Analysis of the implementation and evolution of the information system Dreamshaper within Associação Acredita Portugal

Fernando Miguel Fraga
Instituto Superior Técnico

Abstract

The Associação Acredita Portugal is a non-profit organization that promotes entrepeneurship and helps thousands of entrepreneurs every year in launching their projects (Associação Acredita Portugal, 2018; João Wengorovius Meneses et al., 2012; Jornal Económico, 2016; PME Magazine, 2018). Dreamshaper is one of the information systems that the organization uses to support entrepreneurs in a more scalable way (Dreamshaper, 2020; Laranjeiro, 2019; Macias de Castro, 2017). Despite initially considering the implementation of Dreamshaper in Acredita Portugal a success, it had never been developed an analysis to determine the real impact of the information system to its users (Acredita Portugal, 2020). As a way to understand the impact of the information system to the supported entrepreneurs, this is, if the impact has diminished or if updating the information system and its contents would lead to a greater impact to the entrepreneurs, the survey method and the framework CCP to develop a study that used the answers annually to the questionnaires of satisfaction given by the participants of the entrepreneurship competition of Acredita Portugal (Fowler Jr., 2014; Roberts, 1999; Stockdale & Standing, 2006). It was verified that despite the existence of an increase of satisfaction and learning experience in the year posterior to the implementation of Dreamshaper, both decreased gradually as the years passed. Therefore, complementing this information with the analysis of other data, the impact on the entrepreneurs by the information system Dreamshaper has a positive impact the use it, however the information system should suffer an update to maintain its usefulness to the target-audience. Besides being used as the basis of this study, the results and analysis we're also published has a dashboard that shall be used by the Associação Acredita Portugal in a updates, impact and evolution of the information system.

Keywords: Acredita Portugal, Dreamshaper, IS, assessment, impact

1. Introduction

The use of increasingly automated information systems (IS) within the scope of the third sector is recognized as one of the factors that allow associations to obtain a higher level of differentiation and competitiveness, and their correct implementation is essential in the sustainable growth of social organizations. (Jones & Hughes, 2001)

This dissertation intends to analyze the implementation of the Dreamshaper information system within the context of the Associação Acredita Portugal, to evaluate the results of this implementation and to propose points of improvement to the information system that promote a better integration of it in the context of the association and in the user experience.

The results of the developed analysis will be implemented by the Associação Acredita Portugal in the development of new information systems that contribute more effectively to the promotion of the association's objectives and by Dreamshaper to better adapt its information system to the needs of the social sector.

2. Research Hypothesis

Throughout the dissertation, it was addressed the implementation and evolution of the Dreamshaper information system within the scope of Associação Acredita Portugal.

Although the initial implementation of Dreamshaper in the scope of Acredita Portugal was considered a success by the Association's team, the partners and the entrepreneurs with whom it had a greater contact,(Acredita Portugal, 2020) an analysis was never carried out allowing to understand the real impact of this IS for users. Thus, the main question addressed by this dissertation analyzes “What is the impact of the IS on supported entrepreneurs?” having as a proposed hypothesis (H1) that, as directly observed, “SI Dreamshaper proved to be more effective in providing support to entrepreneurs than the system used before implementation”.

On the other hand, although useful, the SI version used by Acredita Portugal has not undergone any significant changes over the past few years (Dreamshaper, 2020). It is natural that, with the passage of time, it is necessary to update the SI and its contents, at the risk of it being able to reduce its impact on entrepreneurs if it is not maintained and updated. Thus, a parallel question arises that is also analyzed throughout the dissertation and which can be subdivided into two separate questions. The first one (Q2.1) addresses whether “Over the years has the IS impact on the target population decreased?” the second if (Q2.2) "Would updating the SI and its contents lead to a greater impact?" proposing as an answer hypothesis that, effectively, (H2.1) “The impact of the SI has decreased over time” and that (H2.2) “Updating the SI and its contents would be beneficial for the association and entrepreneurs ”.

3. Developed Analysis

In order to develop the desired analysis, the answers given to the most relevant questions for the topic were used as part of the satisfaction and evaluation surveys distributed by the association at the end of each year of implementation with the respective users. Subsequently, an analysis methodology was used, which was based on the survey methodology and which allowed a first interpretation of the evolution of the implementation of the information system in the context of the association (Andrews, 1984; Ballantine & Stray, 1999; Bethlehem, 2009). Finally, the results of this analysis were presented to the team responsible for the implementation of Dreamshaper in the context of the Associação Acredita Portugal and an interview was carried out that allowed to evaluate the results obtained and potential actions to be implemented based on these same results (King et al., 2019; Roulston, 2010; Rowley, 2012).

