Triple

Transforming Research through Innovative Practices for Linked Interdisciplinary Exploration

26/11/2020

Advancing Open Scholarship

D3.1 – Iteration on the User Needs

Version 1.0 – Final - PUBLIC

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Acronyms

EOSC	European Open Science Cloud
RI	Research Infrastructure
SSH	Social Sciences and Humanities
LIS	Library and Information Sciences

Publishable Summary

The overall ambition of the TRIPLE project is to help Social Sciences and Humanities (SSH) research in Europe to gain visibility, to be more efficient and effective supporting collaboration and to improve the reuse of resources within the SSH. TRIPLE will deliver a platform (GOTRIPLE) which will be a dedicated service of the OPERAS research infrastructure and will become a strong service in the EOSC marketplace. GOTRIPLE, the European discovery solution, addresses the following issues: (a) it enables researchers to discover and reuse SSH data; (b) it aims at facilitating the work of other researchers and projects across disciplinary and language boundaries; (c) it provides all the necessary means to build interdisciplinary projects and to develop large-scale scientific endeavours. As a consequence, the ambition of TRIPLE is to increase the economic and societal impacts of SSH research and of the resources produced by this research.

The Work Package 3 of the TRIPLE project is tasked with conducting the user research which is necessary to make the TRIPLE platform a success. The WP3 focuses on understanding the user needs and on co-designing with users some of the core aspects of the platform, including the user profiles and the trust system. The work reported in this deliverable (D3.1 Iteration on the user needs) follows the identification of users' needs (D3.1 Report on the User needs) which was achieved with qualitative research. The D3.1 iteration reports on the findings of the TRIPLE user questionnaire, which aimed at obtaining a broader view of some of the needs of the potential GOTRIPLE users as well as investigating some of the existing discovery work practices and tools in order to locate the position of the TRIPLE project platform. This work is based on a questionnaire which was released for completion at the beginning of May 2020 and that closed at the end of August 2020. The questionnaire has obtained 925 usable responses, with respondents from 26 EU countries and from some additional associated countries. Respondents also came from a good variety of SSH disciplines. The deliverable reports on the descriptive statistics analysis and statistical tests which were performed on the data and give a picture of the discovery practices, tools and needs of European SSH researchers. Information thus obtained will be used by the project consortium to inform better decisions about the design of the GOTRIPLE platform.

1| ABSTRACT

This deliverable reports on the results obtained from the TRIPLE user questionnaire conducted as part of the Work Package 3 activities. The questionnaire was prepared with the purpose of obtaining a broader overview of the end-user needs for the GOTRIPLE platform. The key problem for the questionnaire was to answer the following main research question: "what is the perception of end-users on their discovery practices, networking practices, research tools and use and management of resources?". The questionnaire was distributed for completion during the period May-August 2020. In total 925 usable responses were collected, with respondents from 26 EU Member States. The data was analysed with descriptive statistics and with non-parametric tests. Some of the key results of this research are: (1) there are often significant differences in discovery practices between interdisciplinary scholars and scholars working on a single discipline; (2) scholars at lower level of their career struggle more than those at higher level in a number of areas, which include the discovery process and the capacity to collaborate with other stakeholders; (3) differences in the discovery practices are also perceivable across different research techniques (qualitative, quantitative, quali-quantitative); (4) also at disciplinary level there are perceivable differences in the discovery and networking practices, with in particular differences between disciplines using archives and the others. The results obtained from the questionnaire will support the TRIPLE consortium in taking relevant decisions for the final design and shape of the GOTRIPLE discovery platform.

2| INTRODUCTION

This iteration of Deliverable 3.1 of the TRIPLE project reports on the results of the user questionnaire conducted as part of the activities of the Work Package 3 "User Research and CoDesign". Following the work conducted for the definition of Personas and Scenarios for TRIPLE and based on qualitative interviewing (**Deliverable 3.1 Report on the User Needs**), the questionnaire was planned with the intent of obtaining a much broader overview of the needs of the potential end users[1] of the platform and to gather further knowledge to be used for the design. The key problem for the questionnaire was to answer the following main research question: "**what is the perception of end-users on their discovery practices, networking practices, research tools and use and management of resources?**". We expected from this work to help us in exploring a number of issues such as: what kind of needs would SSH researchers have, that could be met by the GOTRIPLE platform? would the innovative services be of interest to the SSH community? Would there be a difference between single and interdisciplinary researchers? or between researchers at different career levels or working with different research techniques? what are the main priorities of SSH researchers toward discovery practices and tools? what are the main priorities of SSH researchers for collaboration and networking with others, both colleagues and other stakeholders?

This deliverable was, according to the Description of Work, supposed to be an iteration of the D3.1 Report on the User Needs. However after consideration, given the wealth of data collected and the wealth of the results produced, it has been decided that rather than just producing an iteration, it was preferable to have a stand-alone deliverable.

The deliverable is organised as follows:

☐ Firstly, there will be a section describing the methodology, in particular of the questionnaire in itself (with description of the rationale behind some of the main questions), the approach to its distribution via electronic communication channels and the analysis of the data.

☐ Secondly, there will be a presentation of the main results from the survey, organised according to the main eight blocks of the questionnaire. The results will be accompanied by a list of the main take-away points from each of the questionnaire blocks.

☐ Thirdly, there will be a conclusion highlighting the main lessons learned (or the main global patterns) from the questionnaire, and how these can inform the work on the design of the GOTRIPLE platform and the forthcoming planned research for TRIPLE.

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[1] A thorough discussion about who the end users of the GOTRIPLE platform are or should be, is presented in D3.1 Report on the User Needs, available here https://zenodo.org/record/3925022#.X6EqBmj7Q2w

3| Methodology

The core instrument for data collection was the questionnaire prepared by the Work Package 3 participating organisations. The full questionnaire is included in the Appendix of this deliverable and the specific form and content of the questions can be consulted in this Appendix. In this section, we concentrate on providing some details of the rationale underpinning the questionnaire organisations and of some of the main questions. The work on the preparation of the questionnaire was led by the WP3 leader Abertay University with the support of several other partners. The work for the preparation of the questionnaire started in late January 2020. A finalised version of the questionnaire was produced by the beginning of March 2020. Subsequently the questionnaire was imported in the online software tools adopted for the purpose of the data collection (Limesurvey), hosted by the project partner EKT. Limesurvey is an open source tool, offering a robust solution for the conduction of online surveys, which was ideal for the proposed TRIPLE questionnaire.

More specifically, for preparing the questionnaire we used the following approach:

☐ An organisation of the questionnaire in separate blocks of questions mirroring (to a large extent) the organisation we used for the qualitative interview scripts used for the collection of initial user needs (these scripts can be consulted in D3.1 Report on the User Needs[2]).

☐ Use of knowledge coming from the literature review on end-users and their discovery practices, also presented in D3.1.

☐ Knowledge obtained from the interim results of the analysis of qualitative interviews of D3.1 Report on the User Needs, has been relevant for formulating some of the questions.

☐ General knowledge of the different partners in relation to their expertise was used for preparing some of the questions (e.g. knowledge in visual search engines from Open Knowledge Maps).

In broad terms, the questionnaire had 3 main sections, with the third section containing most of the questions:

1. Information Sheet and Informed consent
2. Demographics
3. Specific questions (organised in 8 main blocks) on the discovery practices

We will consider each of these sections in turn.

3.1 Information sheet and collection of the informed consent

The opening page of the questionnaire provided information to respondents about the project and the reasons for the data collection. The distribution of the questionnaire was accompanied by very detailed information about the purpose of the questionnaire and of the TRIPLE project. The second page of the online questionnaire contained the informed consent, with respondents required to read the consent and subsequently give consent (YES, I consent) or refuse consent (NO, I do not consent), with the questionnaire terminating immediately in the second case and directing people to a "thank you" page with additional information (i.e. the TRIPLE contacts). The informed consent and the specific question collecting the consent can be seen in the questionnaire in the Appendix.
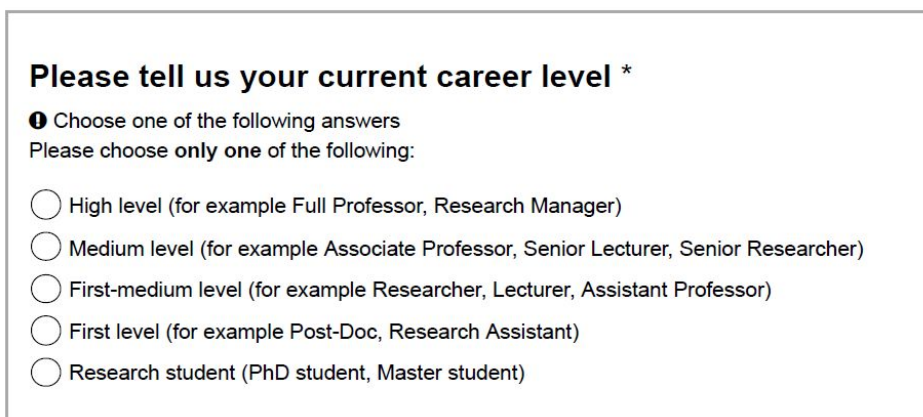
3.2 Demographics

Concerning the demographics data collection, after discussion and cross-consultation across the WP3, the following demographic items were selected to appear in the final questionnaire:

1. **Country of work:** including a list of all the EU Member States and main associated countries, with an additional option "Other" to cover all possible responses not captured by the list provided. This was offered to respondents as a single-choice question list, with the option to select only one Member State or Associated country.

2. **Gender:** offered to respondents as a single-choice question list. The following options were offered to respondents: Female, Male, Other, Prefer not say - in order to cover the main potential genders of respondents.

3. **Career level**: with the intent to measure participation from the student level (i.e. research students such as PhD), first level (e.g. post-docs, research assistants), first-medium level (i.e assistant professor, lecturer, researcher), medium level (i.e. associate professor, senior lecturer, senior researchers), up to highest career level in research (e.g. professor or principal investigator). Indication from qualitative interviews was that senior people are less engaged in the use of digital technologies for their research. Thus this demographic was considered important for the analysis. This again was presented to respondents as a single-choice question list.

4. **Research techniques**: with the intent to measure whether participants were mostly working with qualitative, quantitative or mixed methodologies (quali-quantitative) techniques. This demographic was considered important for the analysis. Indication from the qualitative interviewing was that qualitative researchers were far less interested in activities such as data sharing than quantitative researchers. This again was presented to respondents as a single-choice question list.

5. **Interdisciplinarity**: the decision to collect this demographic relates with the opportunity to measure potential differences in practices between those working mainly within one discipline and those working across disciplines (interdisciplinary researchers). This again was presented to respondents as a single-choice question.
6. **Main discipline of work**: to understand the main field of work of respondents and detect potential relevant differences across disciplinary domains. The list of SSH disciplines used, can be consulted in the questionnaire in the Appendix. This again was presented to respondents as a single-choice question list.

As stated, all these demographic questions were presented as a single-choice question list, of which an example from the questionnaire is in Figure 1, related to the career level.

