Ready to start-up? The way to acquire early-stage USO funding.

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ABSTRACT

University Spin-Offs (USOs) have become more popular over the past years because a rapid increase in technology-based economic development initiatives happened. These initiatives lead to significant changes in research commercialization because developed technologies are diffused and knowledge is transferred from university to industry. In consequence, USOs are generating economic, technological and societal impact. Despite the positive messages, most of the USOs fail or do not generate the expected outcomes because they are dealing with liabilities as newness and smallness. USOs go through different phases of development, adding critical junctures that USOs need to overcome in order to become successful. To overcome these critical junctures and move phases it is important that the USO has sufficient financial resources, because in the beginning USOs do not generate revenue. These financial resources can be provided by the Dutch Research Council (NWO). Since the amount of funding is very limited and can not be provided to every startup it is important to know which factors positively influence early growth stage entrepreneurial successes for small business startups to acquire early-stage funding. Therefore, this research examines how technology innovation, market knowledge, business model and balanced founding team influence the development of gaining this crucial early-stage governmental funding and surviving on the market. Data from 242 USO funding proposals is used in this study. Our study shows that market knowledge, business planning and motivation and commitment positively contribute to funding success. Our study also indicated that receiving funding is positively related to USO survival. The findings from this study contribute to a better understanding of the research commercialization process and provide new insights to long-term benefits of USOs.

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Keywords

University spin-off, success factors, early-stage funding, business model, balanced founding team, technological innovation, market knowledge, motivation and commitment, business planning.

1. INTRODUCTION

University spin-offs (USOs) are increasingly recognized as important mechanisms to generate new economic, technical and societal impacts in knowledge-based society; they can solve grand business challenges. USOs are new ventures initiated within a university setting and based on technology derived from university research (Rasmussen & Wright, 2015). In the past years, USOs have become more popular because a rapid increase in technology-based economic development initiatives happened (Grimaldi, Kenney, Siegel, & Wright, 2011) (Siegel & Wright, 2015). These initiatives increase the recognition of the desirability for encouraging entrepreneurship, they positively influence the economic development impact that university-related entrepreneurial ventures can generate, causing some pioneering experiments that aimed at encouraging entrepreneurship (Grimaldi, Kenney, Siegel, & Wright, 2011). The initiatives were mainly focused on stimulating technological entrepreneurship in universities via licensing, patenting, start-up creating and university-industry partnerships (Grimaldi, Kenney, Siegel, & Wright, 2011). This "academic entrepreneurship" leads to significant changes in research commercialization in universities. Universities commercialize and diffuse technologies developed in their research laboratories and elsewhere on campus, and they transfer knowledge from universities to industry which leads to the creation of technological impact (Grimaldi, Kenney, Siegel, & Wright, 2011). Without the existence of USOs, research commercialization would not generate the expected impact, technologies might not be further developed and their potential could not be examined. Another reason for USOs to become more popular is the creation of economic and societal impact. Economic and societal impact to universities is provided by developing students to become more entrepreneurially equipped which results in more on-campus industry collaborations and the creation of business parks which automatically leads to the creation of new jobs on a local, regional or national level (Rasmussen & Wright, 2015). Two key consequences of this change are that stakeholders, who invest a large amount of money, have become more involved in academic entrepreneurship, and that universities have become more 'strategic' in their approach to this activity. (Siegel & Wright, 2015). While USOs have a great potential to generate technological, economic and societal impact, the current situation is far from being perfect and most of the academic ventures fail or do not generate the expected outcomes.

This study aims to realize potential to a higher extent, because survival rates for start-ups are disappointingly low (Gonzalez, 2017). About 50% of all new business ventures will fail in the first 5 year of existence (Perry & Davis, 2018). With failure, we mean situations where ventures stop their existence or situations where the USO still exists but cannot scale enough or cannot produce the desired results (Perry & Davis, 2018). There are a few situations where startups are more likely to fail, the lack of money for further development being the most prominent reason (Bednár & Tarisková, 2017). When USOs lack money, they are unable to reach the sales stage and thus obtain financial resources from customers which leads to the problem of financing of expansion and covering operating costs (Bednár & Tarisková, 2017). The second largest issue involves the lack of interested customers for the startup solution. If entrepreneurs do not incorporate the needs of the customers and do not know what customers want, there is less chance of becoming successful (Bednár & Tarisková, 2017). Market testing is leading to a better understanding of customer needs, and therefore better products and services can be developed. Some startups do not have the right business model or lack team competencies which means that the team members do not have enough experience, quality or social skills (Bednár & Tarisková, 2017). However, prior research has identified that USOs have a high potential to generate impact (Pattnaik & Pandey, 2014). According to Fini and Lecetera (2010), USO creation should be supported because USOs contribute to technology transfer through their commercial ties to industry and therefore facilitate economic growth (Fini & Lacetera, 2010). There is the potential for promoting technology commercialization and generating revenue for the university, which is typically re-invested in academic research (Grimaldi, Kenney, Siegel, & Wright, 2011). Yet, the research commercialization process is complex and dependent on a combination of various factors such as liabilities of newness and smallness, which means the technology is not developed enough at the start of the process, or market research could not be done because the budget was too limited (Vohora, Wright, & Lockett, 2004). Even when the success rate of University Spin-offs is quite high compared to the rate of regular start-ups (van Geenhuizen & Soetanto, 2009), the outcome they promised back in the day is not achieved (Rasmussen & Wright, 2015).

To overcome these difficult situations USOs need financial resources. These financial resources can be provided by governmental funding parties that aim to foster academic entrepreneurship, such as the Dutch Research Council (NWO, 2021). Governmental organizations provide funding because the production and utilization of knowledge is becoming an even more crucial factor of economic growth and competitiveness of nations and their constituent private sector business. (Davey, 2016) Funding is an incentive or driver for the encouragement of academic entrepreneurial activities (Davey, 2016). The lack of funding can lead to a barrier that may deter the intention of the entrepreneur to pursue the opportunity. Funding is very important for entrepreneurs in order to undertake entrepreneurial activities and for the contribution of their research objectives. Since funding can not be provided to every startup it is important to know which factors play a key role in receiving this funding. It is believed that these aspects call for further investigation.

1.1 Research objective and question

This study is relevant because it examines which key factors positively influence early growth stage entrepreneurial successes for small business startups in order to acquire early-stage funding. This funding can be crucial for start-ups to ensure they will become a success. The ***research question*** stated in this report is:

Which factors of academic spin-offs and the academics involved are critical to reach early-stage spin-off success (i.e. positive funding and survival)?