4. Obtained Results

4.1. Comparing the years before and after implementation

4.1.1. Satisfaction changes and the usefulness of the IS

Although it is natural to have some resistance when a new IS is implemented, based on the responses obtained, it was possible to trace *Table 1 Satisfaction Average Value in the year before and after the implementation of the IS (1 to 4 scale)*.

Year	Satisfaction Average Value
Year -1	2,626
Year 1	3,182

Table 1 Satisfaction Average Value in the year before and after the implementation of the IS (1 to 4 scale)

Comparing the two values, we easily notice that there was a considerable evolution in satisfaction with the SI after the implementation of Dreamshaper. Although these values do not mean that the system was more effective, they reveal that it was at least preferred by the users.

To better understand the changes that took place at the level of utility, Table 3 - Video Usefulness Average Value in the year before and after to the implementation of IS (1 to 5 scale) and Table 4 - Examples Usefulness Average Value in the year before and after to the implementation of IS (1 to 5 scale)

Year	Average value of filling facility
Year -1	2,725
Year 1	2,861

Table 2 - Average value of the ease of filling in the year before and after the implementation (scale 1 to 5)

Year	Video Usefulness Average Value
Year -1	3,943
Year 1	3,315

Table 3 - Video Usefulness Average Value in the year before and after to the implementation of IS (1 to 5 scale)

Year	Average Value of Examples Usefulness
Year -1	4,078
Year 1	3,621

Table 4 - Examples Usefulness Average Value in the year before and after to the implementation of IS (1 to 5 scale)

Comparing both tables, we verified a decrease in the utility attributed to the tool. This decrease should be discussed as it is accompanied by an increase in satisfaction (how is the SI less useful but more satisfying the target audience?).

4.1.2. Changes in ease of completion and number of questions

Likewise, the average value for the questions "Do you think that the tool is easy or difficult to fill in?" and "Do you think the tool has too many questions or, on the contrary, would you like to have more intermediate questions that help 'getting into' new concepts?".

Year	Average value of the number of questions
Year -1	1,780
Year 1	1,626

Table 5 - Average opinion value on the number of questions in the year before and after implementation (scale from 1 to 3 ,1 represents “few questions”, 2 represents “ideal” and 3 represents “more questions”)

Through this calculation, it is possible to see that with the implementation of IS Dreamshaper the ease of filling slightly increased even though, in the opinion of users, the number of questions was further from the ideal than with the previous SI. In both cases the change is only slight, and it can be discussed why such a small change when a new information SI was implemented that apparently had such an impact on the Association.

4.2. IS Evolution

4.2.1. Evolution of satisfaction and learning obtained with the information system

Although there is a clear increase in satisfaction with the implementation of the IS, it is equally important to understand how satisfaction has evolved over the years of use. For this, the average satisfaction values in each year were calculated and plotted in the Figure 2 - Evolution of satisfaction with the SI over the years.

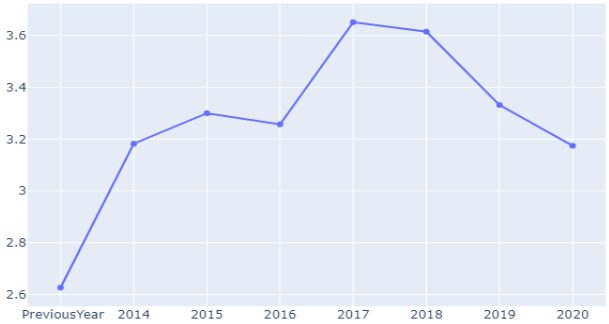

Figure 2 - Evolution of satisfaction with the SI over the

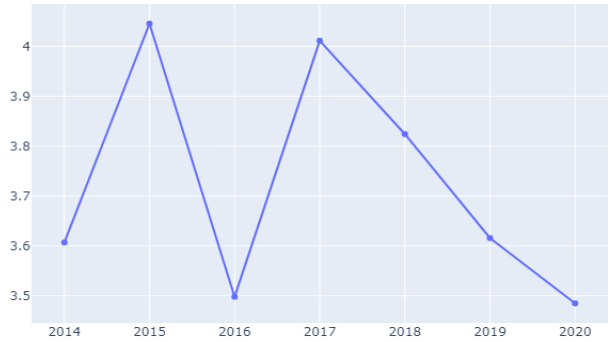

Figure 1 - Evolution of IS learning over the years

On the other hand, the same reasoning can be applied to the amount of learning. The evolution of the answers to the question "How much did you learn from DreamShaper?" over the years has been traced in the Figure 1 - Evolution of IS learning over the years. Both figures can be superimposed (Figure 3 - Evolution of IS satisfaction and learning over the years), verifying that there is an apparent correlation between how much was learned and how much users were satisfied with the IS.