Please tell us your current career level *

ⓘ Choose one of the following answers
Please choose **only one** of the following:

◯ High level (for example Full Professor, Research Manager)

◯ Medium level (for example Associate Professor, Senior Lecturer, Senior Researcher)

◯ First-medium level (for example Researcher, Lecturer, Assistant Professor)

◯ First level (for example Post-Doc, Research Assistant)

◯ Research student (PhD student, Master student)

FIGURE 1. EXAMPLE OF ONE OF THE DEMOGRAPHIC QUESTIONS – CAREER LEVEL

3.3 Questionnaire Blocks on the discovery, networking and management practices

Moving forward, the main body of the questionnaire was organised according to a set of eight blocks, all including Likert-items type of questions, based on 5 items scales (either Strongly Disagree -> Strongly Agree or Never -> Always). The blocks of the questionnaire are as follows:

1. **Block 1 - General perception on discovery associated aspects important for the work:** the goal of this set of Likert-items was to get an initial general perception around some technological and collaborative aspects relevant for the SSH research work including around the importance of tools for discovery, the importance of open access or the importance of collaboration. With this block of questions we expected to answer the sub-question of "**what is important for the work of SSH researchers?**"
2. **Block 2 - Tools used in research practices/discovery:** the goal of this set of items was to investigate the perception of respondents toward most relevant

discovery tools, including search engines (generalist, scientific and visual), archives and databases and research platforms. This set of questions was built with the specific purpose to measure the perception of respondents toward some of the most common discovery tools across the SSH research community and support a better understanding of the collocation of some of the planned TRIPLE innovative services. With this block we expected to answer the sub-question of "**what are the main priorities of SSH researchers toward discovery tools?**"

3. **Block 3 - Tools for networking and dissemination:** the goal of this set of items was to understand the perception of respondents toward a number of tools for networking and the dissemination of research results with other researchers and general stakeholders. This set of questions was built with the intent to understand the main approaches/tools that SSH researchers use for networking and thus allow for an understanding of the collocation of the planned TRIPLE networking/dissemination tools. With this block we expected to answer the sub-question of "**what are the main priorities of SSH researchers toward collaboration and networking tools?**"

4. **Block 4 - Tools for management and retrieval of material:** the goal of this set of items was to understand the perception of respondents toward a number of tools for the management and retrieval of materials (the discoveries) for example datasets or publications. This set of questions was built with the intent to understand the main approaches/tools that SSH researchers use for the management of their digital discoveries and thus allow for an understanding of the collocation of the planned TRIPLE tools. With this block we expected to answer the sub-question of "**what are the main priorities of SSH researchers toward the tools for management of discoveries?**"

5. **Block 5 - General section on digital literacy:** this section was introduced in order to better understand the level of digital literacy of the respondents. While digitalisation of research processes is now becoming commonplace, it may not be the same for digital competencies and the intention here was to better understand the perception of how SSH researchers fare in this area. With this block of questions we expected to answer the sub-question of "**what are the main priorities of SSH researchers toward digital literacy and the acquisition of skills?**"

6. **Block 6 - Current discovery practices**: this section aimed at investigating in more detail some of the discovery practices of SSH researchers in relation to a number of issues such as the access to discoveries or the capacity to formulate discovery queries. With this block of questions we expected to answer the sub-question of "**what are the main discovery practices of SSH researchers?**"

7. **Block 7 - Current collaboration and networking practices:** this section aimed at investigating in more detail some of the current practices for discovering people with an eye on facilitating collaborations for example with external stakeholders or other researchers. With this block we expected to answer the sub-question of "**what are the main collaboration practices of SSH researchers?**"

8. **Block 8 - The future needs for discovery:** this section was introduced in order to better understand what are in the perception of SSH researchers their future needs in terms of discovery. The intention was to better understand some of the directions that TRIPLE could focus on in terms of design and innovative services and whether the current ideas being explored by the project would meet some of the needs of the users. With this block we expected to answer the sub-question of "**what are the future discovery needs of SSH researchers in relation to GOTRIPLE?**"

9. **A final section asking about the main discovery priority:** this was introduced in order to clarify what could be the main focus of the TRIPLE discovery in particular around publications, data, people and projects. This is not considered as a block since it was composed by just one question, whose results will be reported in the demographic section later in the deliverable (see Figure 9.).

Likert-items were preferred over other choices (such as multiple choices), in order to have a measure of the perception/attitude of respondents across the areas of the questionnaire. Likert Scales in their "standard format consists of a series of statements to which a respondent is to indicate a degree of agreement or disagreement" (Albaum, 1997). A Likert-item is just one of such statements. An example of the Likert-items used in the questionnaire is presented in Figure 2., in this case part of the block of items is associated with the investigation of the tools for networking (with measures of perception going from Never to Always), with the full questionnaire available in the Appendix of the deliverable.

FIGURE 2. EXAMPLE OF SOME OF THE LIKERT ITEMS OF THE TRIPLE USER QUESTIONNAIRE

3.4 Data Analysis

The data obtained from the questionnaire was analysed mainly with **descriptive statistics**, with the intent of producing graphs (bar charts) reporting on the main findings. The graphs are accompanied by relevant descriptions and interpretations of the findings. Descriptive statistics (Boone and Boone, 2012) were adopted because of the nature of the questions (Likert-items, which are ordinal data). However, it was decided in some evident cases to conduct appropriate tests to measure whether there are significant statistical differences among some of the groups in the different demographics in relation to some of the questions (e.g. differences between qualitative and quantitative researchers in relation to their discovery priorities). Thus for some questions, we performed **non-parametric statistical tests**.

For the production of the descriptive statistics, the consortium has produced custom scripts in python programming language. The first version of these scripts was prepared by partner Know-Center and later on these scripts were adapted by the WP3 leader Abertay. All the graphs presenting the comparison between groups (across the demographics), do show the results in percentage. This allows for a meaningful comparison, which would not be possible by using absolute values. A small number of graphs was produced with datawrapper (https://www.datawrapper.de/) a tool for data-science, supporting easy manipulation of data. In particular global graphs for the main blocks of the questionnaire were produced with this tool. In the interpretation of the descriptive graphs **positive response/perception** will be considered as the sum of the two positive items of the scale used. For example the sum of Strongly Agree and Agree responses, or the sum of Always and Often responses (depending on the labels of the Likert-items used). Likewise the **negative response/perception** will be considered as the sum of the two negative items such as the sum of Strongly Disagree and Disagree.

For the analysis of the Main Discipline demographic we will present (in most cases) results from the five disciples with most responses (see Section 4.6). This is a methodological choice made necessary by the fact that for many disciplines we have a quite low number of responses (<20). Thus using the five disciplines with most responses as examples, has allowed for a relatively good consistency in the analysis, allowing to reflect on numbers which are somewhat significant. For the Research Techniques demographic, often the comparison presented will be between the qualitative and quantitative groups, considered to be at the opposite poles of methodological approaches in SSH (i.e. interpretation Vs Hypothesis testing). Whilst quali-quantitative researchers sit in-between these two groups, displaying perceptions/practice which are similar to one (qualitative) or the other (quantitative) depending from the questions analysed. Occasionally also the quali-quantitative group is included in the testing.

Non-parametric tests were also conducted on the data since most of it comes in the form of ordinal variables (i.e. Likert-items). These tests have been performed with custom python scripts written by Abertay. In particular a non-parametric t-tests, the **Mann-Withney test**

(1947) has been used (this is also known as U test but we will refer to it as non-parametric t-test in the remainder of the deliverable). This is a test that can be used to detect whether two groups present differences in the distribution of responses that are statistically significant. In this non-parametric test, we consider two independent groups/samples G1 and G2. Sample G1 has size n1 and sample G2 has size n2. The test allows to investigate if there is a statistically significant difference between the two groups, based on a comparison of the values for the two samples. Occasionally it has also been possible to produce some correlation measures for which the non-parametric Spearman (1904) test was used. This test can be used to determine if there is a correlation between two variables that are non-parametric. This test was possible largely for one demographic only - the career level - which allows to put the demographic variable on an ordinal scale (i.e. 5 for High level down to 1 for Research Students), whilst the other demographics do not allow this (i.e. it is arbitrary to assign values to e.g. disciplines, such as 5 to Sociology or 1 to Literature). Both these tests (Spearman and Mann-Withney) were used in their python implementation as available from the scipy library (Virtanen et al. 2020). For all the tests an **alpha (α) of 0.05** was used.

3.5 Sampling, Communication and Distribution

It was decided that the questionnaire should be distributed as widely as possible using a **snowball sampling approach** and utilising regular electronic communication channels. For this purpose, the TRIPLE coordinator, the WP3 and WP8 leaders held a number of calls in which it was decided what the main vehicles for distribution would be national and international SSH professional mailing lists, newsletter and various official and personal social media channels. For distribution via mailing lists, a tailored email was prepared and signed by the project coordinator (see the email in Appendix A of this deliverable); for distribution on social media channels, a set of short messages was prepared and accompanied by relevant images (see Figure 3.). For example for Twitter the following message was used:

> Are you an #SSH #researcher? Then pls take part in our survey on user needs to help us develop a discovery platform that will revolutionize your research!
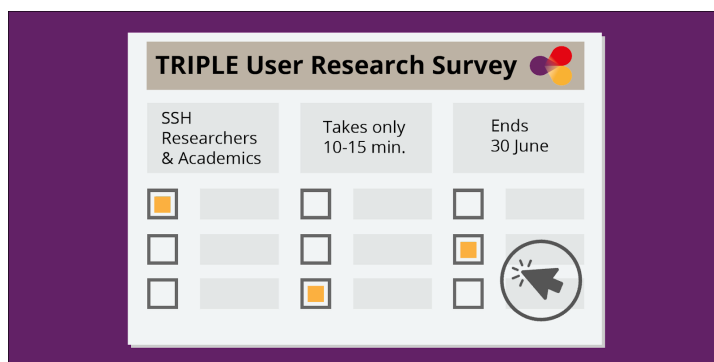> https://surveys.ekt.gr/index.php?r=survey/index&sid=819254&lang=en

FIGURE 3. ONE OF THE IMAGES USED ON SOCIAL MEDIA FOR THE DISTRIBUTION OF THE QUESTIONNAIRE

The population that we wanted to target were researchers and academics in the Social Sciences and Humanities at any stage of their careers - from Master student to full Professor - working in a EU Member State (or associated country). Work Package 8, Communication and Dissemination (led by Max Weber Stiftung), distributed the call on the following channels and platforms:

- TRIPLE website (news item)
- OPERAS website (blog post - same as news item on TRIPLE website)
- Official TRIPLE Twitter, Facebook, LinkedIn (repeated posts)
- Official OPERAS Twitter, Facebook, LinkedIn(repeated posts)

At the same time several TRIPLE partners took care of the distribution on following channels:

- Mailing lists covering a wide variety of SSH disciplines and different languages/national communication outlets
- Communication officers at universities
- Personal contacts from networks
- Retweets and reposts of posts on Twitter/FB/LinkedIn/Facebook

For the purpose of achieving this distribution, a spreadsheet with a list of mailing lists and other potential channels (e.g. Facebook groups) was prepared in order to keep track of where the questionnaire was distributed, when and by which partner. The questionnaire was distributed in 70 mailing lists, newsletters and social media groups ranging from large international channels (such as the European Sociological Association Mailing list, ESA) to local channels such as Portuguese Association of Higher Education Presses.

Although the initial official communication stated that the questionnaire would close on the 30th of June, the questionnaire remained open for further 5 weeks effectively closing on the 1st week of August. This extension was carried out in order to allow for the collection of data from some countries where we did not have any response or where the response was comparably lower than what we expected.

Overall we have obtained **925 usable responses**.

4| DEMOGRAPHICS DATA

In this section we present the results associated with the main demographics questions of the questionnaire. Responses are presented in absolute values on the graphs with an accompanying percentage value.

4.1 Country of Work

Overall we obtained responses from 26 out 27 **EU Member States** (with only Latvia not providing any responses, despite the best effort of the consortium to reach out to communities in all the EU27 countries). We have however measured some significant variations among the respondents (Figure 4.) for this demographic. This may be due to a variety of reasons for example the size of the country where one could expect less responses in absolute terms from smaller countries. For example the two countries at the bottom of the graph (Cyprus and Estonia) are relatively small countries, whilst France at the top is a rather large country in terms of population. However it is also clearly evident some effect which is due to the composition of the project consortium and the capacity of project partners to distribute the questionnaire among their own national research communities. This can be seen for example in the case of Portugal, which is a relatively small country if compared for example to the neighbouring Spain. Portugal is the second country per number of responses, where the project partner University of Coimbra operates and that is well inserted in the SSH research communities in the country and has distributed the questionnaire in a number of Portuguese channels. Likewise France has the highest number of responses probably due to the traction operated by the TRIPLE project coordinator (CNRS Huma-Num).
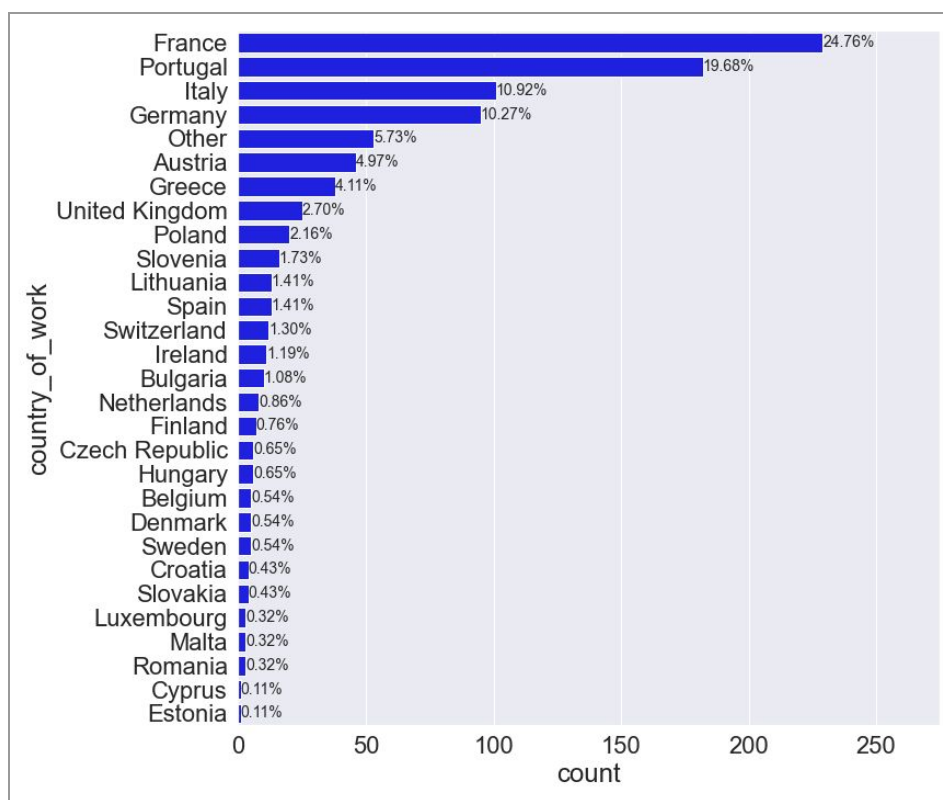

