



TOWARDS A DESIGN OBSERVATORY: THE CASE OF SCHOLARLY DESIGN RESEARCH IN PORTUGAL

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Abstract

The DesignOBS project was created to collect, map and interpret data about the Portuguese Design Ecosystem, providing supportive information for decision making. This study takes advantage of a participative Design perspective to define and test an observation process via a case based on Design doctorates undertaken in Portugal. It emphasises the need for additional participatory analysis and curation by experts to evaluate and develop more reliable information about the discipline. Moreover, it develops recommendations that can enhance the communicability of Design doctorates.

Keywords: design, design research, design doctorates, design education, design guidelines

1. Introduction

Design is recognized as a key factor of innovation and competitiveness (European Commission, 2013). European countries i.e. UK, Denmark, are making efforts to observe Design to better support policy making, and develop design-driven actions (Whicher et al., 2012, 2018). Whicher's model - an important backbone to understand the European Design System (2012, 2016) - is being infused in various countries to leverage the discipline (Whicher et al., 2018). Despite external incentives, Design has not been an explicit part of Portuguese political strategies nor an area of investment. Mateus and Associates (2016) emphasize the importance of Creative industries - which include Design - for the Portuguese GDP (3,7%) but key governmental strategies lack political actions to promote Design as an innovation factor in the country (ex. Conselho de Ministros, 2018).

Since the disappearance of the Portuguese Design Center (CPD) in 2013 Portugal does not have observation and promotion mechanisms in place for Design (Curado, 2013). Thus, the lack of systematized information about the Portuguese Design Ecosystem may be an impediment for the development of public policies for Design. The DesignOBS project was created to address this issue. It aims to collect, map and interpret data about the Portuguese Design Ecosystem, providing more robust and reliable information that - in turn - may support the creation strategies and policies for its promotion and evolution.

Following Whicher's model, we began by analysing Design Education and Research in Portugal as it is identified as a key vector to support innovation and because designOBS project's team is mainly composed by teaching/research staff. The direct knowledge about this field, enabled the definition and test of the process and methods for its observation, with expected impact on the observation of the overall ecosystem. This paper gives an example of this process.

During the analysis of Design Education and Research data in Portugal, several problems were identified namely due to the ambiguous classification of Design as an autonomous field of knowledge. This results into a low reliability and robustness of Design data obtained via official databases. At the same time, when analysing Design doctorates undertaken in Portugal as a probe to understand and map scholarly Design Research, a problem regarding communicability emerged. This problem hampers the quick access to the content through the most common search cues i.e. Title, Keywords and abstracts. The interpretation of the gathered data regarding the doctorates enabled the development of recommendations which could alleviate this problem, closing a cycle of data collection, interpretation and support for decision making.

With these challenges in mind, this paper aims to present a first portrait of the process that can be used to observe a Design Ecosystem, taking advantage of being conducted by a participative Design perspective.

2. Background

Academic research within the Design discipline is still relatively recent when compared to other areas, such as social sciences and/or engineering, although there are signs of a maturing field (Cross, 2007; Forlizzi et al., 2009; Lloyd, 2017). Design research can aim to “study and understand the phenomena of design” and/or “advance knowledge useful for those who design” (Buchanan, 2001; Forlizzi et al., 2008, 2009). Design research should contribute to the transformation of Design practice, either by critically analysing current situations and/or proposing something new. However, there seems to be a disconnection between research and professional practice (Dorst, 2016).

Design doctorates are an important part of the Design Research landscape (Davies, 2008). They integrate an inherent original, innovative component, and aim to tackle the increasingly complex nature of Design problems. They also should constitute a new and important path to generate and disseminate design knowledge (Davies, 2008). However, practitioners appear not to recurrently consult universities for original research (Dorst, 2016). In this context, it is becoming paramount to better understand how to make doctoral research in Design more useful for the practitioner community.

2.1. Design doctorates in Portugal

The institutionalization of Design Education in Portugal began after the democratic revolution (post 1974), with the first design programs created in the Schools of Fine Arts of Lisbon and Porto. Since then it spread throughout the country, currently forming a network of 37 Design Schools (Borges et al., 2018). Design is understood and taught as an activity of cultural mediation that results in the shaping of artefacts, devices, and services (Branco and Providência, 2018); a process of reflection-action (Schön, 1983) in which the purpose of sense making guides problem solving (Manzini, 2015).