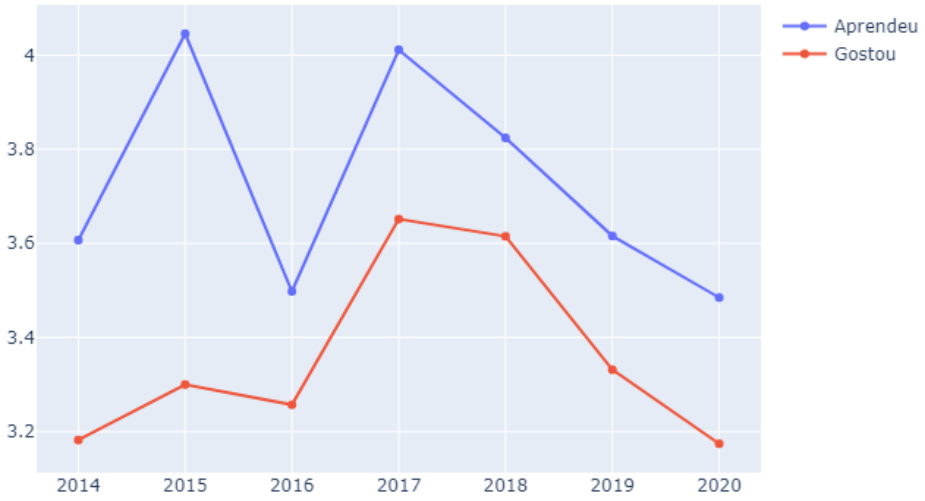

Figure 3 - Evolution of IS satisfaction and learning over the years

4.2.2. Evolution of the positive and negative aspects of the IS

Finally, it is necessary to analyze the evolution over the years of aspects marked as favorites and least appreciated on the platform. For that, the Figure 4 - Evolution of the preferred aspects in the SI over the years was traced as well as the Figure 5 - Evolution of the aspects less appreciated in the IS over the years, that allow to graphically represent this evolution.

Within the various aspects contemplated as preferred, the “Visual aspect”, “Navigation in the tool” and “Business Model” are constantly highlighted.

The components of "Videos" and "Examples", although relevant, have been inconsistent over the years, which may be related to small changes made in specific editions where the data show a greater difference in relation to their general trend.

Among the aspects least appreciated by users, the "Access to external resources", "Interface indications", "Team wall" and "Team management" stand out.

It should also be noted that although, as mentioned, “Navigation in the tool” continues to be one of the aspects most indicated as preferred, it presents less and less answers in this sense and one appears in more and more answers as a less appreciated aspect. The analysis of this component should be something to be further developed by the Acredita Portugal team.

