

Secondly, the study shows that even in situations where there are no capacity constraints, consumer options can be used to accumulate profits in advance. This opens a discussion for several applications in the real world, even though several issues still require further research before applying consumer options into practice.

Future research should also take more into account the seller point of view to consumer options in a context where the goods are finite. Several questions for the seller of a consumer option remain, such as pricing and what value is being provided by offering these options, and what direct and indirect benefits are found. For example, the implications to marketing communications caused by more pledgers sharing their pledge can be interesting.

## 8. Conclusion

This study began with the aim to shed light on how well the relatively new concept of consumer options could be employed in the context of crowdfunding, more specifically crowdfunding of video games. This context was chosen due to novelty in the academic context, since the product in question is practically infinite, and due to managerial implications for independent game developers who wish to partake in crowdfunding to obtain the necessary capital to continue the development of their products.

An experimental approach was chosen to approach the issue in an explorative manner. The research design incorporated consumers' perceptions of risk into the study, and the formulated main assumption of the study was that consumer options could be offered to consumers to enable them to reduce the risks that are perceived in the context of crowdfunding.

Through a review of previous research, the experimental variables were operationalized. The analysed variables were operationalized base on the seminal works of authors such as Kaplan et al. (1974) and Roselius (1971) regarding risk perception and risk-reduction strategies, and Sainam et al. (2010) and Balseiro et al. (2010) regarding consumer options. It was hypothesised that when perceptions of risk are high, consumer options would be the favoured payment method over advance selling, and that this was caused due to the consumer being uncertain about future valuations of the product that was being bought.

A lab experiment of 252 respondents was conducted. The independent variable which was manipulated in the experiment was the perception of risk related to the product. This manipulation was done by showing the control group a scenario with crowdfunding campaign for a video game from a known developer. The experimental group were shown the same scenario but with a different developer, a longer release schedule and an explicit mention of no possibility for refunds. The aim was that for the experimental group the level of overall perceived risk would be higher resulting in them choosing consumer options over advance selling.

Despite the alterations in the scenario the manipulation was only partially successful. This resulted in inconclusive results regarding payment methods being used as risk-reduction

strategies when the levels of perceived risk are different. Although the manipulation was not successful, the study did have implications that consumer options are indeed a feasible possibility for consumer goods that are non-finite due to the risks perceived at the product category level, i.e. because of the context of crowdfunding. An important assumption in this study was that the manipulation of product-specific risks would lead to differences in risk perception and through that to differences in payment method choices. However, the case would seem that the risks involved in crowdfunding are not related to the entity which is running the crowdfunding campaign. Instead, the risks seem to be related to the concept of crowdfunding and the product category of video games in general.

Despite inconclusive results, the study offers some indications for future research areas and some managerial implications. The experimental approach in this context can be used to study multiple variations regarding consumer options and risk perceptions regarding crowdfunding. Possibly the most interesting and relevant further research area is indeed the product category level risks and how they can be reduced by offering different payment methods. Managerial implications of this study are focused on the feasibility of consumer options. The main research question of this study was to find out whether or not consumer options are a feasible alternative to current practices. Although it was not for the assumed reasons, this study found that consumer options can be used in the context of non-finite goods to lower the perceived risks of consumers.

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## Appendices

Appendix 1. Descriptive statistics for variables used in regression models

| Variable | N | Mean | Std Dev | Min | Max | Median | Lower 95% CL for Mean | Upper 95% CL for Mean | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|---|---|---|
| Familiarity with CF | 252 | 3.62 | 1.22 | 1.00 | 5.00 | 4.00 | 3.47 | 3.77 | -0.79 | -0.30 |
| Positive experiences with CF | 252 | 3.50 | 1.01 | 1.00 | 5.00 | 4.00 | 3.37 | 3.62 | -0.60 | 0.34 |
| Liking CF | 252 | 4.30 | 0.76 | 1.00 | 5.00 | 4.00 | 4.20 | 4.39 | -1.27 | 2.58 |
| Considerate buying behaviour | 252 | 4.36 | 0.90 | 1.00 | 5.00 | 5.00 | 4.25 | 4.47 | -1.76 | 3.39 |
| Supporting CF of video games | 252 | 3.06 | 1.28 | 1.00 | 5.00 | 3.00 | 2.90 | 3.22 | -0.21 | -1.05 |
| Buying products in advance | 252 | 2.88 | 1.29 | 1.00 | 5.00 | 3.00 | 2.72 | 3.04 | -0.03 | -1.30 |
| Spending on video games and similar entertainment | 252 | 2.91 | 1.11 | 1.00 | 6.00 | 3.00 | 2.78 | 3.05 | 1.02 | 0.50 |
| Buying products from CF is risky | 252 | 3.27 | 1.11 | 1.00 | 5.00 | 3.00 | 3.14 | 3.41 | -0.09 | -0.94 |
| Liking the product | 252 | 3.56 | 0.98 | 1.00 | 5.00 | 4.00 | 3.43 | 3.68 | -0.59 | -0.14 |
| Buying games or software from CF is risky | 252 | 3.36 | 1.14 | 1.00 | 5.00 | 4.00 | 3.22 | 3.50 | -0.27 | -0.89 |
| Buying video games is risky | 252 | 2.67 | 1.16 | 1.00 | 5.00 | 3.00 | 2.52 | 2.81 | 0.21 | -0.91 |
| It was easy to decide between payment methods | 252 | 3.96 | 1.02 | 1.00 | 5.00 | 4.00 | 3.84 | 4.09 | -0.90 | 0.18 |
| Understandability | 252 | 3.75 | 1.02 | 1.00 | 5.00 | 4.00 | 3.62 | 3.87 | -0.76 | -0.03 |
| Psychosocial risk | 252 | 1.15 | 1.98 | 0 | 11.44 | 0.20 | 0.90 | 1.40 | 2.45 | 6.51 |
| Investment risk | 252 | 5.66 | 3.60 | 0 | 18.00 | 5.18 | 5.22 | 6.11 | 0.88 | 0.72 |
| Performance risk | 252 | 3.92 | 2.26 | 0 | 10.00 | 4.00 | 3.64 | 4.20 | 0.44 | -0.13 |

Appendix 2. Factor analysis results for variables used in regression models

| **Item** | **Factor1** | **Factor2** | **Communalities** | **MSA (Overall 0.71)** |
|---|---|---|---|---|
| Supporting CF of video games | **0.73285** | -0.05335 | 0.56 | 0.80 |
| Familiarity with CF | **0.72902** | 0.15164 | 0.49 | 0.75 |
| Buying products in advance | **0.66188** | 0.05676 | 0.44 | 0.80 |
| Positive experiences with CF | **0.60597** | -0.14375 | 0.42 | 0.82 |
| Buying games or software from CF is risky | -0.04705 | **0.93597** | 0.91 | 0.62 |
| Buying products from CF is risky | -0.02768 | **0.85293** | 0.74 | 0.62 |
| Buying video games is risky | 0.11861 | **0.51628** | 0.24 | 0.78 |
| **Cronbach's alpha** | 0.77 | 0.79 | | |