The goal is to understand how to improve USOs and how to increase their current performance rate, which is not very impressive yet (Gonzalez, 2017). This study presents new findings that contribute to the model of Vohora et al. (2004). The application of this model clarified the moment an organization is ready to move phases and overcome the critical junctures (Vohora, Wright, & Lockett, 2004). When the funding is provided, a USO can move on to the next phase. This study also gives a key role to universities, business parks and practitioners in order to help academic entrepreneurs acquire the appropriate resources from the earliest phases in order to succeed and gain the funding. It will be interesting to see which factors play a key role in attracting funding and which will not. For policymakers and stakeholders, it is important to see if receiving money makes a difference for the success of a USO. This way, governmental money will be used more efficiently, which is better for all parties involved. Universities and governments, who both are technologically advanced and developing nations, have great

interest in academic entrepreneurship and USOs are a means of building links between universities and industry (Pattnaik & Pandey, 2014). It also helps stakeholders from the government, industry, and academia itself in the promotion of university spinoffs (Pattnaik & Pandey, 2014). The results of this study could help reduce the number of small business failures by providing actionable knowledge to entrepreneurs in the start-up during the early growth stage of business development.

1.2 Outline of this report

The following section of this report consists of a theoretical framework. The research design is presented afterwards. Subsequently, results are reported after which the discussion, implications, limitations and recommendations for future research are discussed.

2. THEORETHICAL FRAMEWORK

This section will first discuss a general overview of academic entrepreneurship and the development of university spin-offs. Ultimately, hypotheses will be formed and explained.

2.1 General overview of academic entrepreneurship and USO development

The number of USOs has increased over the last years. The field of academic entrepreneurship has found greater visibility as universities are considered a source for the creation of technological firms (Pattnaik & Pandey, 2014). Universities are moving to a more advanced role of creating spinoffs and promoting academic entrepreneurship (Wright & Siegel, 2015). Originally, universities had two missions: to teach and to research. Consecutively, a need for universities to help businesses who were suffering emerged. The reason behind this was the universities' possession of a unique, state-of-the-art knowledge on technology that has huge potential to serve on the market as a new product or service (Pattnaik & Pandey, 2014). Subsequently, a third mission, being entrepreneurial, was introduced. This means that the university can succeed in a highly turbulent and unpredictable market because of their self-development and innovation skills. Being entrepreneurial also leads to the development of business parks. An example of this is Novel-T (technology transfer office of the University of Twente), which supports academic entrepreneurship by bringing together entrepreneurs, government and knowledge institution to stimulate innovative activity that keeps the region sustainable and vital. Governments also started to get on board by providing financing, motivated by the desire to stimulate academic entrepreneurship which leads to economic growth and competitiveness of nations. The number of USOs increased due to these reasons.

University spin-offs are crucial for the creation of economic development and for commercializing university technologies (Pattnaik & Pandey, 2014). They commercialize technologies that otherwise might not be developed at all. mechanism for the commercialization of an invention for firms that have high uncertainty is provided (Etzkowitz, 2003). Inventors' involvement in the subsequent development of technologies from the university is also ensured, which is crucial when technologies are based on tacit knowledge (Pattnaik & Pandey, 2014). Research results are translated into technologies which lead to market solutions, which in turn lead to the creation of business opportunities. USOs also contribute to economic development on local, regional and national levels. New technology businesses are concrete examples that investments of public money in universities lead to direct economic benefits in terms of new business activity at national and regional level. Thus, universities create new jobs, tax income, technology business and new organizations to the local business ecosystems that can compete internationally (Siegel & Wright, 2015).

This report defines a USO as: *a new firm which is initiated or becomes commercially active while still affiliated with the university in order to exploit a scientific and technological idea* (Smilor, Gibson, & Dietrich, 1990).

Yet, all these changes did not improve the number of *truly successful* USOs. Universities are increasingly being considered as a source for the creation of high- technology firms. Simultaneously, the linkage between technology, science and university spinoffs is receiving an increased focus. Universities are shifting from their traditional roles towards more advanced roles which are creating spinoffs and promoting academic entrepreneurship (Lerner, 2004).

USOs go through different phases of development. These phases are non-linear and separated by critical junctures. USOs need to focus on and anticipate how to overcome each critical juncture in order to reach the next phase of development (Vohora, Wright, & Lockett, 2004). Vohora et al. (2004) developed a model that provides a systematic approach for university spinoffs. Opportunity analysis and identification are critical for successful commercialization. The first of the five development phases is the research phase. This phase is followed by the opportunity framing phase, the pre-organization phase, the re-orientation stage and, last, the sustainable returns phase. In this report, the first and second development phases will be focused upon, which are the research phase and the opportunity framing phase. The reason for this being that USOs operate in these phases and mainly focus on them. It has been examined how USOs develop from phase one to phase two (Vohora, Wright, & Lockett, 2004). These phases of growth are going to be discussed.

As shown in the figure below, every single stage consists of one or more critical junctures. The first critical juncture is the research phase. It is important to state that to begin with each of the USOs, studied emerged from scientific research that has taken place over several years within university academic departments (Vohora, Wright, & Lockett, 2004). During this phase, valuable intellectual property is created which generates the potential opportunity for commercialization. The academic inventors have studied at the forefront of research in their chosen fields. They all created valuable know-how and technological assets (Vohora, Wright, & Lockett, 2004). This is in line with the existing research which suggests that USOs are usually founded by successful scientists. When a team is lacking competencies, USOs will struggle to generate a technology that provides incremental or radical changes to existing state-of-art in industry (Vohora, Wright, & Lockett, 2004). The second phase is the opportunity framing phase. This phase involves a screening process that kicks off with an evaluation of the technology to ensure that sufficient evidence that the technology actually works is available. When there is a great opportunity for the technology, performance and validity, it is attempted to frame it within a commercial opportunity. It is then important to find the right target group (Vohora, Wright, & Lockett, 2004).