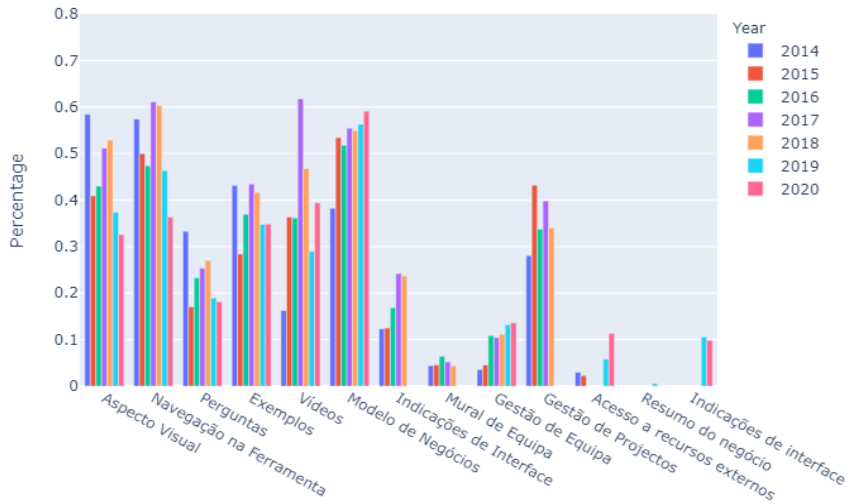

Figure 4 - Evolution of the preferred aspects in the SI over the years

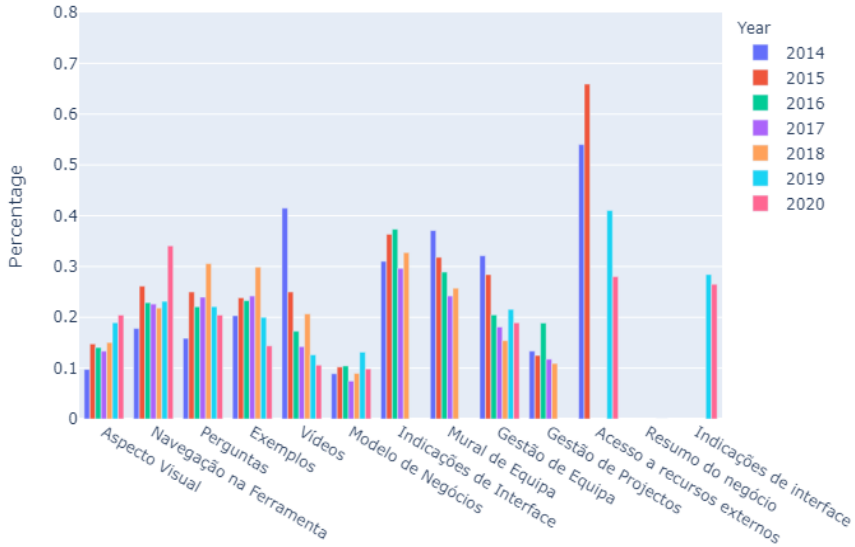

Figure 5 - Evolution of the aspects less appreciated in the IS over the years

5. Discussion of results

5.1. (Q1) What is the impact of the IS on the supported entrepreneurs?

Although a decrease in the usefulness of the examples and videos was identified in the year after the implementation, it is important to note that it is accompanied by an increase in satisfaction with the IS. This change may seem strange, however, it is justified if it turns out that the main factors that lead to satisfaction or not with the tool are not correlated (or have a low correlation) with the usefulness of the videos and examples presented in it. This is one of the points that should be discussed with the Acredita Portugal team during the interview and that can serve as a basis for them to come to better understand what really influences user satisfaction with this IS.

Regarding the ease of use and users' perception of the number of questions, the change is only slight, and it can be discussed why such a small change when a new information was implemented in the IS that apparently had such an impact on association. The main reason that the difference is not very pronounced is related to the professionalization of the association and to the complexity of the information necessary to be able to complete the participation in the contest. According to the information available on the association's website, (Acredita Portugal, 2020) in the year prior to the implementation of SI Dreamshaper there were a total of 2965 participants. This number, although high, is far from the 14238 participants in the year after the implementation. (Associação Acredita Portugal, 2018). The growth in the number of participants has made the contest itself more complex, requiring a greater number of questions (with a greater degree of complexity) in the IS itself. Thus, it is not surprising that there is an increase in ease of use (since IS Dreamshaper is simpler) despite the fact that the number of questions is far from ideal. This is only a consequence of growth and is the price to be paid for the professionalism and scale achieved.

On the one hand, although there are no more data referring only to the implementation period of Dreamshaper that can bring greater clarity about the difference between this IS and the IS that was used previously, we can assume that if the IS was not having a direct impact in the entrepreneurs who use it, neither the degree of satisfaction nor the degree of utility indicated for the videos and examples would be positive, that is, higher than the average value of the scale.

On the other hand, Figure 1 - Evolution of IS learning over the years allows us to realize that the degree of utility perceived by users over time, despite presenting an abrupt decline in 2016 and a decreasing trend, presents values clearly positive, oscillating between 3.5 and 4 on a scale of 1 to 5. The minimum values coincide with the end of a period without IS updates (last year under review: 2020) and with a team transition year in which despite of the IS has remained unchanged, the level of support given to entrepreneurs outside of the IS was considerably lower (fewer clarification sessions, longer waiting times for clarifying doubts, among others), so the learning potential using the SI has been affected.

Thus, the data obtained confirm the hypothesis presented that SI Dreamshaper has a greater impact on entrepreneurs than the IS previously used.

5.2. (Q2.1) Over the years has the IS impact on the target population decreased?

When looking at Figure 1 - Evolution of IS learning over the years it becomes indisputable that, after the initial increase, there was a gradual decrease in the degree of learning associated with Dreamshaper over time, having reached lower values in 2020 year of implementation.