The six PhD Design programs in Portugal have less than two decades. The first doctorate in Design was completed in 2001. Since then, few studies have attempted to identify, systematize and interpret the Portuguese scholarly Design Research landscape. Some exceptions include the work developed by Agapito et al. (2015) and Félix (2013). Agapito et al. provide a quantitative study of Design education in Portugal - including doctorate studies - between the period of 2002-2013, looking at different variables such as number of graduates and institutions (Agapito et al., 2015). Although important, this study is not very informative about the theme/content of the doctoral research undertaken. Also, Félix (2013) analyses Design doctorates until 2012, classifying them according to Frayling categories i.e. research into/through/for Art and Design (Frayling, 1993) since the grassroots of Portuguese Design education and academic research come from the Arts and Humanities. The author concludes that most of the doctorates use a “research into Design” methodology and emphasize more analytical approach - close to historical or social sciences - as opposed to using more action-oriented approaches to transform Design practice. Moreover, Félix (2013) also highlights problems related with the modus operandi of doctorate research in Design which, in contrast to other more established disciplines, is not necessarily aligned with the overall objectives of a structured supervision body. It rather tends to emphasize individual work/projects, with little connections with previous research or other projects.

The studies from Agapito et al. (2015) and Félix (2013) are an important backbone of this paper as they provide insights about the status of research undertaken via Design doctorates in Portugal. This

portray is closely aligned with the Design research gaps identified and Dorst (2016). However, a more systematic analysis is required to better identify and interpret national scholarly Design research, namely, to better understand the underlying reasons of its low impact in the practitioner community.

3. Methodology

The present study departed from a numerical analysis of scholarly Design research undertaken in Portugal, focusing in particular in Design doctorates undertaken in the country. We followed a two stage research process: (1) collection of Design doctorates via official governmental higher education databases to build a robust and valid database, (2) development of a numerical analysis based on title, keywords (KW) and abstracts to set the ground to build a preliminary visual map about the current status quo of the national scholarly Design Research produced. Titles and KWs in particular can constitute important mechanisms to rapidly identify the main themes of PhDs as well as the field and scope of research.

We covered the period from the year when the first doctorate Design thesis was approved until the present (2001- late 2019). First, we identified all the published doctorates undertaken in Design resulting from formal Doctoral Design programs, officially classified in Portugal within the Arts and Humanities area. Second, the documents were organized under multiple categories (ex. title, author, year of completion, etc.). The research was undertaken between July and October 2019. The PhD theses concluded after this period were not considered in the analysis.

We presented this numerical study and set the ground for discussion about the key issues regarding communicability of national scholarly Design Research in the country. This discussion occurred during REDE#02, the national Design Schools Meeting (follow-up of REDE#01, Borges et al., 2018) with 55 representatives of 23 schools. Based on the results of the analysis and the debate, we drew calls for action for the Design education and Research community.

3.1. Phase I) Creating a database

The information regarding doctorates in the area of Design was collected through official governmental databases. The search criteria defined to initiate data collection focused on “Design” programs and/or specialty. This was applied to three institutional databases - DGEEC (general directorate of statistics on education and science), RENATES (national registry of masters and doctoral theses) and RCAAP (open access scientific repository of Portugal) - within the period of 2002-2017. Although RENATES has data available before and after the time period defined (doctorates registration since 1970), DGEEC has a more limited timeframe (2002-2017). Thus, we first adopted this shorter time period to compare the results obtained.

With the same search criteria, we found different results: DGEEC provided 149 theses while RENATES provided 201 theses. RCAAP had to be eliminated from the analysis since (i) it was almost impossible to apply the same criteria; (ii) the repository had many double entries (Figure 1, search 1).

After obtaining these results, the inquiry continued focusing solely on the documents produced via RENATES as it is currently the only database which gives a detailed analysis of each document, including access to the title, authors and access links to the thesis document. We enlarged the time span for data collection, from 2001 (the year of the first approved design PhD) until the present, providing additional 44 documents. Moreover, the data was cross-checked with local repositories of three major national Universities, namely Faculties of Fine Arts from Universities of Porto and Lisbon, and Aveiro University to further test for robustness and reliability of data. Several differences were identified namely: (1) at least three documents identified in university repositories are not registered in RENATES, (2) at least six documents have different completion dates, making the representation of the evolution of doctorate work over time, inaccurate. The additional doctorates were added to the overall results, increasing the sample to 248 theses (Figure 1, search 2).