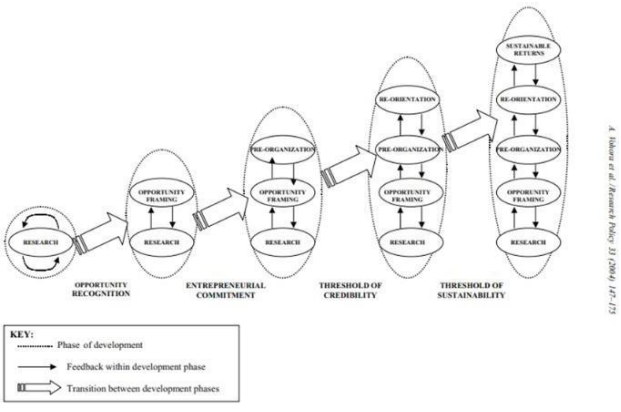

Fig. 1. The critical junctures in the development of university spinout companies.

Funding can be crucial to overcome these critical junctures because when a spinoff is not funded sufficiently, it has a weak bargaining position for high investment in product-related factors (Gubitta, Tognazzo, & Destro, 2015) . Budget constraints that are caused by a lack of startup funds result in less freedom to invest and problems such as not being able to cover financing costs, operating costs or do proper market testing (Gubitta, Tognazzo, & Destro, 2015). Governmental funding parties such as NWO allocate research grants through a tender procedure. Applications that were submitted are assessed and subsequently ranked. The best applications end up highest in the rankings and are the first to be eligible for a grant (NWO, 2021). To increase the chance of receiving funding it will be investigated which factors positively influence the likelihood for gaining this funding. The role of several factors will be investigated in order to state hypotheses.

2.2 Hypotheses development

This section discusses important factors that can be associated with achieving USO success. The receival of USO funding is meant with 'USO success', but a look is also taken at the survival rates of USOs. Hypotheses 1 – 4 examine the impact on the dependent variables 'USO funding' and 'USO survival', whereas hypothesis 5 examines the impact of USO funding on USO survival.

2.2.1 The role of technological innovation on USO success.

Technology startups bring in a high number of advantages and economic growth since they serve innovative activities and contribute to a high employment status. These are crucial for an increase in sales demands and economic profits (Cho & Park, 2019). USOs are becoming technologically innovative by identifying new ideas and opportunities which distinguish them from competitors, leading to a strong competitive advantage through innovation in a market (Aminova & Marchi , 2020). There is a positive relation between innovation and market power, by increasing competitive advantage, allowing the creation of dynamic capabilities, or bringing costs down consequently (Aminova & Marchi , 2020). This will help to increase efficiency and reduce mistakes. This saves resources which results in USOs being able to develop a product in a more efficient way than the competitors, and it requires fewer capital investments. Hence, they will become more attractive to investors and potential launching customers. These aspects combined will result in an increase of the opportunities to enhance performance and the likelihood of survival because innovation provides a central role of creating value and sustaining competitive advantage (Aminova & Marchi , 2020). So, companies that successfully use technological innovation as their core business can gain an increase in productivity, growth potential and efficiency which will increase the likelihood of gaining funding. That is why the assumption is made that the possession of a high technological innovation has a positive effect on USO success.

H1: Having a good technological innovation increases the likelihood of USO success.

2.2.2 The role of market knowledge on USO success.

Although academic research was a necessary condition for the business opportunity to be created, it might not always be sufficient for the new venture process to start (Rasmussen, Mosey, & Wright, 2011). They must acquire and develop some form of market related competency to initially frame the business idea (Rasmussen, Mosey, & Wright, 2011). An evolution towards greater market knowledge is important to be able to frame and revise the scientific knowledge into a viable business opportunity (Rasmussen, Mosey, & Wright, 2011). There is a positive association between new product advantage and product market performance because of market knowledge (Li & Calantone, 1998). Market knowledge is generated regarding either the customers or the competitors, in order to enhance its new product advantage (Li & Calantone, 1998). Market knowledge is a strategic asset of an organization (Li & Calantone, 1998). It is meaningful to know whether there are new markets for your product launch. In order to receive funding, it is important that you can show that the new product will be well-received. When there is no market or customer need for the product it will make no sense to fund the product. When there is high market knowledge, it is interesting for stakeholders to get involved because of the great potential that can arise. It is expected that once market research is done, the demand, likeability and need for the new invention are known. This knowledge is really important because if people do not like the product or technology, bringing it to the market will result in failure. So, when there is market knowledge and people are willing to adopt the new product or technology, a positive effect on USO success is expected.

H2: Having high market knowledge increases the likelihood of USO success.

2.2.3 The role of the business model on USO success.

Technology by itself has no single objective value, the economic value of technology is not there until it is somehow commercialized via a business model (Chesbrough, 2010). According to Chesbrough (2007), a business model performs two important functions: It creates value, and it captures a portion of that value (Chesbrough H. W., 2007). The first function requires the defining of a series of activities (from raw material through to the final customer) that will yield a new product or service. Each of the various activities add value (Chesbrough H. W., 2007). The second function requires the establishing of a unique resource, asset or position within that series of activities, in which a competitive advantage can be enjoyed (Chesbrough H. W., 2007). Having a winning business model can target the average consumer by emphasizing different product attributes, support low prices by driving down costs, reduce customer risk through branding and communication, build the distribution that can serve the mass market and create alliances with key suppliers (Chesbrough, 2010). Therefore, it is believed that a good business model is important in order to receive the funding because a firm has to show their potential for the creation of value and uniqueness, which creates a great business opportunity (Chesbrough H. W., 2007). So, it its expected that having a good business model has a positive relationship on USO success.

H3: Having a good business model increases the likelihood of USO success.

2.2.4 The role of the team on USO success.

A team consists of several individuals who share the responsibility for a certain outcome (Bercovitz & Feldman, 2010). Even within the same environment and with the same task, different teams can perform very differently (Bercovitz & Feldman, 2010). The difference is attributable to the various qualities of the team members (Bercovitz & Feldman, 2010). To approach problems from various perspectives, it is important to combine different types of knowledge and expertise in order to come up with possible solutions. When all the team members have the same knowledge ground, recombination possibilities are constrained. If the team members have different knowledge grounds, they will provide very novel combinations with a high degree of differentiation (Bercovitz & Feldman, 2010). A significant degree of novelty leads to a wide-ranging search over a very broad knowledge space to solve more complex problems. When a lot of commitment is needed for the adoption and integration of knowledge over the different disciplines, this will generate a higher possibility of breakthroughs (Bercovitz & Feldman, 2010). Several studies noticed a positive effect of both education and scientific research on the technological performance of firms (Aminova & Marchi , 2020). That is why it is expected that having a balanced founding team has a positive relationship on USO success and therefore it is assumed that it will increase the likelihood of being successful.

H4: Having a balanced founding team increases the likelihood of USO success.