FIGURE 4. DISTRIBUTION OF QUESTIONNAIRE RESPONSE PER COUNTRY (COUNT = NUMBER OF RESPONSES)

4.2 Gender

D3.1 Iteration on User Needs

In terms of **gender** distribution (Figure 5.), the responses show some difference between the number of Male (n= 391 - ~42%) and Female (n=505 - ~54.5%) responses, with a minority of respondents selecting the other options (Other n=6 and Prefer not to Say n=23).
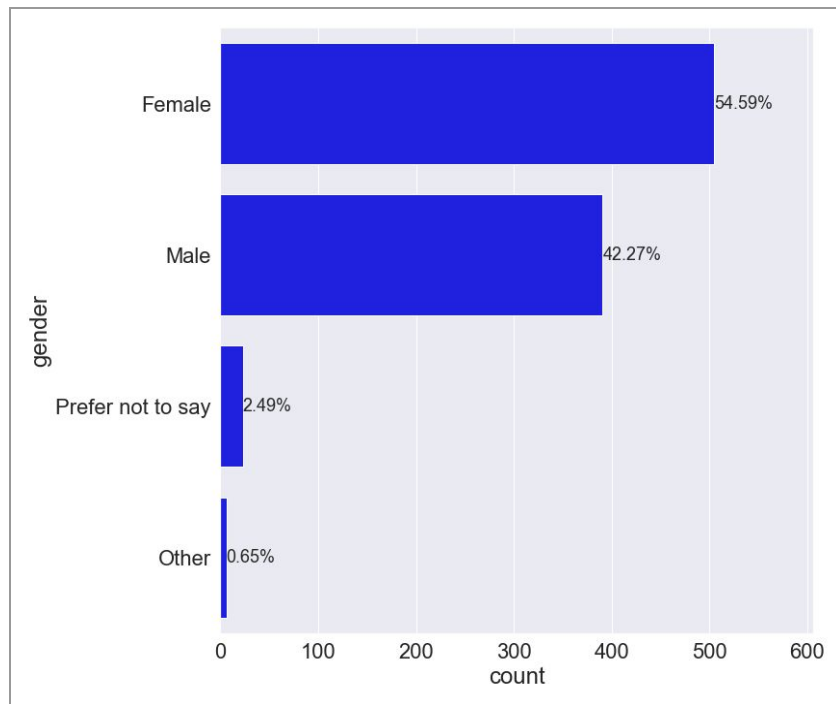
4.3 Career Level

In terms of **career level** (Figure 6.), the largest set of responses came from research students (PhD/Master, n=234) and the smaller number of responses from researchers at the first level of their career (i.e. post doctoral researchers/ research assistants, n=114). The expectation was that people at the highest level of their career (such as Full professors, Principal Investigators or Research Managers, n=165) would be the smaller group in relation to this specific demographic. The other two groups were first medium level (such as lecturers, assistant professors etc., n=193) and medium level (such as Associate Professor, Senior Lecturer, Senior Researchers, n=219).
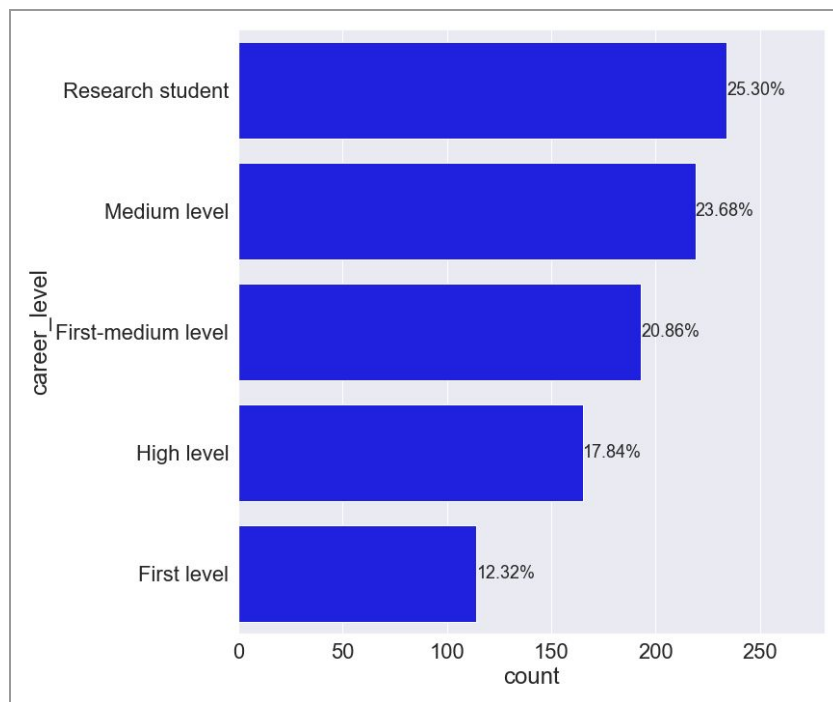
FIGURE 6. DISTRIBUTION OF QUESTIONNAIRE RESPONSE PER CAREER LEVEL (COUNT = NUMBER OF RESPONSES)

4.4 Research Techniques

In terms of **research techniques** (Figure 7.), there clearly was a majority of respondents working with qualitative techniques (n=475, ~51%), followed by researchers working with mixed-methods (or quali-quantitative, n=252, ~27%) and quantitative (n=117, ~19%), with a small fraction of respondent saying they do use other techniques (n=21. ~2%). These figures are not necessarily a reflection of the composition of the SSH research communities and may be connected with the mailing lists where the questionnaire was distributed (although this cannot be proved empirically), since we used snowball sampling which does not allow for randomisation or stratification. Anyway, we cannot prove from our data whether this is a reflection of the distribution of the research techniques in use in the SSH communities. Indeed, for instance, in both Humanities and Social Sciences there is currently an increased push toward quantitative techniques due to e.g big data, new machine learning techniques, data science and other aspects associated with the production of high quantities of digital data. From this, one could expect a prevalence of quantitative work also in SSH.
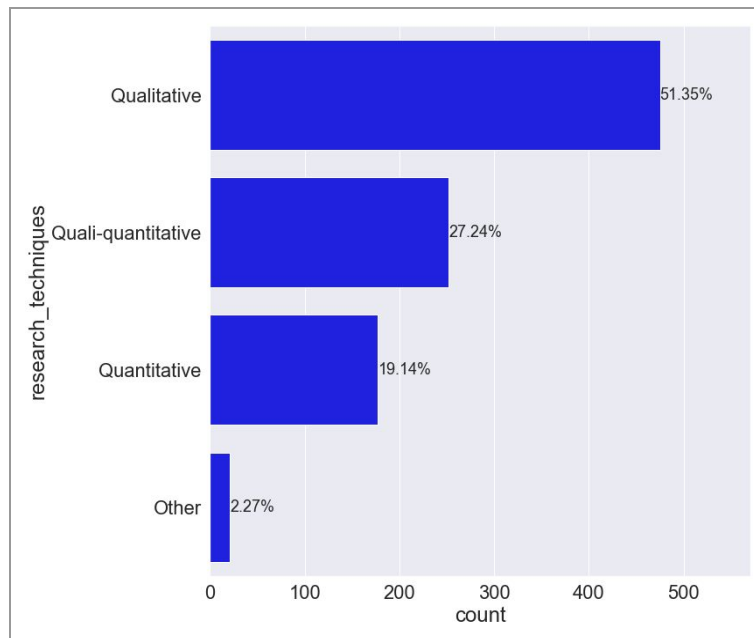
4.5 Interdisciplinarity

For the **interdisciplinarity** demographic, the majority of respondents declared they are doing interdisciplinary research (n=724 - 78%), with the remaining (22%, n=200) declaring they are working on a single discipline only. No graph is presented here for this demographic since it is just composed of the two values/groups just mentioned (interdisciplinary scholars and scholars based on a single discipline).

4.6 Main disciplines

The disciplinary distribution of respondents (Figure 8.) shows clear variation among the various **SSH disciplines**. Linguistics (n=95, 10.27%), Sociology (n=94, 10.16%), History (n=74, 8%), Library and Information Sciences (n=65, 7%) and Literature (n=55, ~6%) are, respectively, the five most represented disciplines and **these will be used later for the analysis around the disciplinary demographic** (as anticipated in the Methodology Section). These five disciplines (the ones with most responses) are also a reasonable representation of the variety across SSH with a clear social science discipline (Sociology), a clear humanity discipline (Literature) and the other perhaps sitting at the cross-roads between these two fields. The choice to use these for the analysis stems from the fact that for most disciplines the number of responses is relatively low and it thus will be difficult to derive generalisations.

Generally one has to be mindful again that the results here presented do not necessarily represent the distribution of the whole SSH field and it may be actually connected with the type of mailing lists that were targeted for the distribution of the questionnaire, often associated also with the direct research field of the members of the consortium. Again we need to flag up the limits that are imposed by the use of a snowball sampling, for which the resulting data may not necessarily be a true representation of the whole population. The field Other also had a quite wide response, presenting the case of several other non-SSH disciplines (such as computer science or geology) and minor SSH disciplines (such as "landscape architecture and history"), often represented by just 1 or 2 respondents.
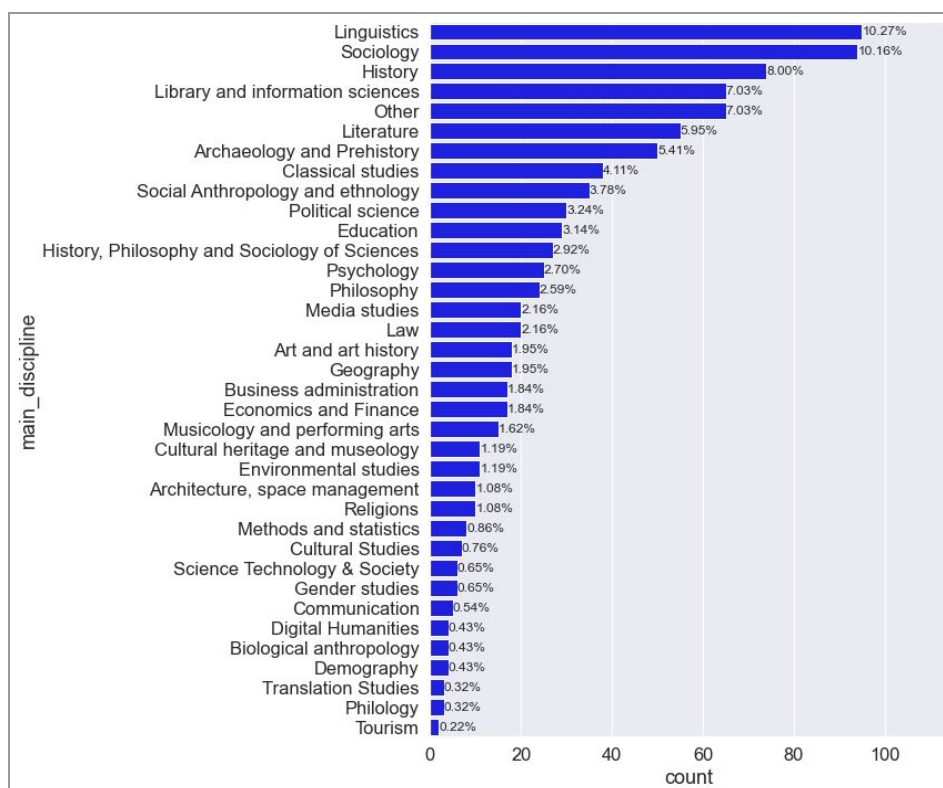
FIGURE 8. DISTRIBUTION OF QUESTIONNAIRE RESPONSE PER MAIN RESEARCH DISCIPLINE (COUNT = NUMBER OF RESPONSES)