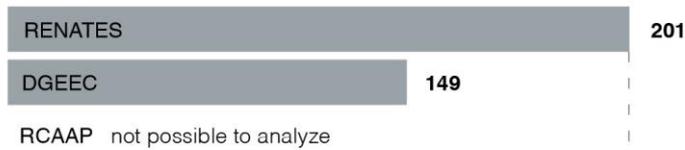
When analysing the sample, we found that 12% had restricted access with no abstract available; and 12% were not available online (files not found). These restrictions limited the sample to 188 documents (Figure 1, results).

Search 1.

Doctorates undertaken in Portugal

course /specialty: Design

2002 – 2017



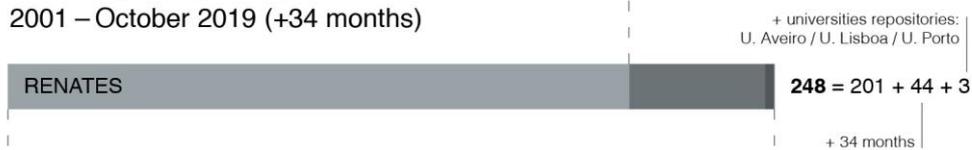
Search 2.

Doctorates undertaken in Portugal

+ universities repositories

course /specialty: Design

2001 – October 2019 (+34 months)



Results

open access	restricted access	not found
188 records (76%)	30 (12%)	30 (12%)

Figure 1. Application of the search criteria and results obtained

3.2. Phase II) Analysing and reflecting on the results obtained via the new database

The objective of the second phase was to characterize Design doctorates undertaken in Portugal via numerical analysis to enable the creation of a “first draft” of the landscape. To achieve this objective, we collected data regarding titles, authors, supervisor(s), year of publication, host institution, keywords (KW) and abstracts. After compiling this information, we proceeded with the numerical analysis driven by a Design a perspective.

We searched for “Design” (quotation marks indicate a solo word) or within an expression (ex. Product Design) in titles, KW and abstracts. The documents which did not specify “Design” in neither categories were subject to further analysis and evaluation by two different researchers to reduce interpretation bias (Yin, 2014). This evaluation aimed to understand if the PhD theses were, indeed, included in the Design research area. The documents resulting in different evaluations (13 out of 46 doctorates) were analysed by two other researchers. The ambiguity shown in the evaluations by the experts was due to: (i) some abstracts were not comprehensive and structured enough, and (ii) some contributions of the doctorates delved more into Fine Arts than Design (ex. photography, painting, drawing).

3.3. Phase III) Presentation and discussion of results with REDE community

Based on the results of phase I) and II), a call for action was undertaken to the Design research community in Portugal. The results of the analysis was presented to 55 representants of 23 national Design Schools at the REDE#02 event. REDE consists of a network of schools scattered around the country, that aims to discuss about Design Education, Research and knowledge transfer (Borges et al., 2018). The meeting occurred in October 2019, within the DesignOBS project (Branco et al., 2019). The presentation of results set the ground to discuss the practical implications of the current status quo of doctorate research, namely regarding its low impact in the practitioners community and in the Portuguese

socio-economic context; and supported the reflection and development of recommendations to improve its visibility and communication, namely by increasing the readability and pertinence of KWs.

4. Results

4.1. Creating a database

A comparison between the databases was undertaken, revealing disparities and mismatches between official document registrations. Results show important discrepancies between the number of doctoral theses obtained within the program/specialty of Design undertaken in Portugal, for the same time period (2002-2017). A considerable variation in the number of documents was identified (RENATES: 201, DGEEC: 149; variation: 52). A possible explanation for the mismatch may be due to the different classification systems used for the Design area. RENATES uses FOS (field of science and technology), an international classification system within which Design is embedded in Arts and Humanities. DGEEC on the other hand, uses CNAEF (national classification of education and training areas), which classifies doctorates in program/specialty of Design in five different codes i.e. 211 (Fine-Arts), 212 (fashion, interior, industrial design), 213 (audio-visual and media production) and 214 (design). Since DGEEC only presents numeric results, it was not possible to cross-check the PhD theses between the databases. The same search criteria was not possible to apply to the third database (RCAAP) as explained in the methodology section.