2.2.5 The role of funding on USO survival.

A key factor for having startup success is attracting enough financial resources. These resources are needed to develop an idea. In the beginning, a startup does not generate revenue and therefore financial resources from the external environment are important. A few examples of external resources are family, friends, crowdfunding, governmental funding, banks or development capital (Bednár & Tarisková, 2017). In this case, the external source is the governmental funding provided by the Dutch Research Council (NWO). Since the NWO can only provide rather small funding to a limited number of startups, it is interesting to see whether this early-stage funding is necessary for survival and if the NWO is doing a good job by providing funding. So, it will be investigated whether USO funding is crucial for USO survival. The assumption is made that USO funding has a positive influence on the likelihood of USO survival.

H5: Acquiring early-stage USO funding increases the likelihood of USO survival.

3. RESEARCH DESIGN

To explore the effects of the selected factors on receiving funding, a comprehensive analysis was performed. The research consists of a quantitative analysis, in order to gain some more insight, a logistic regression analysis has been performed.

3.1 Subjects of the study

This study analyses 242 anonymized and aggregated university spin-off (USO) grant proposals submitted for evaluation in the Valorization Grant (VG) program (between 2007 and 2014) managed by the Dutch Research Council (NWO). NWO is *".. one of the most important science funding bodies in the Netherlands and realizes quality and innovation in science. Each year, NWO invests almost 1 billion euros in curiosity-driven research, research related to societal challenges and research infrastructure"* (NWO, 2021). NWO mission is to advance world-class scientific research that is generating scientific and societal impact by means of excellent, curiosity-driven, disciplinary, interdisciplinary and multidisciplinary research (NWO, 2021). NWO additionally selects and *funds ".. the personnel and material cost for scientific research and knowledge exchange and impact activities of Dutch universities and public research institutes. NWO invites partners from industry, the government and societal organizations to contribute with their own knowledge agendas and questions to the programming, realization and co-funding of research"* (NWO, 2021). Hence, Valorization Grant program (NWO, 2021) was one of the financing instruments targeted at academic entrepreneurs from Dutch research institutions to help further develop knowledge innovations within high-tech domains into new activity and entrepreneurship. It may concern product, process, care or service innovations in the broadest sense of the word (NWO, 2021).

The VG has two phases: Phase 1 is the feasibility study with a maximum funding of 25,000 Euro that has to be completed within 6 months. Projects that successfully complete Phase 1 could submit their applications for Phase 2 - the valorization phase with a maximum subsidy amount of 200,000 Euro (NWO, 2015). Phase 2 projects which received the funding have to be completed within two years, including an interim evaluation (NWO, 2015). In this study, USO proposals submitted to Phase 2 of the program are focused upon and therefore reflecting active preparation for the valorization phase.

3.2 Measurements

3.2.1 Dependent variable

The dependent variable is USO success which is defined as the (a) the likelihood to acquire funding and (b) USO survival. A & B together form USO success. To measure the hypotheses, the acquisition of funding was focused upon different independent variables. To make the data more measurable "acquiring governmental funding (USO funding)" was used as the dependent variable. Acquiring USO funding is a binary variable, this means that it can only take two values, namely a 0 or a 1. The dependent variable USO funding will be given a 1 if the goal is achieved, which means that the USO was able to receive the early-stage governmental funding, when this goal was not accomplished a 0 will be given.

3.2.2 Independent variables

Independent variables can influence the dependent variable USO success in a positive or negative way. The independent variables in this report are technology innovation, market knowledge, business model and proper founding team.

Technology innovation is defined as a change in technology which is manifested in the development of new products (Stock, Greis, & Fischer, 2002), which is measured by an ordinal scale where there is an advantageous ability (2), high ability (1), neutral (0) or low ability to assess their technological advantage. (-1).

Market knowledge can be defined as a strategic asset of an organization to enhance its new product's advantage (Li & Calantone, 1998). Market knowledge is measured as the ability to assess the potential of new markets, which is measured by using an ordinal scale where this is defined as high ability to access market knowledge (2), ability of market knowledge present (1), neutral ability (0), or low ability to assess market knowledge (-1).

Business model can be defined as the content, structure and governance of transactions designed so as to create value through the exploitation of opportunities (Chesbrough, 2010). This

independent variable can also be defined in a more extended categorical level, where we measure the following: a lacking model (0), weak model (1), sufficient model (2) or a strong model (3).

Balanced founding team can be defined as a team that consists of various individuals with different types of knowledge in order to solve complex solutions which leads to a higher possibility of breakthroughs (Bercovitz & Feldman, 2010). Properly balanced entrepreneurial founder team is measured as either present, meaning there is a good, balanced founding team (1), neutral (0), or no properly balanced entrepreneurial founder team, which means lacking team (-1).

USO funding is used as an independent variable that confirms whether the USO received the funding (1) or did not receive the funding (0). Here, the USO funding is used as the independent variable and ***USO survival*** is used as the dependent variable, USO survival can also be measured as a dummy variable. If the USO still existed after 5 years we state the USO survived (1), if the USO did not survive, there is no existence after 5 years (0). We are going to measure this because we want to see whether the funding plays a role in the survival of USOs.

3.2.3 Control variables

Control variables are used to help capture the impact of other external variables in addition to the independent variables (Field, 2009). Controls help to check variance in the dependent variable or outcome (Field, 2009). It is controlled because it could influence the outcomes (Field, 2009). Five control variables have been used. The first control variable is the type of industry a USO operates in. This is a nominal variable, and it will be measured by grouping the USOs according to their industry and then looking at their NACE code (NACE Codes, 2020). The NACE codes are a European standard classification system for classifying business activities (NACE Codes, 2020). The second control variable used, is the number of publications of the researcher which is measured as an ordinal variable. This gives an indication of how good the researcher is. The higher the number of publications, the better the researcher. It is believed that when the researcher is very good, the better the startup of this specific researcher will be. Therefore, we assume that the specific researcher has a higher chance of receiving funding. Parent university is used as the third control variable. This is a nominal variable and is measured by the parent university through which the USO is developed. The variables business planning and motivation and commitment are also used as control variables. Business planning is measured as an ordinal variable scored from 1-5. When the structured planning is lacking and therefore below average, we give a score of 1, when there is a clear and structured planning which means the business planning is sufficient, we give a score of 3, when there is a comprehensive and efficient planning approach which means we have an excellent business planning, we give a score of 5. The variable motivation and commitment is also measured as an ordinal control variable, scored 1-5. The motivation and commitment variable cannot be justified and therefore below average (1), clear motivation and commitment is present which means sufficient (3) or excellent which means very convincing motivation and team commitment (5).