4.7 Main Discovery Priority

We present in Figure 9. the results about the question on what is **the main discovery priority for SSH scholars** - appearing as the last question of the overall questionnaire. The discovery of publications is by far the most pressing priority with 623 responses (amounting to ~71.5% of the responses), followed by data with 141 responses, projects with 57 responses and lastly people with 51. The percentages for all the four areas can be seen from the graph in Figure 9.
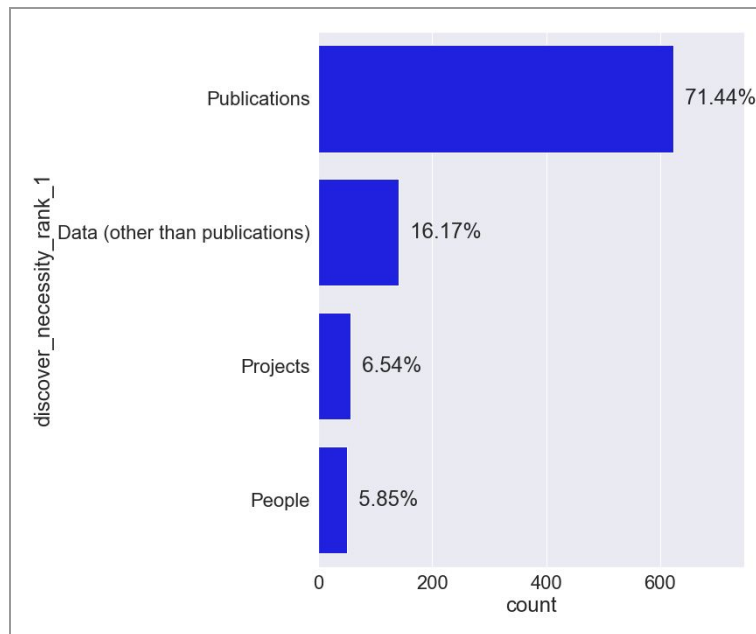
FIGURE 9. DISTRIBUTION OF QUESTIONNAIRE RESPONSE PER DISCOVERY PRIORITY (COUNT = NUMBER OF RESPONSES)

5| BLOCK 1 - PERCEPTION OF WHAT IS IMPORTANT FOR WORK

The first block of substantive questions of the questionnaire was composed of a number of Likert-items aimed at measuring **the perception of the importance of digital tools for research**. The 5 options for this block were Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree. The goal was to investigate the question of "what is important for the work of SSH researchers?". The responses do show the majority of SSH researchers having generally positive perception (Strongly Agree and Agree) to all the questions, respectively on seven items on **the importance of**:

☐ Digital Research Tools (n=921)[3] [**digital_research_tools_importance**][4]

☐ Digital Repositories(n=918) [**digital_repository_importance**]

☐ Digital Discovery Tools (n=917) [**digital_discovery_tools_importance**]

☐ Collaboration (n=920) [**collaboration_importance**]

☐ Open Data (n=919) [**open_data_importance**]

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[3] We report here the total number (n) of responses received for each of the questions, numbers vary since it was possible for the respondents to skip answering specific questions, in line with the informed consent.
[4] These in square brackets are the labels used in the graphs/figures

☐ Open Access (n=914) [**open_access_importance**]

☐ Social Network Websites for work (n=919) [**social_network_importance**].

Figure 10. shows the results obtained from this set of Likert-items, ordered by the Strongly Agree response[5]. There is some homogeneity in the responses (mostly positive) with the exclusion of the question on the importance of social networks where the positive response (the sum of Strongly Agree and Agree) is comparably lower (<60%) than for the other questions (>80%). These results show how digitalization is anchored well in the SSH communities and one could conclude that a dedicated platform (like GOTRIPLE) will be a great tool for their work.
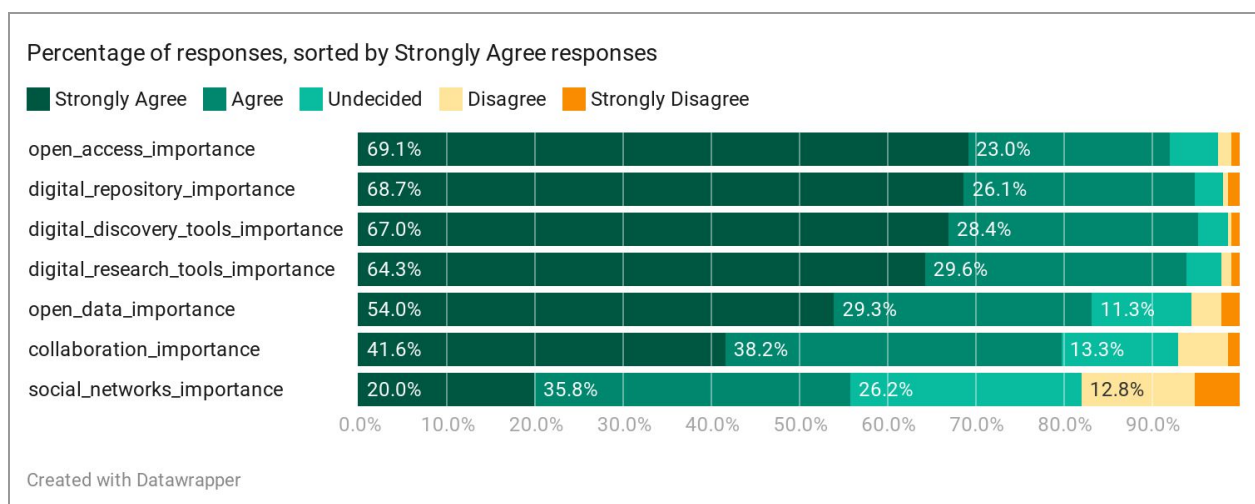
FIGURE 10. PERCEPTION OF THE IMPORTANCE OF DIGITAL TOOLS AND CONCEPTS FOR SSH RESEARCH WORK

The seven general questions above did show in some particular instances some relevant differences when demographics aspects are used to investigate the data further. We will show some of the most interesting graphs to augment this aspect.

5.1 Research Techniques

We start with the **research techniques** demographic. During qualitative interviews we had found that qualitative researchers seem less interested in data reuse and data sharing, consequently one could expect some differences, in particular in relation to the question on **the importance of Open Data**. Such differences are preliminary detectable in the descriptive graph of Figure 11. where we see less Strongly Agree responses and more Undecided for qualitative researchers than for quantitative colleagues, whereas quali-quantitative clearly have the same distribution as quantitative. Although responses are generally positive for both groups (Strongly Agree and Agree are respectively n=371, 78% and n=154, 88%). A non-parametric t-test

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[5] Please note that these global figures are **not** ordered by positive response (sum of Strongly Agree and Agree), as the tools used for making the graphs only allow the sorting for one of the options (Strongly Agree in this case).

D3.1 Iteration on User Needs

(Mann-Whitney U, with α = 0.05[6]) was conducted between the qualitative and quantitative groups. The results show that the two groups have indeed a different distribution in relation to the question (*H0: The two groups have the same distribution of scores*)[7], resulting in an U value of 35243.5 and p=0.002 (that is, p< α and we thus *reject H0*).
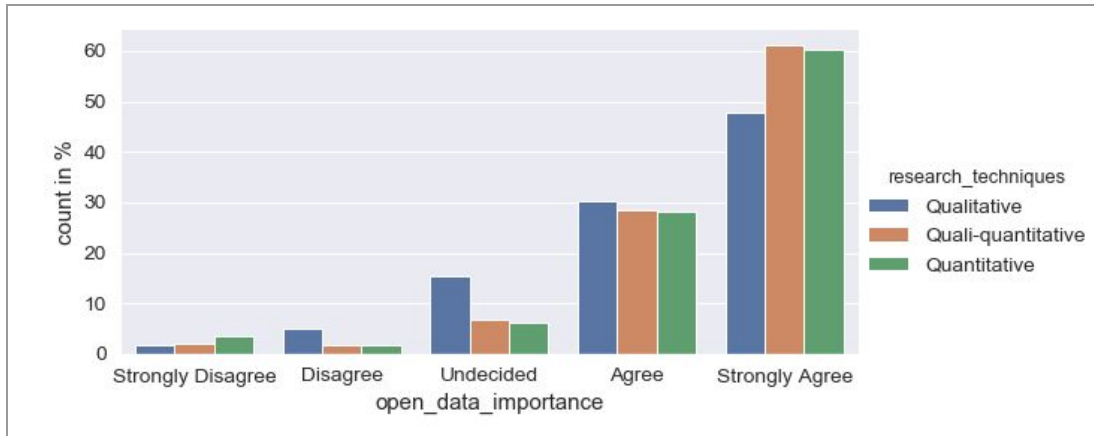

IGURE 11. PERCEPTION OF THE IMPORTANCE OF OPEN DATA BETWEEN DIFFERENT RESEARCH TECHNIQUES

Likewise, the Figure 12. for the differences between qualitative and quantitative researchers shows differences on **the importance of digital research tools**, although again positive responses are dominant for both groups (n=444, 93%, n=164, 92%, respectively). A non-parametric test was conducted (*H0: The two groups have the same distribution of scores*), resulting in an U value of 35900 and p=0.001, with the conclusion that they present a different distribution (*reject H0*). Digital research tools do appear marginally more important for quantitative researchers than for qualitative researchers.
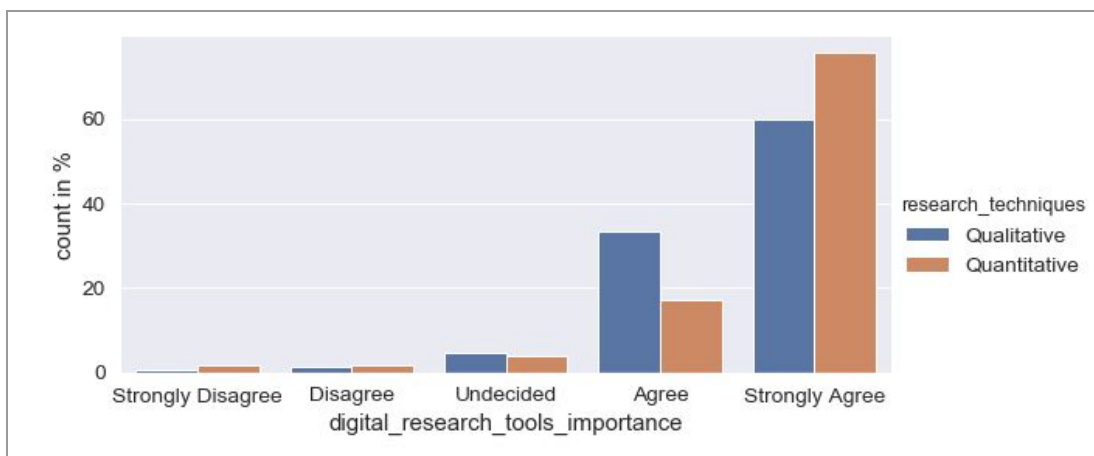

FIGURE 12. PERCEPTION OF THE IMPORTANCE OF DIGITAL RESEARCH TOOLS BETWEEN QUALITATIVE AND QUANTITATIVE RESEARCHERS

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[6] A reminder that alpha will be at 0.05 throughout this deliverable

[7] The approach to reporting the results is taken from Hollingsworth et al. (2011).

These two groups (qualitative and quantitative), albeit again showing positive responses across the board, thus present some statistically significant differences in some areas. In other areas however these differences are not present or anyway they are not this marked. The Figure 13. shows the differences between qualitative and quantitative researchers in relation to the perceived **importance of digital discovery tools.** A non-parametric test was conducted (*H0: The two groups have the same distribution of scores)*, resulting in an U value of 39759.0, p=0.368, with the conclusion that they present the same distribution (that is p>α, we thus *accept H0*). Digital discovery tools are thus equally important for both qualitative and quantitative researchers.
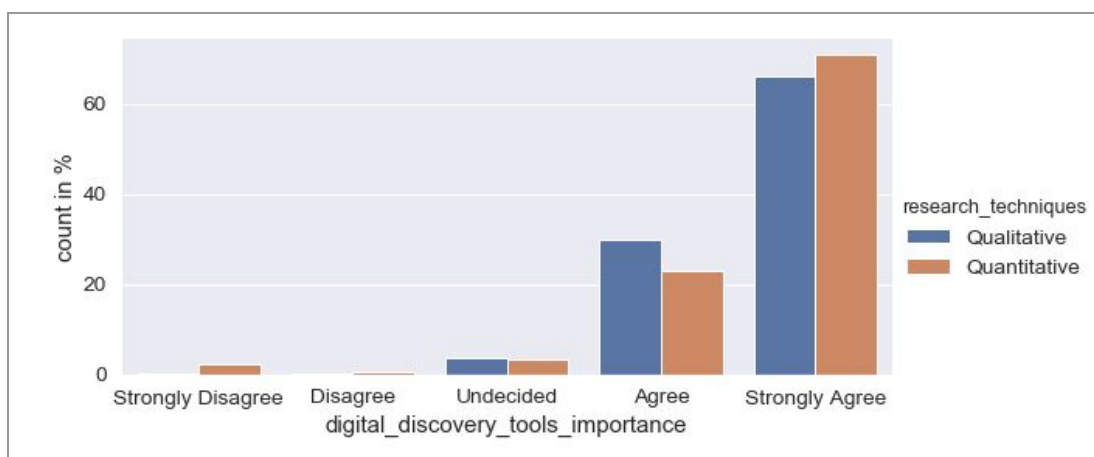
FIGURE 13. PERCEPTION OF THE IMPORTANCE OF DIGITAL DISCOVERY TOOLS BETWEEN QUALITATIVE AND QUANTITATIVE RESEARCHERS