From the 188 doctorates, only 170 identified as “open access” had KWs available. They presented a variation between two to ten KWs; and the total number of KWs within this sample summed 788 results (total: 1073 with repeated KWs and an average of six KWs per thesis). These results emphasize two major issues. First, the need for a more effective data collection method and precise registration of documents in official governmental databases. The information gaps, due to restrict access, missing KWs and/or abstracts, as well as mismatching information between databases, makes it difficult to access the documents, and thus, to characterize the landscape in a reliable way. Thus, it may also prejudice the development of a strategic vision of Design research. Moreover, given the cumulative and informed nature of research, the restrictions and difficulties in the access to those studies can contribute to redundancy of PhDs in Design.

4.2. Analysing the database

Most PhDs with restricted access (Figure 1, results) had an abstract available. However, they were not considered in the sample since some did not provide enough information about the thesis’ content. From the 188 documents with open access, 9% did not have KWs assigned, 1% did not have an abstract, and 1% did not have KWs nor abstract in the thesis document. Two main numerical searches were used to analyse the sample followed by a more in-depth analysis with two researchers.

Most of the PhDs were developed within doctoral programmes classified in the database as: “Design” (64%), “Arts and Design” (22%), “Fine-arts, specialty: Communication Design” (12%), “Communication Design” (2%) and “other field, specialty: Design” (1%). The representation of “Design”, as an area of knowledge (solo word), as well as a field of activity ex. Product Design, Communication Design, or other expressions were evaluated through titles and KWs. As shown in Figure 2, 40% of the PhDs do not mention Design in the title, 76% do not specify “Design” (solo word) as an area of knowledge in the KWs, and 28% do not mention Design at all in the KWs. Additionally, 60% of PhDs which specify Design within their KWs, mention it only once, followed by 26% which mention it twice. Only 14% of this sample, mentions Design from 3 to 5 times.

In the open access sample, 86% of the KWs are mentioned one time, in one thesis. The KW mostly mentioned is “Design” (solo word) in 42 PhDs (25%), followed by “Product Design” with 8 mentions, “Graphic Design”, “Typography”, “Design Process” and “Portugal” with 7 mentions. These results show a very high dispersion of KWs, making the process of establishing connections between PhDs more difficult for people interested in identifying existing studies in specific areas of design.

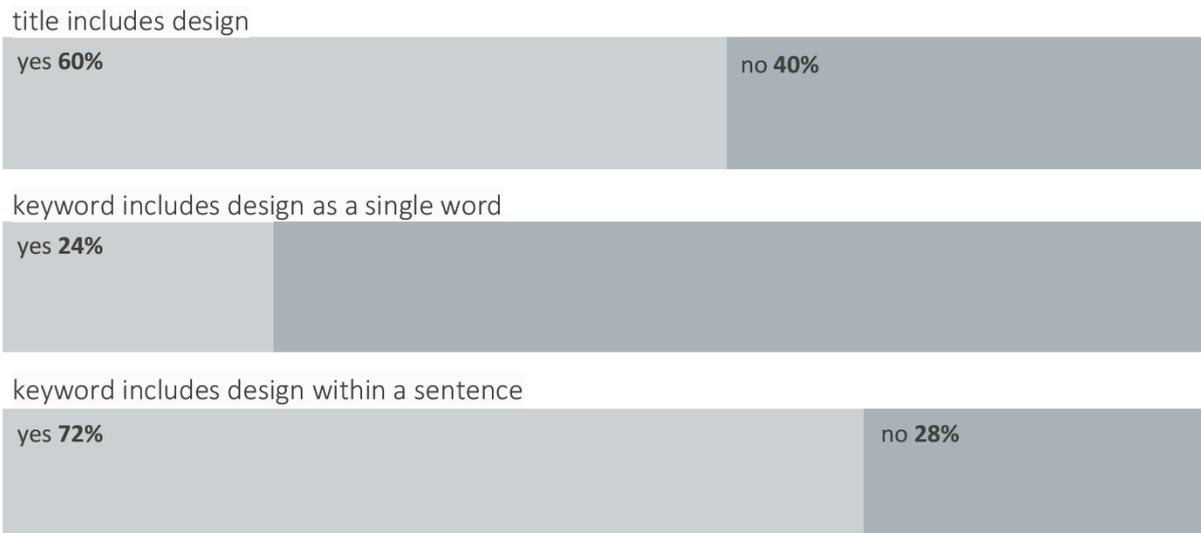


Figure 2. Representation of “Design” (solo word) and, and Design (in an expression), in titles and KWs of PhD theses with open access