3.3 Data collection

To conduct a comprehensive analysis and test our proposed hypotheses, this study builds on a fully aggregated and anonymized research dataset provided to the author of this study. To construct a part of our independent variables, we used content analysis on the aggregated evaluation results regarding feasibility and valorization potential of selected USO proposals. To further enhance our research model, we retrieved information regarding the performance of business incubators and technology transfer offices of the leading Dutch technical universities from their websites and open-source reports. We also retrieved scientometric information about the scientific output and its impact (i.e., the number of peer-reviewed publications, citations, citation networks) in the past 20 years by the leading Dutch technical universities. We further matched the research fields of publications and USO grant proposals with the NACE industry codes.

3.4 Analysis

In this report, we derive new theories and concepts based on data with grounded theory. Open coding is the first step in the analysis of qualitative research (Danneels, 2015). Quantitative methods are able and efficient for testing hypotheses (Sofaer, 1999). With open coding the data is broken up into discrete parts and "codes" are created to label them. The goal of open coding is to open up new theoretical possibilities and being able to continuously compare and contrast similar events in the data (Corbin & Strauss, 1990). This has been done by breaking up and transforming the text in our data set. We divided the text into four discrete categories which are marketing competence, R&D competence, technological competence and customer competence (Danneels, 2015). The second step of coding that follows is axial coding. With axial coding connections between codes are drawn in order to organize the codes developed in open coding. A deeper look is taken into the underlying data to find how the codes can be grouped into categories (How To Do Open, Axial and Selective Coding in Grounded Theory, 2020). We did this by transforming the four big discrete parts into fifteen clear variables. The last step in grounded theory is selective coding. In this step, all categories are connected around one core category. It connects categories that already have been developed from the qualitative data in previous steps. In this thesis, it connects the categories *technological innovation, market knowledge, business model* and *properly balanced entrepreneurial founded team* to the core category which is ***USO funding*** (How To Do Open, Axial and Selective Coding in Grounded Theory, 2020). To predict the relationship between our independent variables and dependent variables, the statistical technique binary logistic regression is used (Binary Logistic Regression, 2012). This method is used since the dependent variable is binary, which means that within this numeric system, only two digits can be used which are 1 and 0 (Binary, 2018). In our data, we can say that a 1 stands for "received the governmental funding" and a 0 stands for "not received the governmental funding". Binary logistic regression predicts the odds of either being the case. The odds are the probability of the two alternatives modelled (Binary Logistic Regression, 2012). So, we predict the chance of having a positive relation between the variables and USO funding (What is logistic regression?, sd).

4. RESULTS

This section starts with insights in the performed analysis. Next the correlation table and the results of the binary logistic regression analysis will be compared and discussed.

4.1 Performed analysis

Before we discuss the results, we are going to reflect on the coding procedure. Open coding has been done by breaking up the text and transforming it into four discrete categories which are marketing competence, R&D competence, technological competence and customer competence (Danneels, 2015). To bring the number of open codes down into small numbers of specific codes, a content analysis of selective coding was used. The codes were grouped regarding factors that are associated with success factors of entrepreneurship such as customer focus,

market knowledge, properly balances entrepreneurial founder team, business model, IP position and technology innovation. The content analyses have provided us with the most important information concerning the USOs success factors. We relied on the expertise of the evaluation committee members of the Valorization Grant. For example, *"market knowledge and commerce are weak"* as mentioned in USO 176 of our dataset, is a negative comment about market knowledge, whereas "*experienced team, team presentation strong*" as mentioned in USO 135 of our data set, is used as a positive comment regarding a balanced founding team. This was done to all the 242 USOs (*N* = 242) in our dataset. When all the data was coded properly, we arrived at the numbers as shown in table 4.1 in the appendix. To say something about USO survival, all the unknown data of USO survival was filtered out. The sample size for USO survival exists of 103 USOs (*N*=103).

4.2 Empirical context

In table 4.1 and 4.2 of the appendix, an overview of descriptive statistics and correlations for all the variables used in this report is presented. The sample size of table 4.1 consists of 242 (*N* = 242) individual USOs and the sample size of table 4.2 consists of 103 (*N=103)* USOs, which means that the assumption of having a large sample size was accomplished. For now, we take a close look at table 4.1. The assumption of appropriate outcome structure can also be guaranteed because the outcome variable should be a binary variable. In this case the outcome variable which is the dependent variable *USO funding* is a binary variable, it can only have the value 1 which means received the funding or it can have the value 0 which means did not receive the funding. We can state that 41% (mean = .41) of all USOs in our sample gained the funding. This is quite high compared to the general survival rate of start-ups, but these USOs are actively operating and aiming for requiring the funding. It is interesting to see that the correlations between independent variables *market knowledge* (.266), *business model* (.309) and *balanced founding team* (.323) in relationship with our dependent variable USO funding are statistically significant. This means that there is a positive relationship between our independent variables and our dependent variable. Between our independent variable technology innovation and our dependent variable USO funding, a negative relationship was found (-.35). We can state that the independent variables do not correlate too highly with each other because the variance inflation factor (VIF) values are lower than .5 which means that they are below the critical threshold. Thus, it can be stated that assumption of the absence of multicollinearity is accomplished. In order to make sure that the assumption of observation independence is accomplished, logistic regression observations need to be independent of each other. In other words, the observations should not come from repeated measurements of matched data. Table 4.3 presents the results of binary logistic regression with the dependent variable USO funding and table 4.4. presents the results of binary logistic regression with USO survival used as the dependent variable. These tables show that we contribute to the assumption of linearity of independent variables and log odds, since logistic regression assumes linearity of independent variables and log odds. Although this analysis does not require the dependent and independent variables to be related linearly, it requires that the independent variables are linearly related to the log odds. Now, a further explanation of the tables will be given; In model 1 the effect of all the control variables on the dependent variable were analyzed. In model 2 the effect of all the control variables and the first independent variable, which is technology innovation, on the dependent variable were analyzed. Model 3 analyses the effect of all the control variables and the second independent variable which is market knowledge. Model 4 examines the role of all the control variables and the independent factor business model. Model 5 examines the role of a balanced founding team on the dependent variable. Model 6 investigates the role of the business planning and in model 7 the role of all the controls and the variable motivation and commitment on the dependent variable are investigated. Model 8 consists of a full model which includes all independent variables and control variables.