5.2 Interdisciplinarity

One further interesting aspect was detected in relation to the question about **the importance of digital collaboration** tools (Figure 14.), between interdisciplinary researchers and those claiming to work on a single discipline (**interdisciplinarity demographic**). The descriptive graph clearly shows some differences between the two groups, even though collaboration is clearly perceived as important for both groups (with the majority of responses being Strongly Agree and Agree). A non-parametric t-test was conducted, (*H0: The two groups have the same distribution of scores*). This resulted in U=58380 and p=0.000, with the conclusion that the two groups present indeed a different distribution (*reject H0*). The preliminary conclusion of this could be that interdisciplinary researchers tend to be marginally more prone and open to collaboration and thus to the use of collaboration tools than the colleagues working on a single discipline. This aspect will be investigated further in another section of this deliverable (Section 11.)
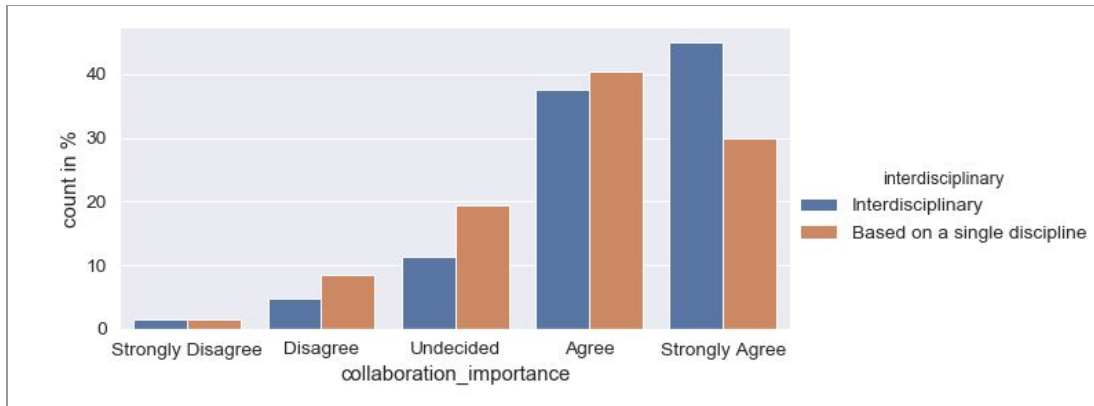
FIGURE 14. PERCEPTION OF THE IMPORTANCE OF COLLABORATION BETWEEN INTERDISCIPLINARY SSH RESEARCHERS AND SSH RESEARCHERS BASED ON A SINGLE DISCIPLINE

5.3 Career Level

Qualitative interviewing conducted for D3.1 showed that older researchers felt a little less prepared toward the use of digital technologies and experienced a sort of feelings for being left behind, in comparison to the younger generation of researchers. Although we did not ask the age of respondents in the questionnaire, the **career level** may give us some indication in this regard (in the expectation that people at an higher career level may normally be older - but not always - than people at the beginning of their career).

The Figure 15. shows the responses to the question associated with **the importance of digital discovery tools** for different career levels. Again, most of the respondents gave positive perception (in Strongly Agree or Agree), with the 3 central career levels presenting very similar outcomes. There are some perceivable differences between research students and people on a high career level (with the former clearly presenting more Strongly Agree responses). A non-parametric t-test was conducted to check whether this difference (between students and high level groups) is statistically significant, (*H0: The two groups have the same distribution of scores*). This resulted in U=15781 and p=0.000, with the conclusion that the two groups present indeed a different distribution (*reject H0*). Moreover A non parametric correlation test (Spearman) was conducted (with *H0 that there is a correlation between career levels and the perception of the importance of digital discovery tools*) resulting in a coefficient of -0.122 (p=0.000, that is p<α) showing that there is mild negative correlation, with people at lower levels of their careers perceiving a greater importance of digital discovery tools.
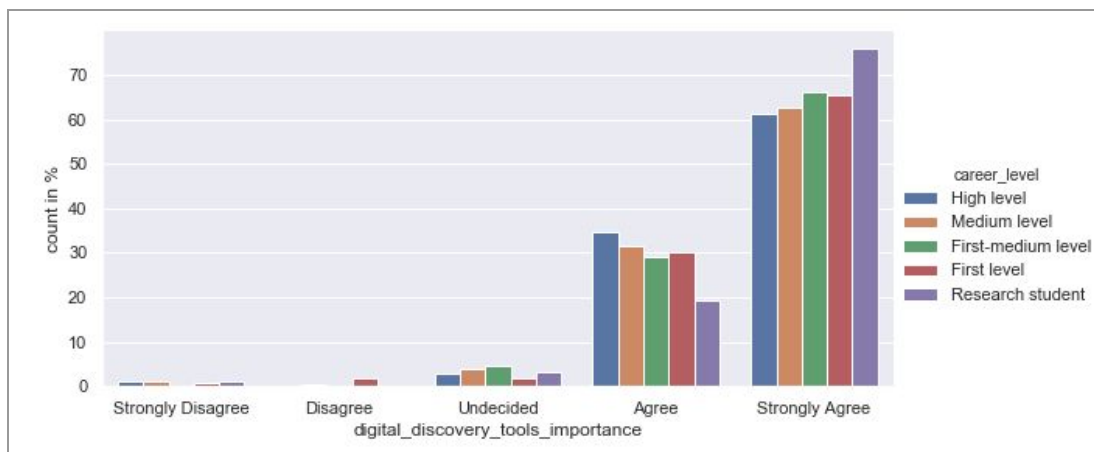
FIGURE 15. PERCEPTION OF THE IMPORTANCE OF DIGITAL DISCOVERY TOOLS PER CAREER LEVEL

5.4 Block 1 - Main take-away points

The first block of the questionnaire tried to answer the question of "what is important for the work of SSH researchers?". The **main take-away points** from the analysis presented are as follows:

☐ There are general positive responses for all the questions, showing that the use of digital tools is important across SSH research communities.

☐ Open data and digital research tools appear more important for quantitative researchers than for qualitative researchers, somehow confirming some of the findings of qualitative interviews (as presented in D3.1 Report on the User Needs), albeit positive responses are prevalent for both groups.

☐ Digital discovery tools are equally important for both qualitative and quantitative researchers (since there are no significant differences in the distribution of responses).

☐ Collaboration appears more important for interdisciplinary scholars than it is for those based on a single discipline (albeit positive responses are dominant for both groups).

☐ Digital discovery tools are important for all the career levels, however there is a negative correlation with people at lower levels of their careers perceiving a greater importance of digital discovery tools. This perhaps confirms again some of the findings of qualitative interviews (D3.1 Report on the User Needs).

6| Block 2 - Perception toward digital tools supporting discovery

The next block of the questionnaire was composed of a set of Likert-items aimed at measuring the **perception of SSH researchers toward a number of categories of digital tools**. The 5 options for this block were Never, Rarely, Sometimes, Often, Always. This block tried to answer the following main question "what are the main priorities of SSH researchers toward discovery tools?". The Figure 16. show the general responses from the questionnaire, respectively for:

☐ generalist search engines such as google (n=918) [**search_engines_usage**]

☐ scientific search engines (n=914) [**scientific_search_engines_literature_usage**]

☐ scientific databases (n=916) [**databases_usage**]

☐ generalist literature archives (n=911) [**generalist_archives_literature_usage**]

☐ disciplinary literature archives (n=915) [**disciplinary_archives_literature_usage**]

☐ library catalogues (n=918) [**library_catalogues_usage**]

☐ visual search engines (n=909) [**visual_search_engine_usage**]

☐ and research platforms (n=915) [**research_platforms_usage**]

Two important questions of this block are the ones related to visual search engines and research platforms. A visual search engine (delivered by partner OKMAPS) will be one of the innovative services of GOTRIPLE. These technologies have only been around for a few years, if compared to for example literature archives or other solutions such as regular search engines, therefore it's not surprising that they are not as widely used as other tools. However - despite their relative novelty - we have seen that nearly 29% of respondents do use them with some frequencies (the sum of Always, Often and Sometimes responses) and ~57% (if those who have responded Rarely are included in the sum) have used visual search engines to some extent. These are thus encouraging figures for a novel technology. That also implies however that ~43% of respondents have never used visual search engines.

The question on the use of research platforms (that is digital environments where there is the integration of multiple tools and functionalities for the conduction of research work) also is an important one as it can measure the perception of relevance of these tools for research work, considering that GOTRIPLE will be a discovery research platform. Only ~4.6% of respondents (n=42) claimed they have never used a research platform, with ~56% (n=513) stating that they use the tools Often or Always. Also important is the use of scientific search engines of which Isidore (a fundamental component of the GOTRIPLE platform) is an important example, with only 2.4% of respondents (n=22) stating they have never used these tools and 75% (n=687) stating they use these Often or Always.
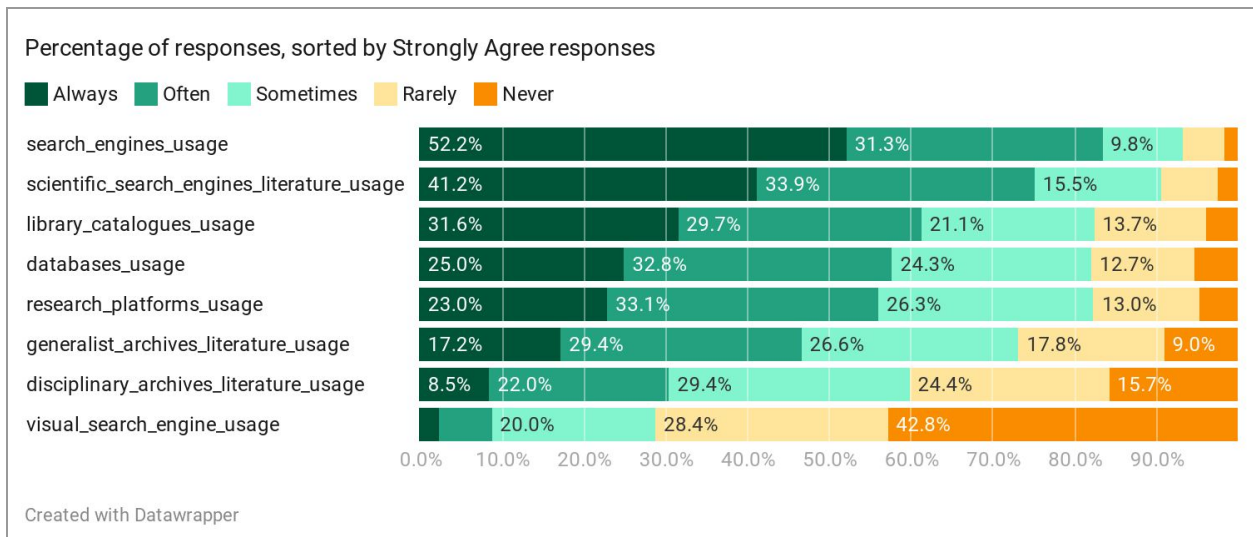
Figure 16. Perception toward digital discovery tools of SSH researchers

6.1 Research Techniques

In this block, for some of the questions the differences among demographics are more evident than for previous general questions on the importance of digital tools (block 1). This is evident for example on the question about the **use of library catalogues** (Figure 17.), if we look at the **research techniques** demographic. We see strong positive responses as Always and Often for qualitative researchers (above 70% for qualitative and nearing 60% for quali-quantitative), while most responses for quantitative are in the Sometimes and Never. Clearly qualitative researchers make a much more widespread use of library catalogues than researchers working with quantitative (and also quali-quantitative) techniques. A non-parametric t-test was conducted between the qualitative and quantitative groups to check whether this difference is statistically significant, (*H0: The two groups have the same distribution of scores*), although this is already clear from the descriptive graph. This resulted in U=59858 and p=0.000, with the conclusion that the two groups present indeed a different distribution (*reject H0*).