5.3. (Q2.2) Would updating the IS and its contents lead to a greater impact?

This trend, accompanied by a gradual decrease in the degree of satisfaction, reinforces the hypothesis that argues that the non-updating of the IS is leading to a lower impact on the organization. Even so, it should be noted that according to Figure 5 - Evolution of the aspects less appreciated in the IS over the years the reasons for dissatisfaction that show an increasing trend are not those related to the IS content (videos, examples and questions), but components linked to the development of the same (visual aspect and navigation in the tool) that are not directly controlled by Acredita Portugal.

Thus, from the analysis of the data obtained, it seems clear that there is an urgent need for a thorough update to the SI that can only be developed in partnership with Dreamshaper itself.

5.4. Interview and discussion with the Acredita Portugal team

The interview developed was useful in confirming the conclusions reached through the interpretation of some of the data and in the joint construction of interpretations that allow to give a better answer to the questions asked and proposed hypotheses.

In the first place, it is worth highlighting the analysis made by the interviewee on the value of rising satisfaction and learning in the use of the IS. The prospect that there may be a slight bias in the responses from the nature of the contest had not been considered and brings another perspective in relation to how much this indicator could actually go up, contributing to the confirmation of H1.

On the other hand, the decline in satisfaction and learning that took place in 2016 was validated, having been validated that they were the result of internal factors that, although they do not directly involve the IS, contribute to its not being as effective as in a less atypical year.

The positive aspects and the improvement of the platform were also validated, confirming that the analysis developed in relation to the decrease in satisfaction with the IS over the years and the need to update it is shared by the Acredita Portugal team.

Finally, the usefulness of the developed dashboard was validated, with the commitment of Acredita Portugal once again to keep it up to date and functioning.

6. Conclusion

Having finished all the analysis and discussion of the results obtained, it is time to list the main conclusions reached. In this chapter, the conclusions, the main contributions generated to scientific knowledge, the existing limitations to the research developed and all future work will be listed.

6.1. Main contributions

As provided for in the introductory chapter, throughout the dissertation the implementation and evolution of the Dreamshaper information system within the scope of Associação Acredita Portugal was addressed.

Given that despite the initial implementation of Dreamshaper within the scope of Acredita Portugal, it was considered a success by the Association's team, by the partners and by the entrepreneurs with whom it had a greater contact, an analysis had never been developed that would allow to realize the real utility of this IS for users, one of the main objectives of this dissertation was to determine (Q1) "What is the impact of IS on supported entrepreneurs?" taking as a proposed hypothesis (H1) that, as directly observed, “IS Dreamshaper proved to be more effective in providing support to entrepreneurs than the system used before implementation”. It is concluded that the data obtained validate the hypothesis presented, given that there is a considerable increase in satisfaction with IS in the years after the implementation and the decrease in the usefulness considered for the videos and examples provided can be justified by increasing the usefulness of other characteristics. not monitored.

Even so, in analyzing this aspect, it is important to consider the parallel question that is also analyzed throughout the dissertation. On the one hand, it is concluded that (H2.1) is true, as soon as (Q2.1) “Over the years, the usefulness of the SI among the target population has decreased”. This decrease is mainly due to factors associated with the IS structure itself (visual aspect and navigation in the tool) and not with its content (videos, examples and questions) by a (H2.1) was also validated, confirming that (Q2 .2) “Updating the IS and its contents would be beneficial for the association and entrepreneurs”.

Based on the conclusions obtained, Associação Acredita Portugal was recommended to proceed with the update and review of IS Dreamshaper. An interactive dashboard was also developed in which the results obtained during the dissertation are presented, which will be updated by the Association and used as a tool for presenting the evolution and monitoring of the assessments made to the IS.

6.2. Research limitations

The analysis developed during this dissertation was based solely on the answers given to a selection of some of the questions presented in the Acredita Portugal satisfaction questionnaires. These questionnaires are shared at the end of each edition with the participants of the same edition, and over the years there has been a huge discrepancy in the number of responses obtained and the period of the contest in which the questionnaire was made available.

The biggest limitation to the research developed is related to the need to use these questionnaires, as opposed to the possibility of creating questions from scratch, being able to control the content, submission period, response hypotheses, among others. The data obtained are thus less than ideas, having been chosen for its use, as it is not feasible to complete a new evaluation questionnaire by users who have not used the IS for several years.