Table 4.3 and 4.4 in the appendix show the result of binary logistic regression. In table 4.3, we can see that the control variable industry shows a negative value. This means that the odds of gaining funding decrease. However, identified industries and differences in them do not play a role in the process and likelihood to acquire funding. Table 4.4 presents a positive effect from industry on USO survival, but both results are insignificant, further conclusions should be based on additional research. Concerning the controlled effect on the number of publications and the parent university we can say that the parent university in both tables has a positive effect on both receiving funding and USO survival. The control variable number of publications has a minor positive effect on receiving funding but a slightly negative effect on USO survival. The controlled variables have not shown any significant results. Table 4.3 and table 4.4 have been used to analyze our hypotheses.

In hypothesis 1, the assumption was made that technology innovation has a positive effect on USO success. Since USO success was defined as the likelihood of acquiring the funding, the results of table 4.3 are the most interesting for our hypotheses. USO survival has also been taken into account, the results of logistic regression can be found in table 4.4. Model 8 of table 4.3 shows a positive relationship between technology innovation and receiving the funding (B=.84), whereas table 4.4. shows a negative relationship between technology innovation and USO success (B=-.306). Since both results are insignificant, hypothesis 1 is rejected.

In hypothesis 2 there was assumed that having market knowledge has a positive effect on USO success. Both tables are showing a positive relationship on the dependent variable. The positive relationship between market knowledge and receiving USO funding can be confirmed as shown in table 4.3 model 8, since the relationship is significant (B=.479, $p<0.05$). Therefore, we can state that hypothesis 2 can be confirmed which means that market knowledge positively affects gaining USO funding. The relationship between market knowledge and USO survival is also positive (B=.117) but there is no significant relationship.

Hypothesis 3 stated that having a good business model will have a positive influence on USO success. Table 4.3 shows a positive but insignificant relationship on receiving funding (B=.267). However, if we consider the variable business planning which has a lot in common with the variable business model, we are facing a positive and significant relationship between business planning and receiving funding (B=2.979, $p<.01$). Table 4.4 shows a negative and insignificant relationship between business model and USO survival (B=-.095). Taking business planning into account, there is a positive but still insignificant relationship (B=.781). Hypothesis 3 is rejected.

Hypothesis 4 proposed that having a balanced founding team has a positive influence on USO success. As shown in table 4.3 there can be stated that there is a positive but insignificant relationship between a balanced founding team and receiving funding (B=.161). If taken into account the variable motivation and commitment, which maybe can be related to a balanced founding team, we can see that there is a positive and significant relationship (B=2.524, $p<0.01$). Table 4.4 presents a negative insignificant relationship between a balanced founding team and USO survival (B=-.193), even when we take into account the

variable motivation and commitment, the relationship remains insignificant, but there is a positive relationship (B=.050). That is why hypothesis 4 is rejected.

Hypothesis 5 proposed that acquiring early-stage USO funding would increase the USO likelihood for survival. A separate analysis was conducted to make sure that the result would not influence other models. The results of this binary logistic analysis can be found in table 4.5 model 2 of the appendix. According to the results of this analysis, we can conclude that we are dealing with a positive and significant relationship (B=.951, p<.05). Therefore, hypothesis 5 can be confirmed.

5. DISCUSSION

USOs have become more popular over the past years because a rapid increase in technology-based economic development initiatives took place (Wright & Siegel, 2015). These initiatives lead to significant changes in research commercialization because they diffuse developed technologies and transfer knowledge to industry. Therefore, USOs are important mechanisms to generate economic, technological and societal impact (Wright & Siegel, 2015). Despite the positive messages, most of the academic ventures fail or do not generate the expected outcomes because the commercialization process is too complex and dependent on factors such as liabilities of newness and smallness. To overcome these situations, USOs need financial resources which can be provided by the Dutch Research Council (NWO, 2021). Governmental organizations want to provide funding because the production and utilization of knowledge is becoming an increasingly crucial factor of economic growth and competitiveness of nations, and their constituent private sector business (Davey, 2016). The amount of funding is very limited and cannot be provided to every startup. Therefore, it was examined which key factors positively influence early growth stage entrepreneurial success for small business startups in order to acquire early-stage funding.

The results show the association between different key factors influencing the decision of obtaining funding, and key factors influencing USO survival. Looking at the dependent variable 'receiving funding', it can be seen that the factors which matter are ***market knowledge, business planning*** and ***motivation and commitment***. When taking a look at the dependent variable USO survival it was found that none of the factors are significant.

First, a look was taken at the role of technology innovation on USO success. As mentioned in the results section, this hypothesis should be rejected. Both for funding and survival we see that technology innovation has no significant impact. According to Gubitta et al. (2015) this can be confirmed because in order to provide funding, the government takes a high risk when investing in small and immature companies. Capital is hard to attract, the high uncertainty and significant monitoring costs of assessing early-stage investments in technology and science-based fields mean that few capital investments are made before a proof of concept becomes available (Gubitta, Tognazzo, & Destro, 2015). The level of uncertainty and information asymmetry hinders the external assessment of the potential of the technology, consequently the ability to attract external capital can therefore become either very expensive or it can become impossible to obtain (Gubitta, Tognazzo, & Destro, 2015). However, Gubitta et al. (2015) also stated that technology endowment for spin-off companies is strongly related to the patent(s) licensed from the parent university. Spin-offs with more effective patents were more likely to obtain financing (Gubitta, Tognazzo, & Destro, 2015). Thus, even though there was no connection found between technology innovation and USO success in this thesis, it is recommended to scholars that future studies examine whether this link does appear to exist when examining spin-offs.

Secondly, the effect of market knowledge on USO success was examined. This study contributes to research done by Danneels (2016) and Rasmusses et al. (2011) and Li & Calantone (1998), as they stated that companies should have the ability to see new markets in order to be successful. This perfectly fits with the results of this thesis, because having high market knowledge is significant. When a company is capable of identifying the needs of customers and making sure that market research has been done properly, they have a significant chance of gaining funding because they can make sure the demand, likeability and need for the invention are known. Therefore, information asymmetry decreases and the chance for USOs to become successful increases. This ensures that organizations such as the government, who provide financing to startups think they run less risk and are therefore more inclined to invest.