Likewise to the question on the **use of scientific search engines** (e.g. Isidore, google scholar) (Figure 18.), some differences are perceivable between different research techniques, in particular between the qualitative and quantitative groups. A non-parametric t-test was conducted between these two groups to check whether this difference is statistically significant, (*H0: The two groups have the same distribution of scores*). This resulted in U=30752.5 and p=0.000, with the conclusion that the two groups present indeed a different distribution (r*eject H0*). It seems evident (especially from the descriptive graph) that quantitative researches do make a much more concrete use of scientific search engines for finding literature, than qualitative researchers. Differences are however less clear when comparing qualitative and quali-quantitative researchers. A non-parametric t-test (Mann-Whitney) was conducted to check whether this difference is statistically significant, (*H0:*

The two groups have the same distribution of scores). This resulted in U=56662 and p=0.405, with the conclusion that the two groups (qualitative and quali-quantitative) present the same distribution (*accept H0*).
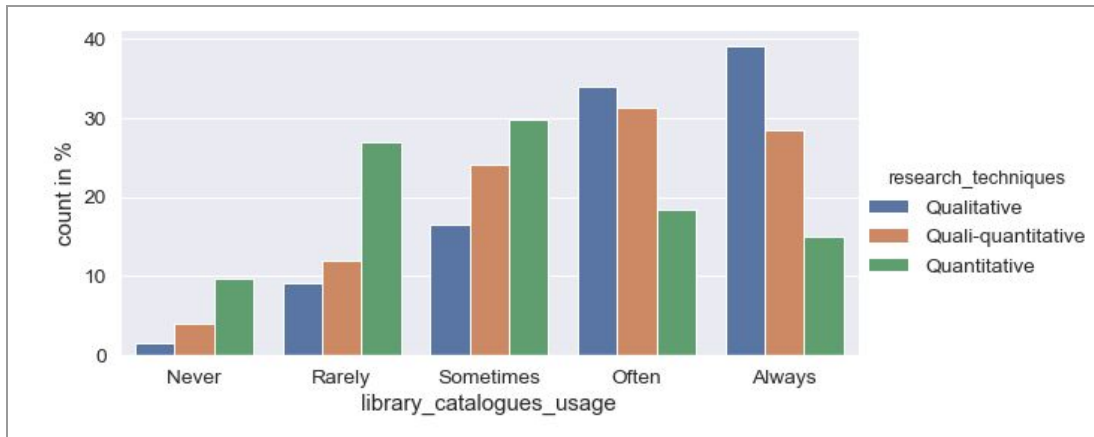

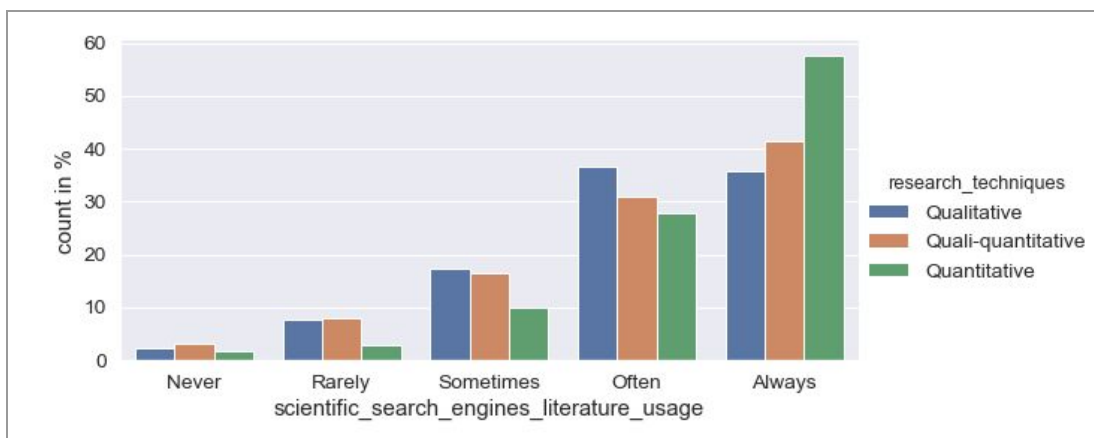FIGURE 17. PERCEPTION OF THE USE OF LIBRARY CATALOGUES FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

FIGURE 18. PERCEPTION OF THE USE OF SCIENTIFIC SEARCH ENGINES FOR RESEARCH TECHNIQUES DEMOGRAPHIC

However there do not seem to be significant differences between qualitative and quantitative research techniques, in relation to **visual search engines** as shown in Figure 19. A non-parametric t-test was conducted to check whether this difference is statistically significant, (*H0: The two groups have the same distribution of scores*). This resulted in U=42927.5 and p=0.195, with the conclusion that the two groups present the same distribution (*accept H0*).
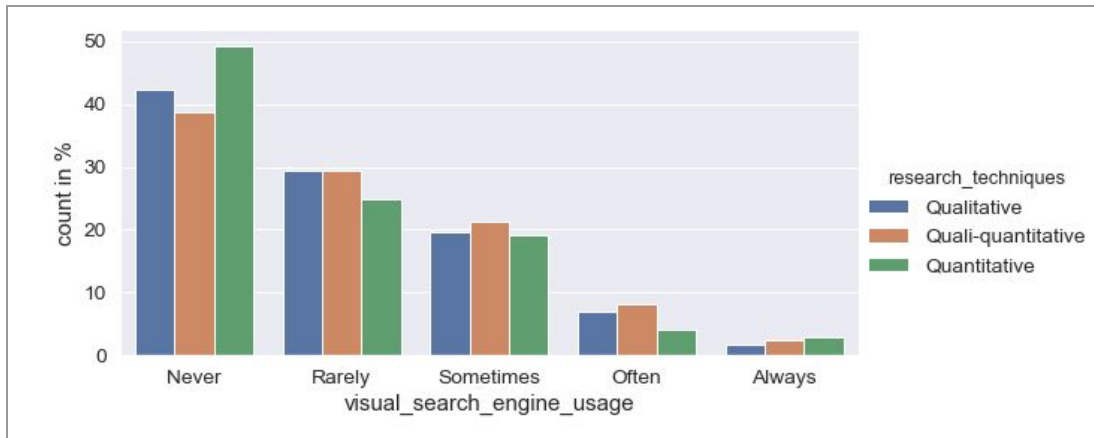
FIGURE 19. PERCEPTION OF THE USE OF VISUAL SEARCH ENGINES FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

6.2 Interdisciplinarity

Turning to the **interdisciplinarity demographic**, we will look at 3 questions for this block, mainly the ones focusing on some of the key TRIPLE services. The first one, is the question on the **use of scientific search engines** (e.g Isidore) (Figure 20.). Again we see very positive responses topping 70% for both groups (76% for interdisciplinary researchers and 72% for the others on the Strongly Agree and Agree responses), which suggests the importance of these tools regardless of this demographic. However interdisciplinary researchers do seem more prone toward the use of scientific search engines if we look at the higher Always response. A non-parametric t-test was conducted to check whether this difference is statistically significant, (*H0: The two groups have the same distribution of scores*). This resulted in U=77058 and p=0.042, with the conclusion that the two groups present a different distribution (*reject H0[8]*).
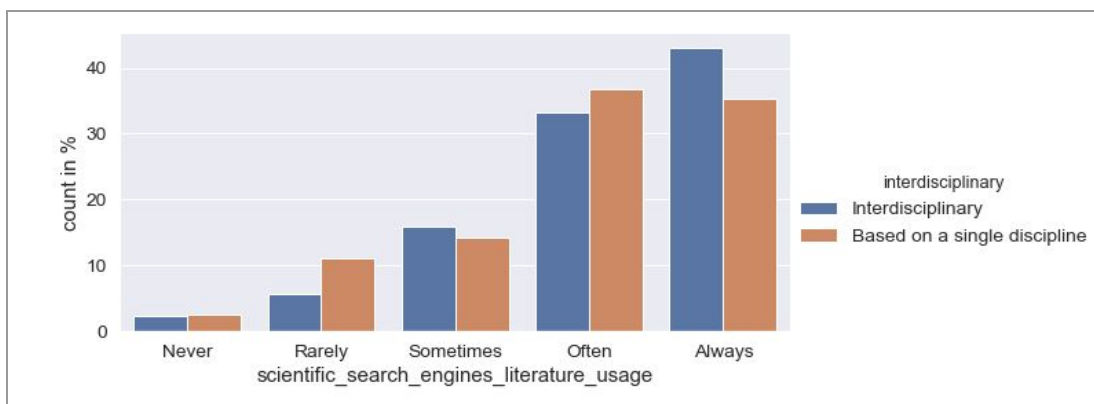
FIGURE 20. PERCEPTION OF THE USE OF SEARCH ENGINES FOR THE INTERDISCIPLINARY DEMOGRAPHIC

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[8] However H0 could be accepted with alpha at 0.01

D3.1 Iteration on User Needs

Turning to **visual search engines** (Figure 21.), we can see some clear potential differences between the aspects of this demographic. We have already noted that for this question there was a low positive response but also that these engines are relatively new and this was to be expected. A non-parametric t-test was conducted to check whether this difference is statistically significant, (*H0: The two groups have the same distribution of scores*). This resulted in U=80395.5 and p=0.001, with the conclusion that the two groups present a different distribution (*reject H0*). It seems then that interdisciplinary researchers have a slightly more positive adoption of visual search engines in their discovery practices, than colleagues based on a single discipline.
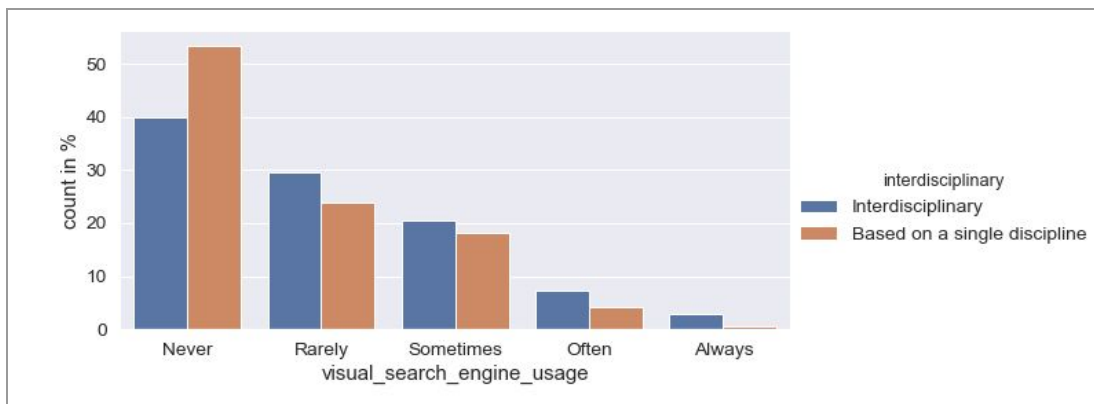
FIGURE 21. PERCEPTION OF THE USE OF VISUAL SEARCH ENGINES FOR THE INTERDISCIPLINARY DEMOGRAPHIC

Likewise for the question on the **use of research platforms** (Figure 22.), we clearly have good perception on the use (84%, n=594 for Sometimes, Often and Always for interdisciplinary researchers and 80%, n=159 for the others) as we can see from the graph, but clearly we can also perceive differences between the two groups, with Always and Often tending to be higher for interdisciplinary researchers. A non-parametric t-test was conducted to check whether this difference is statistically significant, (*H0: The two groups have the same distribution of scores*). This resulted in U=77269.5 and p=0.054, with the conclusion that the two groups present however the same distribution (*accept H0*).
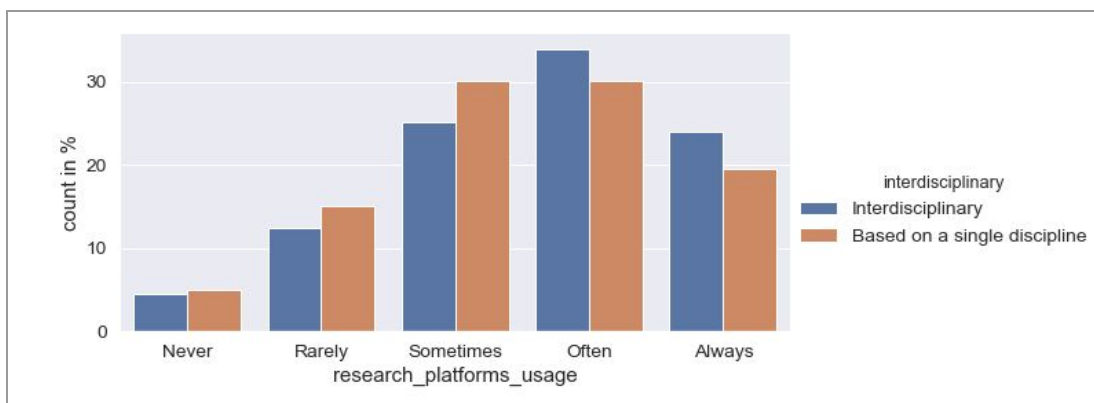

FIGURE 22. PERCEPTION OF THE USE OF RESEARCH PLATFORMS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

Overall one could perhaps conclude that researchers working on a single discipline tend to be slightly more "conservative" when it comes to the use of discovery tools (as covered in the items of this block of the questionnaire), whilst interdisciplinary researchers tend to be slightly more open to innovative tools and practices. With the term conservative here we are not providing a judgment but we are trying to start developing a concept which captures the observation that one group appears generally less prone toward the use of novel digital tools, than the other comparable group(s). This observation is an outcome of both the descriptive statistics (where interdisciplinary scholars tend often to have more positive and less negative responses than the other group) and the statistical tests (where we have seen that often the distribution of responses between the two groups is significantly different).