Additionally, 26% of the sample (45/170) does not specify Design in either the title nor KWs. The documents which fell under this category were further analysed, in total, by four researchers (methodology section, phase II). The documents with abstracts were provided for consultation. 65% of these documents were from “Art and Design” doctoral programme, followed by “Design” doctoral program (26%), “Communication Design” (5%) and “Fine arts” (4%) (Figure 3). The analysis indicates that, even within the “Design” doctoral programmes, some studies were not considered by the experts to be about Design (67%, 8 out of 12, Figure 3). Moreover, “Art and Design” had a rejection rate of 83%; half of the “Communication Design” doctorates and all the “Fine-Arts, specialty Communication Design” doctorates were also rejected by the experts. In total, after this evaluation, 78% of this part of the sample was considered to be out of the scope of Design, going to areas such as art, cinema, social studies, painting and architecture.

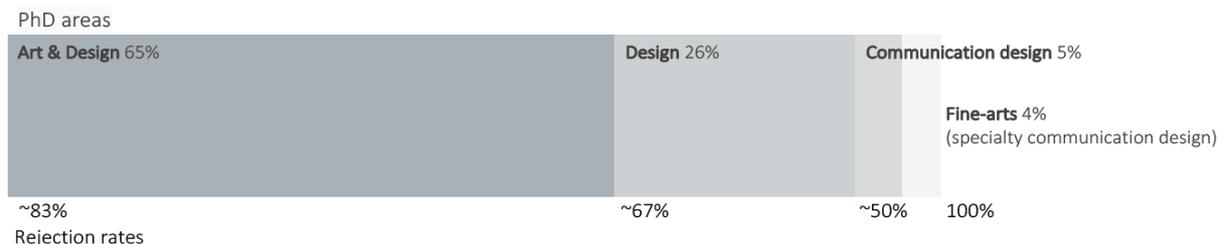


Figure 3. PhD theses which do not mention design in neither KW or title (24% or the total sample)

KWs are an important mechanism to identify studies in multiple online-based search engines and databases. From the results of the analysis, we conclude that current KWs and titles do not enable a rapid and efficient identification of the themes of the PhDs. Based on these results, mapping the design research landscape and establishing evident connections between the PhDs seems difficult and irrelevant through these mechanisms.

5. Discussion

The analysis of results show that current databases do not enable a robust and efficient consultation of research undertaken in the area. They lack reliability and robustness. Many studies that are included through the criteria established (Methodology section, part I) do not address studies related with Design. Moreover, the year of completion of the PhD theses between databases indicate that a temporal representation via governmental institutional information can be misleading. A numerical

analysis via KWs and titles emphasize the lack of connections between PhDs and high dispersion of themes and topics, with few overlaps. Finally, a more detailed examination of content through abstracts, indicates miscellaneous subjects which do not necessarily correspond to Design research studies, even within Design doctoral programs.

Titles and KWs can constitute important cues to facilitate search activities, and can be used to perform numerous studies, assess the evolution and connections of a discipline and/or scientific area. However, the current sample and research results indicate a clear lack of structure and vast dispersion of KWs, which hinders the composition and analysis of a robust scientific area, from a macro perspective. Aiming to be “useful for those who Design”, the doctoral studies need an additional interpretative and professional component to classify their content, expressed in the KWs.

5.1. Presentation and discussion of results with REDE: drawing recommendations for KWs for Design doctorates

The results were presented during the second edition of the National Meeting of Design Schools (REDE, [Borges et al., 2018](#)), organized within the designOBS project ([Branco et al., 2019](#)). REDE is currently one of the few organized structures that represent Design in Portugal. The meeting counted with 55 representatives of 23 Design schools and the main issues presented triggered some discussions regarding the need to develop more comprehensive guidelines to organize and characterize Design doctorates. The results from the discussion with REDE participants supported the development of recommendations to establish KWs organization in future doctorates, namely by the inclusion of (i) “Design” as a research area, (ii) field of activity, and (iii) context of study.

KW1 (scientific area): First, the research results indicate that the vast majority of PhD theses within the program/specialty of Design do not specify “Design” as the scientific area within the KWs. It is important to solidify the knowledge base of the area by having a clearer discourse which aims to contribute to Design and/or through Design. This can support a more efficient identification of PhD theses within the Design area and convey a clearer communication of scholarly Design research contributions to people within and outside the research community, avoiding confusion with studies associated with other knowledge domains and reducing ambiguities.