Third, the effect of the business model on USO success was looked at. It was assumed that having a good business model would lead to USO success, but the results did not confirm this. However, according to Chesbrough (2007) having a good business model is important for receiving the funding because a firm has to show their potential for the creation of value and uniqueness, which creates a great business opportunity (Chesbrough H. W., 2007). What is quite striking is that business planning does show significant results. With business planning we mean having objectives, generating strategies, evaluating strategies, monitoring the process and commitment to the process (Kraus, Harms, & Schwarz, 2008). According to Kraus et al. (2008) small firms, particularly start-ups, which use strategic planning techniques are more likely to become successful than those of non-planning firms. Ineffective planning is regarded as one of the main reasons for firm failure and can be reduced by a high degree of strategic planning (Kraus, Harms, & Schwarz, 2008). Kraus et al. (2008) concluded that planning positively affects success. Some recommendations for further investigation on this variable are; doing a different study with a different sample in order to make sure that outcomes are significant or split the variable business model up into different smaller variables in order to check if maybe a specific part of the business model is significant. It is hoped that this study will stimulate further investigations in this factor.

Fourth, we thought that having a balanced founding team would lead to USO success. We assumed that for a team to be successful and come up with very novel combinations with a high degree of differentiation, the team members should have different knowledge grounds (Bercovitz & Feldman, 2010). Our results show that there is no significance which means that we cannot confirm this. What is very interesting is the fact that having motivated and committed team members is significant. There can be stated that maybe the balanced founding of the team is not that important but how motivated and committed the team members are is really important. This makes sense because when you have very skilled team members, but they are not willing to work and use their skills, the outcomes will not be very promising. Peterson (2007) confirms this by saying that the level of enthusiasm applies towards project efforts and has a direct impact on the project results. Motivation can inspire, encourage, and stimulate individuals to achieve common goals through teamwork (Peterson, 2007). A project can be derived towards project success through the creation and maintenance of a motivation environment for all members of the team (Peterson, 2007).

Fifth, the role of receiving funding in relation to USO survival was assessed. It can be confirmed that receiving early-stage governmental funding is a key factor for USO survival. This means that when an USO receives funding the USO is more likely to survive. Consequently, it can be concluded that the

NWO is doing a great job by providing governmental funding, and that the funding is highly valuable for USOs. When a spin-off is not funded sufficiently, it also has a weak bargaining power for high investment in product-related factors, because the budget constraints caused by a lack of funds result in less freedom to invest in the best managers who are well connected and trusted in the venture capital environment (Gubitta, Tognazzo, & Destro, 2015). For future research it is recommended to further investigate the way upon which an USO is most eligible for gaining funding. A few factors were investigated in this study, but it is recommended to look at new factors that can play a role in attracting funding.

5.1 Theoretical implications

We can conclude that this study presents new findings that contribute to the model of Vohora et al. (2004). The application of this model clarified the moment an organization is ready to move phases and overcome the critical junctures (Vohora, Wright, & Lockett, 2004). In this study we wanted to move from phase one: the research phase, to phase two: the opportunity framing phase (Vohora, Wright, & Lockett, 2004). In order to do so, critical juncture A: opportunity recognition, needs to be overcome. Opportunity recognition is the match between an unfulfilled market need and a solution that satisfies the need that most others have overlooked, which involves breakthrough ideas that trigger an evaluation as a precursor to the formation of commercialization effort (Vohora, Wright, & Lockett, 2004). The findings of this thesis that market knowledge, business planning and motivation and commitment are relevant, fits very well in order to overcome this critical juncture. Market knowledge ensures that the market need is fulfilled, which means that the startup is capable of identifying the demand, likeability and needs for the invention. When a clear business planning is incorporated, we make sure that objectives and strategies are clear. When a team is highly motivated and committed, they are willing to work in order to make the business successful. Combining these results, we are able to receive funding and move phases. There are a few more recommendations for further research, which will be mentioned later.

5.2 Managerial and policy implications

This study contributed to prior literature on academic entrepreneurship and USO success. New key success factors which are; technology innovation, market knowledge, business model and balanced founding team have been identified in order to contribute to gain early-stage governmental funding. Our study indicates new factors that play a role in predicting if an USO can gain early-stage governmental funding. It is thus recommended to USO teams and managers to take these factors into account when aiming for success. Since we concluded that motivated and committed team members increased the likelihood of gaining funding it is important for managers to make sure that the members of a team stay motivated and committed. This will increase the likelihood of becoming successful. As stated before, USOs contribute significantly to the development and innovation of industries, they have a unique role in innovation in general and they have an important effect on the economy. This study also contributes to academic entrepreneurs, after reading this paper new factors are identified which can help them to acquire funding. According to Bednar et al (2017) gaining funding in the early stages of development can be crucial for startups since they are not able to generate profits. That is why it is crucial for entrepreneurs to gain the right knowledge on what helps them gain this funding. This study is also interesting for policymakers. The NWO for example can see which factors are leading to gaining early-stage funding. They can change their criteria and incorporate the results of this study. This makes sure that governmental money is spent wisely. This study can also contribute to the assessors of the proposals, they can take a look at for example the motivation and commitment of the team members, business planning and market knowledge of an USO since this was a significant factor for deciding on funding. When this is done, the likelihood that governmental money will be spent properly increases. Since we found that an USO who received funding is more likely to be successful the more important it is to spend the money well. Our results showed that receiving funding is important for USO survival. USOs do need the money in order to overcome the critical junctures, and we can conclude that the money is well spent since we confirmed that it helps USOs to survive. USO success will contribute to our economic environment because of the economic, technical and societal impact that USOs can generate.

5.3 Limitations & Future research avenues

The greatest strength of this research is that our data set consists of both USOs who received the funding but also USOs who were not able to receive the funding. Therefore, we can compare cases which also made the sample more representative. Another strength of this research is that the information was coded in a reliable and objective manner because multiple students independently coded the data, the data was also double coded which means that at least two individuals coded the same data independently to make sure all the data is coded properly, this contributed to the overall reliability and validity. A detailed data set was built which exists out of mutually exclusive categories who are related with theory.