6.3 Career Level

Looking at the same three questions from the **career level** demographics, we can see some interesting aspects. In relation to **scientific search engines** (Figure 23.), it would appear the researchers at the first level of their career (e.g. postdoctoral researchers, in red) make slightly less use of these in their discovery if we look at the Always response (only 30%, n=30) if compared for example with first-medium level (e.g. lecturers, assistant professors, 46%, n=86).
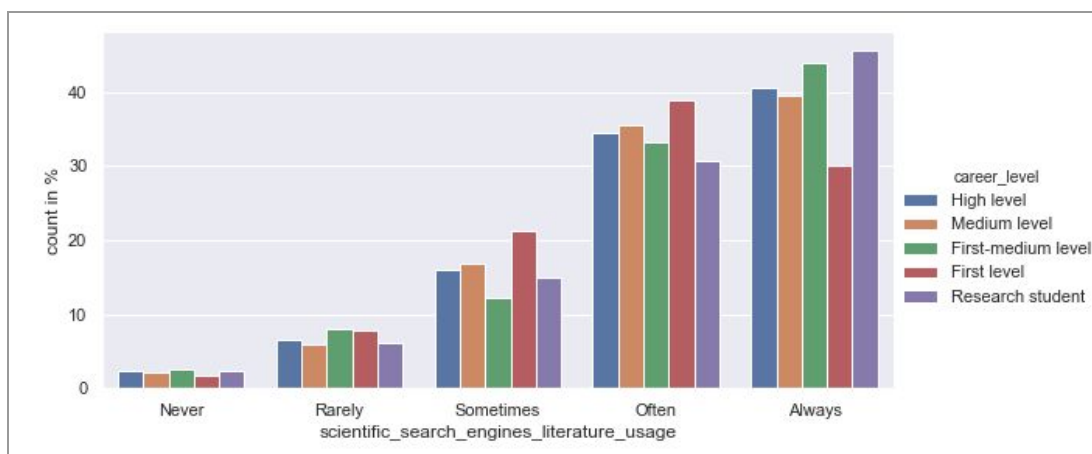

FIGURE 23. PERCEPTION OF THE USE OF SCIENTIFIC SEARCH ENGINES FOR THE CAREER LEVEL DEMOGRAPHIC

To the question on **visual search engines** (Figure 24.), we see again the same pattern, with respondents at the first level of their career (i.e. post-docs) having the (relatively) largest Never response (51%, n=58) and the lowest Always response (less than 1%, with just 1 respondent), whilst for example people at the high career level (e.g. Professors, in blue) do seem to make more use of visual search engines compared to researchers at the first level (34%, n=57 of Sometimes, Often and Always, compared to 22%, n=25 for first level). A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the use of visual search engines*) resulting in a coefficient of 0.102 (p=0.002) showing that there is a very mild positive correlation, with people at higher levels of their careers using visual search engines more than those at lower level of their career.
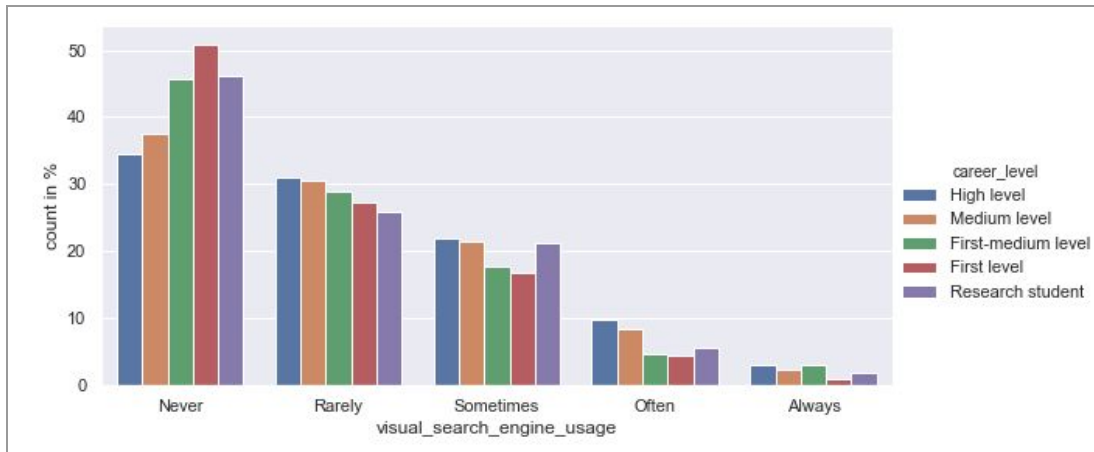
FIGURE 24. PERCEPTION OF THE USE OF VISUAL SEARCH ENGINES FOR THE CAREER LEVEL DEMOGRAPHIC

In relation to the **use of research platforms** (Figure 25.), we again see respondents at the first level of their career being perhaps the group less prone toward digital technologies. While in this case people at medium level (e.g. Associate professors, Senior lecturers) have the least Always responses (17%, n=37), they are followed immediately by people at first level (18%, n=21). However respondents at medium level have a strong Often response (38%, n=84). Respondents at first level have the highest Never response to this question (8%, n=9). A parametric t-test was conducted between first-level and medium-level responses (*H0: The two groups have the same distribution of scores*), resulting in U=13975, p=0.011, confirming these two groups have a different distribution (*reject H0*). A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the use of research platforms*) resulting in a coefficient of -0.032 (p=0.332) showing that there is no correlation between career level and the use of research platforms.
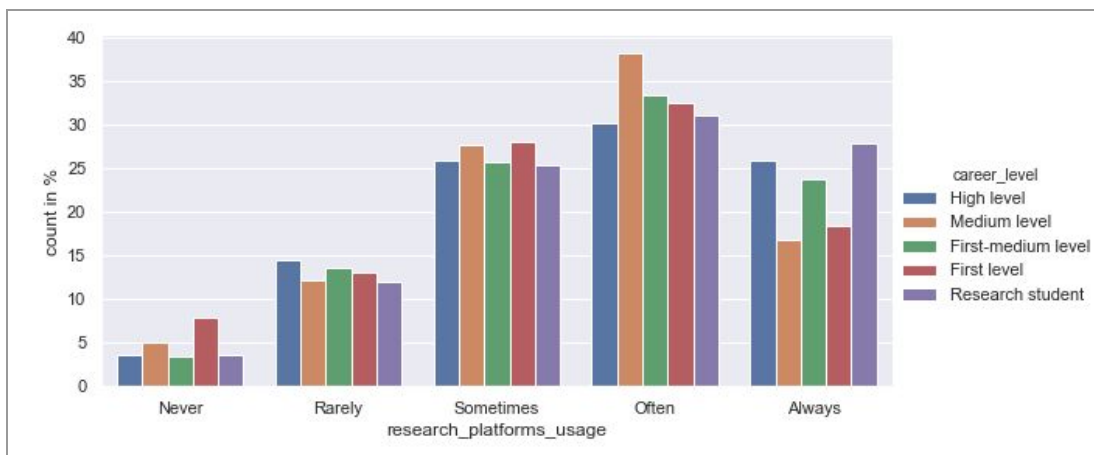
FIGURE 25. PERCEPTION OF THE USE OF RESEARCH PLATFORMS FOR THE CAREER LEVEL DEMOGRAPHIC

6.4 Main Discipline

The Figure 26. shows the response to **the use of scientific search engines** for the **main discipline demographic**. We see a high Always response in Linguistics, Sociology and Library and Information Sciences, but much lower for Literature and especially History. Historians seem the group (among these 5) that least of all use scientific search engines. We could postulate that historians' discovery patterns differ from those of for example Sociology and this is an hypothesis which may warrant further investigations in the future. However some signs of this difference can be seen if we look at some further questions in this block.
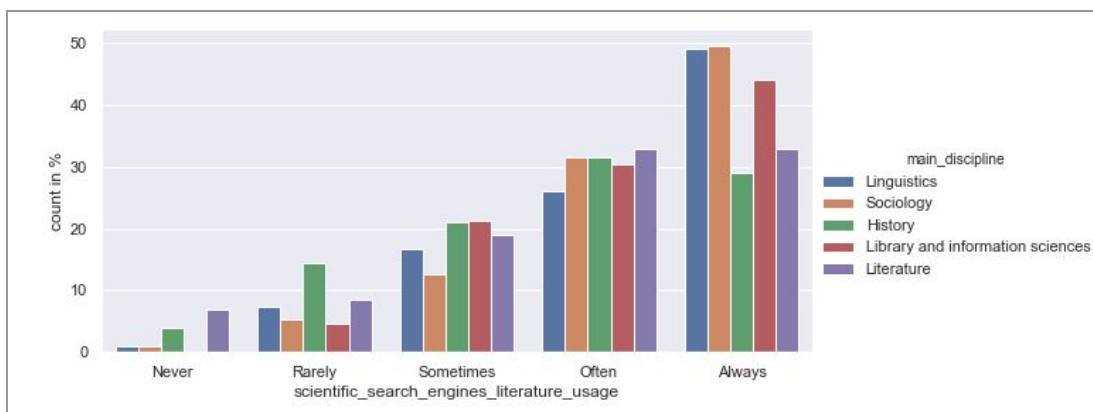
FIGURE 26. PERCEPTION OF THE USE OF SCIENTIFIC SEARCH ENGINES FOR THE DISCIPLINE DEMOGRAPHIC (THE FIVE DISCIPLINES WITH MOST RESPONSES)

The following graph (Figure 27.) shows the responses to the question on the **use of generalist archives**. We see here Historians and scholars in Literature with strong Always and Often responses, with for example Sociologists and Linguists making much less use of this kind of discovery resources. This spells that there are disciplinary differences in discovery practices, depending on the type of research which is conducted with historians and Literature scholars normally using archives more than the others.
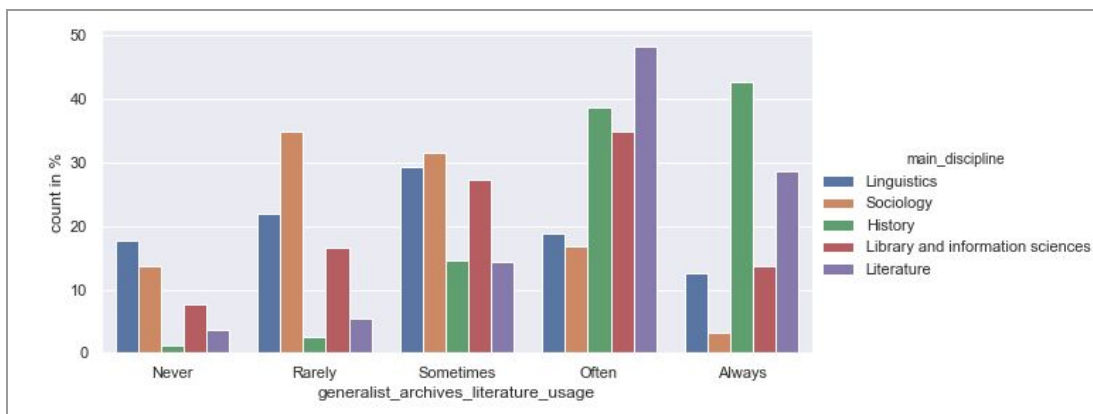

FIGURE 27. PERCEPTION OF THE USE OF GENERALIST ARCHIVES OF LITERATURE FOR THE DISCIPLINE DEMOGRAPHIC

D3.1 Iteration on User Needs

The same patterns can be seen from the following graph (Figure 28.) on **the use of library catalogues**, where we see scholars working in Literature and History making a more widespread use of these catalogues (topping 80% in both cases, for Strongly Agree and Agree responses) if compared with Linguists and Sociologists (both groups just above 50%).
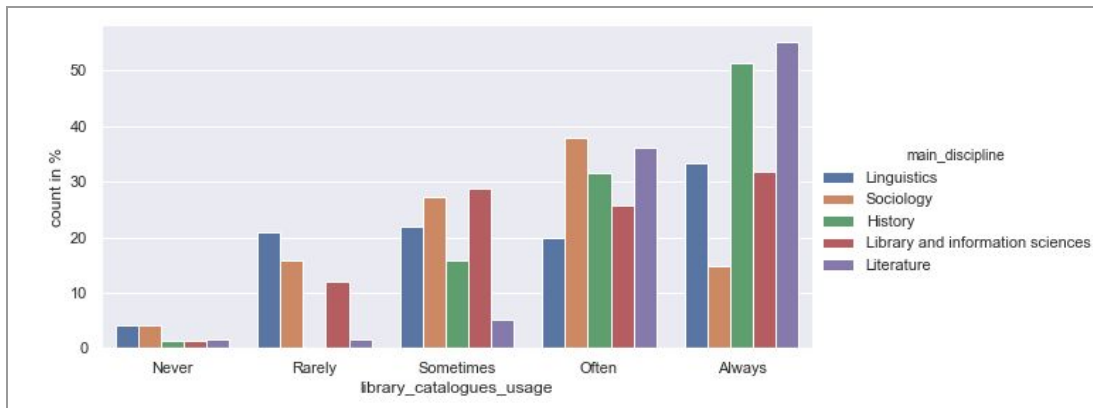