KW2 (field of activity): Second, as mentioned in the previous section, 86% of the KWs are only mentioned once, in one thesis. KWs which represent the field of intervention of Design ex. “Product Design”, “Interaction Design”, represent about 1% of the total amount of KWs, which is very little. Thus, specifying the field of activity is important to rapidly identify topics of interest not only for those who investigate Design, but also for those who practice Design. It can also reinforce the link between Design Research communities with Design practice, leveraging further synergies between the two.

KW3 (context): Finally, providing further details regarding the context of the study (ex. geographic, historic, philosophical context and/or the area of intervention ex. health services) can support people to rapidly create a mental model of the study, its purpose and potential approach. Thus, it may help readers to evaluate if the study fits within their topics of, making existing information more accessible, easier to understand and use.

This proposal does not aim to restrict the KWs, nor limit the diversity and originality of Design research, but rather to attribute specific functions to KWs, which at the moment, are so very thinly spread. This can ease communication, develop a more unified language and body of knowledge, thus improving communicability of Design research via KWs and facilitate the establishment of potential connection between the PhDs.

6. Conclusions and future research

The DesignOBS project aims to develop models, instruments, representations and strategies which may lead to the establishment of an Observatory about the Portuguese Design Ecosystem. Its main objective is to increase the awareness about Design and promoting creativity based on this discipline as a key factor for innovation in Portugal.

This study aims to present and debate the results obtained by analysing Design Research - an important part of the Portuguese Design Ecosystem - namely the research done by PhD students, which results in their Theses. From this process, which departed from the collection and analysis of the data available from different official databases, we can conclude the following:

- (A) the official databases as well as any data collection, done without any expert lens about the universe that is intended to represent, tends to present coarse mistakes, all the more greater as the ontological vagueness of that universe; In the case studied, the ambiguity about Design alignment within the set of knowledge areas, results - anecdotally - into a variations of about 25% in the number of theses registered in different databases. To assure some accuracy in the observation of an Ecosystem, it seems thus, necessary: (i) cross-check different official sources, (ii) cross-check the data obtained with local databases produced by agents with more proximity, or interest in that reality; (iii) validate the data obtained by resorting to expert panels.
- (B) assume the errors and failures detected as generators of new questioning; and potentially indicative of actions.
- (C) call upon the community to reflect about the results obtained and/or, preferably, to participate in the observation with an open perspective. This means that participative observation is not restricted to the characterization of the Design Ecosystem at the national level but can be combined with observations that - a priori - only have interest at the local level.
- (D) the results obtained should be represented and disseminated in their numerical evidence, but also through an interpretative layer, which may favour them as a support to public policies for Design promotion.

The presented study has some limitations which indicate directions for future research. First, the results presented to REDE participants were important to build awareness about the existing issues of communicability of scholarly Design Research. However, the development of a comprehensive and efficient guideline to establish KWs organization needs further discussion and validation with REDE participants as well as with people which use - or could potentially use - Design doctoral theses to support their work.

Taxonomies and ontologies already exist to index Design knowledge to support the reuse of information (ex. [Saavedra et al., 2017](#)). However, they are mostly focused on engineering Design. Although this is not the specific aim of this study, the development of a comprehensive classification guideline for scholarly Design Research, including doctorates, can be of use namely to describe Design activities and contexts.

Third, doctoral work was the primary object of analysis of the research presented in this paper. To make an exhaustive map of the Portuguese Design research landscape would require access to all the doctorates undertaken in the Design program/specialty. Currently, 12% of the documents have restricted access, and other 12% could not be found online. This creates a serious deficit in such a small critical mass of doctorates. The authors were contacted via email and so far, two answers were received. But, to map the landscape would also mean to have access to (at least) a structured abstract and KWs of those studies. The study should also expand to publications made by the researchers in book chapters, conference proceedings or journal papers. Numerous researchers continue and refine their work after the completion of the PhD. This continuous and evolving research is also an important part of the map.

Fourth, the present study is limited to doctorates in Design programmes/specialty. The growing importance of Design at the technical, social and economic levels does have to account for research not only for/about Design, but also through Design ([Frayling, 1993](#)) within other domains of knowledge. This goes beyond the Portuguese Design programmes, increasing considerably the complexity of data collection and interpretation. A future direction thus, could explore strategies which may help understand the impact of the multidisciplinary contexts and studies in Design.

Information is perhaps the most important asset of today's world. According to [KPMG \(2016\)](#). The DesignOBS project is developing a path from data to information about the Portuguese Design Ecosystem hoping to make this effort a spring into a positive transformation of the Portuguese Design reality.

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