Even though multiple strengths have been identified, there are also some limitations that should be noted. The sample sizes were not very big (N=242, N=103). The sample size for USO survival was relatively small (N=103). This might have contributed to the fact that no significant relationships were found between the variables in model 4.4, model 8. The only relationship that was identified is the relationship between funding and USO survival (Table 4.5). The assumption is made that there are more factors that can play a role in USO survival. Therefore, it is recommended to do further research into factors that do lead to USO survival. When taken into account the data set of USO funding, it seems that a larger dataset could result in significant differences. Furthermore, the dataset consists of only Dutch USOs, which means that in order to extend these findings to other institutional environments, the necessity for researchers to conduct this in a cross-country setting exists. This research can only be applied on a regional and national level but not on an international level because of the different policies applying in other countries. Since USO development is a highly dynamic and multi-stage process we could not take every factor into account. Therefore, it could be that some really important factors, which could be relevant for gaining USO funding or for USO survival, are missing. In conclusion, some suggestions for further research can be done. Firstly, it is recommended to perform this research again with a larger sample size. We also suggest further investigating different factors that can be of great importance for receiving USO funding and/or USO survival. For this study only four independent variables have been choses based on prior literature. However, it is possible that certain papers were missed which were considering other factors as well. Technology transfer offices, such as for example Novel-T, or patent(s) licensed from the university can for example be of great importance for USOs, therefore further research is suggested. Further research could also dive more deeply into differences between the variables which means that one factor may be more important than another one, this can also be further investigated.

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8. APPENDIX

Table 4.1 Range, means, standard deviations and correlations of the variables (N = 242)

	Minimum	Maximum	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
[1] USO funding	0	1	.41	.493	1									
[2] Technology innovation	-1	2	.59	.851	-.35	1								
[3] Market knowledge	-1	2	.17	.974	.266**	.041	1							
[4] Business model	-1	3	.4	.892	.309**	.062	.231**	1						
[5] Balanced founding team	-1	1	.13	.66	.323**	.035	.114	.160*	1					
[6] Business planning	1.5	4.57	3.15	.713	.698**	-.080	.212**	.350**	.370**	1				
[7] Motivation and commitment	1.71	4.83	3.68	.636	.631**	-.083	.143*	.271**	.430**	.775**	1			
[8] Industry	0	19	8.49	6.21	-.086	-.078	-.037	.044	-.101	-.069	-.058	1		
[9] Number of publications	1	703	128.6	129.39	.011	-.038	-.129*	-.034	.068	.012	.042*	-.103*	1	
[10] Parent university	1	22	4.401	4.387	.027	.020	-.048	-.070	-.008	.011	.006	-.049	.044	1
N of cases 242														

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Table 4.2 Range, means, standard deviations and correlations of the variables (N = 103)

	Minimum	Maximum	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
[1] USO survival	0	1	.50	.502	1									
[2] Technology innovation	-1	2	.50	.815	-.186	1								
[3] Market knowledge	-1	2	.19	.908	.127	-.131	1							
[4] Business model	-1	3	.30	.895	.073	-.099	.157	1						
[5] Balanced founding team	-1	1	.14	.642	.028	.076	.156	.065	1					
[6] Business planning	1.5	4.57	3.13	.670	.284**	-.261**	.250*	.378**	.312**	1				
[7] Motivation and Commitment	1.71	4.83	3.66	.583	.215*	-.147	.146	.299**	.365**	.786**	1			
[8] Industry	0	19	8.49	6.210	.078	.102	-.007	-.031	.096	.021	.057	1		
[9] Number of publications	1	703	144.61	140.632	-.040	-.067	-.180	-.087	.081	-.030	.058	.071	1	
[10] Parent university	1	22	4.401	4.387	.092	.012	.67	.008	-.001	.106	.117	-.049	.003	1
N of cases 103														

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Table 4.3 Binary logistic regression results. Dependent variable: USO development funding

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.
Constant	-.187	.301	-.129	.322	-.446	.319	-.544	.327	-.420	.323	-14.024**	1.906	-17.281**	2.307	-20.233**	3.028
Technology innovation			-.081	.157											.084	.248
Market knowledge					.587**	.146									.479*	.228
Business model							.801**	.172							.267	.279
Balanced founding team									1.098**	.231					.161	.382
Business planning											4.174**	.551			2.979**	.615
Motivation and commitment													4.465**	.582	2.524**	.686
Industry	-.026	.022	-.027	.022	-.023	.022	-.034	.023	-.018	.023	-.022	.032	-.033	.030	-.031	.036
Number of publications	.000	.001	.000	.001	.001	.001	.000	.001	.000	.001	-.001	.001	.000	.001	.000	.002
Parent university	.007	.030	.007	.030	.015	.031	.020	.032	.010	.031	.024	.044	.020	.042	.034	.050
-2 Log likelihood	324.062		323.794		306.788		298.699		298.126		165.064		184.862		139.517	
Nagelkerke R Square	.009		.010		0.102		.143		.146		.656		.597		.726	
N = 242																

*p<0.05, **p<0.01 ; Hosmer and Lemeshow is not significant (p>0.05)

Table 4.4 Binary logistic regression results. Dependent variable: USO survival

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.	B	s.e.
Constant	-.302	.414	-.079	.438	-.375	.422	-.374	.426	-.304	.414	-2.850**	1.067	-2.889*	1.378	-2.737	1.553
Technology innovation			-.485	.264											-.306	.281
Market knowledge					.246	.228									.117	.247
Business model							.172	.225							-.095	.254
Balanced founding team									.086	.314					-.193	.362
Business planning											.828**	0.315			.781	.530
Motivation and commitment													.730*	.367	.050	.598
USO funding																
Industry	.027	.032	.033	.033	.000	.032	.028	.032	.026	.032	.027	.033	.025	.032	.032	.034
Number of publications	-.001	.001	-.001	.001	.000	.001	-.001	.001	-.001	.001	-.001	.001	-.001	.001	-.001	.002
Parent university	.045	.051	.047	.053	.042	.051	.045	.051	.046	.051	.031	.052	.034	.052	.030	.053
-2 Log likelihood	139.531		136.000		138.351		138.942		139.455		131.996		135.340		129938	
Nagelkerke R Square	.024		.069		.039		.032		.025		.117		.077		.142	
N = 103																

*p<0.05, **p<0.01 ; Hosmer and Lemeshow is not significant (p>0.05)

Table 4.5 Binary logistic regression results. Independent variable USO funding, dependent variable: USO survival

	Model 1		Model 2	
	B	s.e.	B	s.e.
Constant	-.302	.414	-.533	.437
USO funding			.951*	.440
Industry	.027	.032	.017	.033
Number of publications	-.001	.001	-.001	.001
Parent university	.045	.051	.045	.052
-2 Log likelihood	139.531		134.699	
Nagelkerke R Square	.024		.085	
N = 242				

*p<0.05, **p<0.01 ; Hosmer and Lemeshow is not significant (p>0.05)