Based on the knowledge acquired and the analysis developed, several points of improvement were highlighted in the questionnaires used, and these suggestions will be implemented by the team from Associação Acredita Portugal throughout the next editions of its entrepreneurship contest.

6.3. Future work

The analysis developed, although exhaustive, is intrinsically linked to the perception that users have of the usefulness of the IS in their entrepreneurial project. All the results indicate that the IS Dreamshaper had a positive impact on the entrepreneurs who used it, proving to be more useful than the information IS used previously. Even so, although unlikely, it is possible that the perception obtained by users does not correspond to the real impact of the IS on their projects. To complement the analysis carried out, a comparative study should be prepared between the entrepreneurs who use the IS Dreamshaper and those who used the previous IS. As it is not feasible to obtain data from IS users during this period, for example, finalist projects from the before and after implementation editions may be used as a model case and their evolution in the years after the competition will be studied. At the same time, since the data collected from the 10th edition of the initiative will already follow the suggestions given to improve the questionnaires used and the dashboard created to structure the information related to the IS evaluation moments will be used, should come to be used. progressive studies should be developed to complement the analysis already carried out with data from the next editions of the Acredita Portugal entrepreneurship contest.

7. References

Acredita Portugal. (2020). *Acredita Portugal*. https://acreditaportugal.pt/

Andrews, F. M. (1984). Construct validity and error components of survey methods: Astructural modeling approach. *Public Opinion Quarterly*, *48*, 409–442.

Associação Acredita Portugal. (2018). *Relatório de Impacto da Associação Acredita Portugal*.

Ballantine, J. A., & Stray, S. (1999). Information systems and other capital investments: evaluation practices compared. *Logistics Information Management*, *12*(1/2), 78–93. https://doi.org/10.1108/09576059910256286

Bethlehem, J. (2009). *Applied Survey Methods: A Statistical Perspective* . Wiley.

Dreamshaper. (2020). *Dreamshaper | Ferramenta de Aprendizagem Baseada em Projeto*. https://dreamshaper.com/pt/

Fowler Jr., F. J. (2014). *Survey Research Methods* (5a ed.). SAGE Publications.

João Wengorovius Meneses, Susana Bandarrinha, António Brandão de Vasconcelos, António Mexia, António Nogueira Leite, Conceição Zagalo, Eduardo Catroga, Filipe de Botton, Isabel Jonet, Joaquim Pina Moura, João Lobo Antunes, João Pereira, Coutinho, J. S., Jorge Coelho, Jorge Salavessa Moura, José Morgado, José Miguel Júdice, Luís Cunha, Luís Mira Amaral, … Vítor Bento. (2012, Abril 14). Acredita Portugal: manifesto pelo empreendedorismo. *Expresso*, 30–31.

Jones, S., & Hughes, J. (2001). Understanding is evaluation as a complex social process: A case study

of a UK local authority. *European Journal of Information Systems*, *10*(4), 189–203. https://doi.org/10.1057/palgrave.ejis.3000405

Jornal Económico. (2016, Março 8). Acredita Portugal revela perfil do empreendedor português. *Jornal Económico*.

King, N., Horrocks, C., & Brooks, J. (2019). *Interviews in Qualitative Research* (SAGE Publications Ltd (ed.); 2a ed.).

Laranjeiro, A. (2019, Novembro 7). Startup portuguesa DreamShaper fecha ronda de dois milhões de euros - DV. *Dinheiro Vivo*.

Macias de Castro, J. T. (2017). *The influence of network relationships int the internationalization of the startups case study- DREAMSHAPER*. Instituto Universitário de Lisboa.

PME Magazine. (2018, Janeiro 18). Projetos do Acredita Portugal faturam entre 0,34% e 0,73% do PIB. *PME Magazine*.

Roberts, E. S. (1999). In defence of the survey method: An illustration from a study of user information satisfaction. *Accounting and Finance*, *39*(1), 53–77. https://doi.org/10.1111/1467-629X.00017

Roulston, K. (2010). *Reflective Interviewing: A Guide to Theory and Practice* (1a ed.). SAGE Publications Ltd.

Rowley, J. (2012). Conducting research interviews. *Management Research Review*, *35*(3/4), 260–271. https://doi.org/10.5040/9781350088771.ch-004

Stockdale, R., & Standing, C. (2006). An interpretive approach to evaluating information systems: A content, context, process framework. *European Journal of Operational Research*, *173*(3), 1090–1102. https://doi.org/10.1016/j.ejor.2005.07.006