FIGURE 28. PERCEPTION OF THE USE OF LIBRARY CATALOGUES FOR THE DISCIPLINE DEMOGRAPHIC

If we look at the response to the question on the use of **visual search engines** (Figure 29.), this pattern also seems to be present, to an extent, with Linguists and Sociologists showing the largest Never response (respectively almost 60% and nearly 50%) on the use of this discovery technology. Whilst less than 40% of Historians and scholars in Literature responded Never.
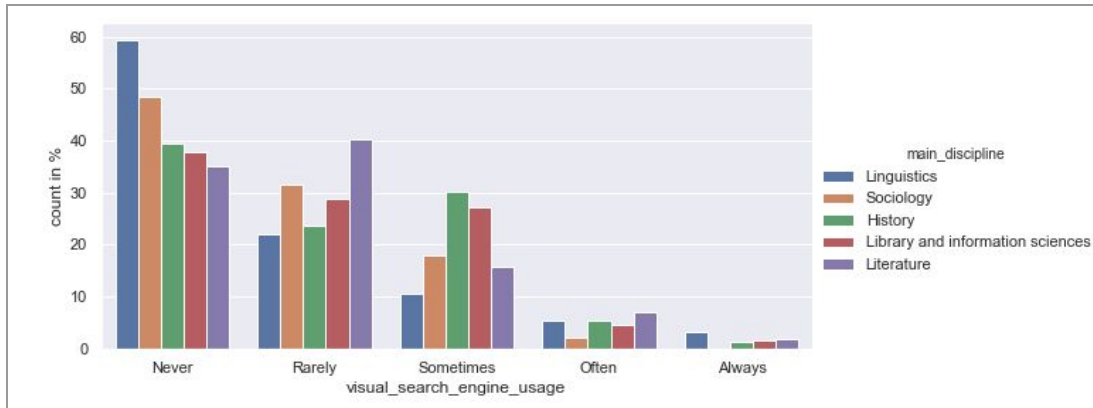
FIGURE 29. PERCEPTION OF THE USE OF VISUAL SEARCH ENGINE FOR THE DISCIPLINE DEMOGRAPHIC

The findings suggest that different work practices among different disciplinary domains may have an effect on shaping different discovery disciplinary challenges and practices. Although we have seen here only 5 disciplines (the ones with most responses from the questionnaire, as discussed earlier) as a methodological choice, this may pose a partial challenge for the design of GOTRIPLE which tries to encompass all SSH research disciplines. Some differences do indeed exist and it may be that GOTRIPLE needs to find some common denominator in order to accommodate these differences.

6.5 Block 2 - Main take-away points

The second block of the questionnaire tried to answer the question of "what are the main priorities of SSH researchers toward discovery tools?". The **main take-away points** from the analysis presented in this section are as follows:

☐ Search engines and scientific search engines use is widespread for SSH scholars. Other tools such as visual search engines appear relatively new but are gaining ground in SSH discovery practices.

☐ In relation to research techniques there are differences between quantitative scholars on one side and qualitative and quali-quantitative scholars on the other, in relation to the use of scientific search engines. Quantitative scholars use scientific search engines more than their qualitative colleagues.

☐ On the other hand, qualitative scholars make a much more wide use of other resources, such as library catalogues, if compared to quantitative researchers. However there are no differences across the research technique demographic in relation to the use of visual search engines.

☐ We have observed that Interdisciplinary researchers appear more prone toward the use of scientific search engines and have a more positive adoption of visual engines in their discovery practices, if compared to scholars working on a single discipline. We have preliminarily formulated the idea that the second group (single discipline) appears more conservative (i.e. less prone toward new digital tools) than interdisciplinary scholars.

☐ There are differences across career levels, but especially we have seen that the researchers at the first level of their career (e.g. postdoctoral researchers) make slightly less use of scientific search engines and visual engines, and in general they appear the group which struggles more with novel digital tools. However we have also seen that there is no direct correlation between career level and the use of research platforms.

☐ There are disciplinary differences in the use of search engines, with historians (amongst the 5 disciplines analysed) being the group that least of all use these tools. Moreover, there are disciplinary differences in discovery practices, depending on the type of research which is conducted (based on discoveries via archives or not).

7| BLOCK 3 - PERCEPTION TOWARD THE TOOLS FOR NETWORKING

As part of the questionnaire we asked SSH researchers about **their practices for networking with other people** with particular focus on broad categories of digital tools and their usage. The

goal was to investigate the question of "what are the main priorities of SSH researchers toward collaboration and networking tools?". Figure 30. reports on general responses around the use of:

☐ professional social network (such as LinkedIn) (n=916) [**professional_social_network_usage**]

☐ research social network (e.g. researchgate) (n=915) [**research_social_network_usage**]

☐ generalist social networks (e.g. facebook) (n=913) [**social_network_usage**]

☐ online forums (n=909) [**forums_usage**]

☐ research websites[9] (n=910) [**research_websites_usage**]

☐ real time communication tools (e.g. whatsapp, discord), (n=912) [**communication_tools_usage**]

☐ mailing lists (n=912) [**mailing_lists_usage**]

☐ and email (n=909) [**email_usage**]
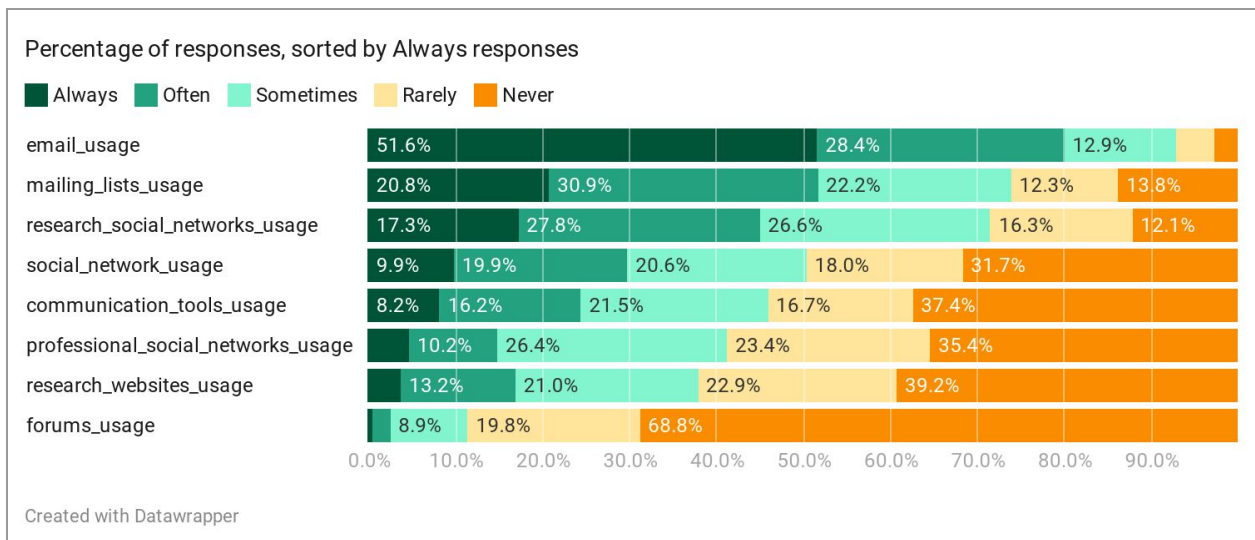
FIGURE 30. PERCEPTION OF THE USE OF TOOLS FOR NETWORKING AND COLLABORATION

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[9] These are for example the websites of professional SSH associations.

What emerges clearly is that the email is by far the most common tool for networking/communication, followed by mailing lists. In the first case 80% (n=730) of respondents said they use emails Often or Always to communicate and network with colleagues, going to 93% (n=848) if we include Sometimes. Mailing lists also are a very popular communication/networking for nearly 52% of respondents (Always and Often, n=470) as well research social network websites (e.g. researchgate/academia), with ~45% (n=412) of positive responses. The situation for the other tools seems that they are less preferred compared to these three just mentioned, especially professional social networks (e.g. LinkedIn) or online forums. The one which perhaps is worth commenting on is the question about communication tools (e.g. whatsapp), under which the TRIPLE Trust Building System may fall (as a mobile app allowing multi-stakeholder collaboration). To this question ~46% of respondents (n=419, sum of Sometimes, Often and Always) stated they make some use of communication tools for networking with others.

7.1 Research Techniques

In relation to using communication/networking tools we will see again the differences across some of the demographics. We start with the **research techniques** demographic in relation to the question on the **use of email** (Figure 31.). While there are some perceivable differences between quali-quantitative researchers and the other 2 groups, it is also clear that qualitative and quantitative researchers both present the same level of responses in relation to the use of email. The further graph on the **use of research social networks** (Figure 32.) shows very minimal differences across the three groups. Some of the differences we have seen earlier, related to qualitative researchers using a bit less digital technologies for discovery if compared to qualitative counterparts, do not seem to appear in this block of questions around communication and networking.
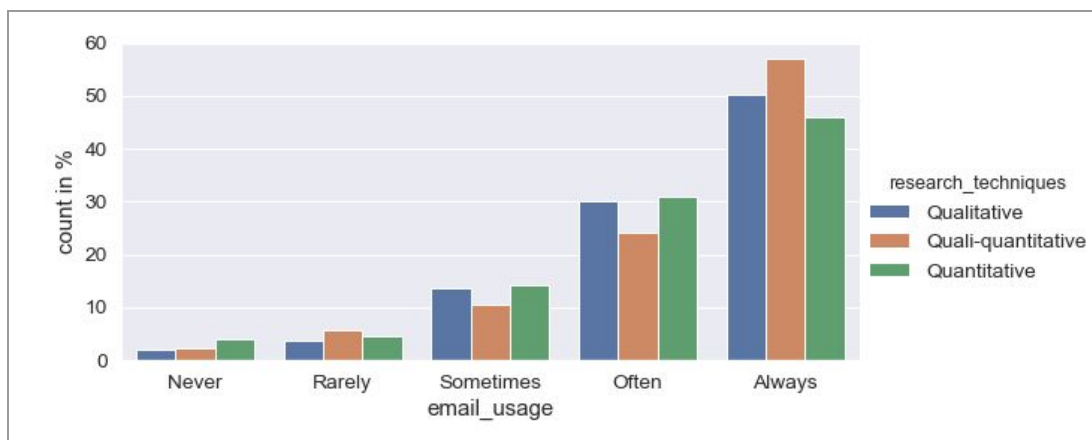

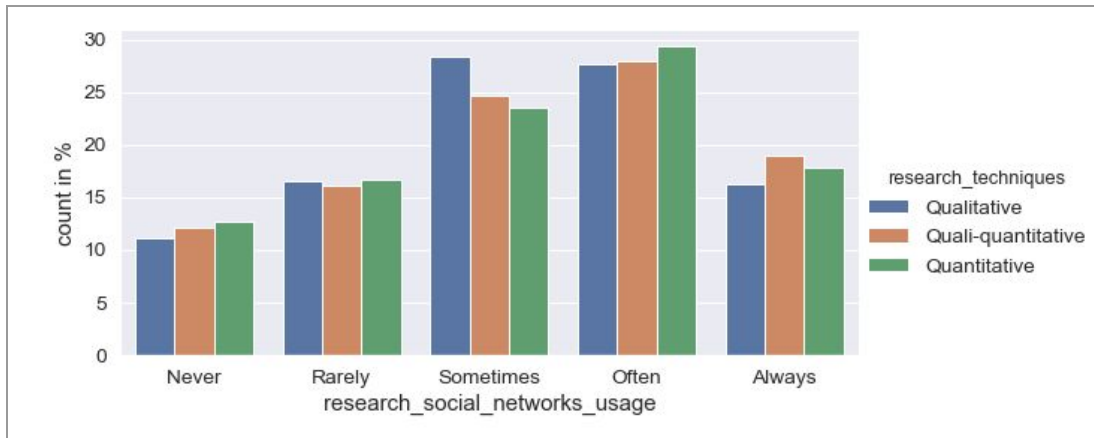FIGURE 31. PERCEPTION OF THE USE OF EMAILS FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

FIGURE 32. PERCEPTION OF THE USE OF RESEARCH SOCIAL NETWORKS FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

7.2 Interdisciplinarity

If we turn our attention to the **interdisciplinary demographic** for some questions we can see again the pattern about researchers working within just one discipline being more conservative (that is marginally less prone toward digital tools) than the other group.

For instance in relation to the **use of communication tools/apps**, there clearly are some differences as shown in Figure 33. We see a larger Never response (nearly 50%) for scholars working on a single discipline and interdisciplinary researchers have higher responses in Often and Always. A non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=83942.5, p=0.000, confirming that the two groups present a different distribution (*reject H0*) and thus interdisciplinary scholars using slightly more often communication tools (e.g. whatsapp) for their networking with others, than the other group.
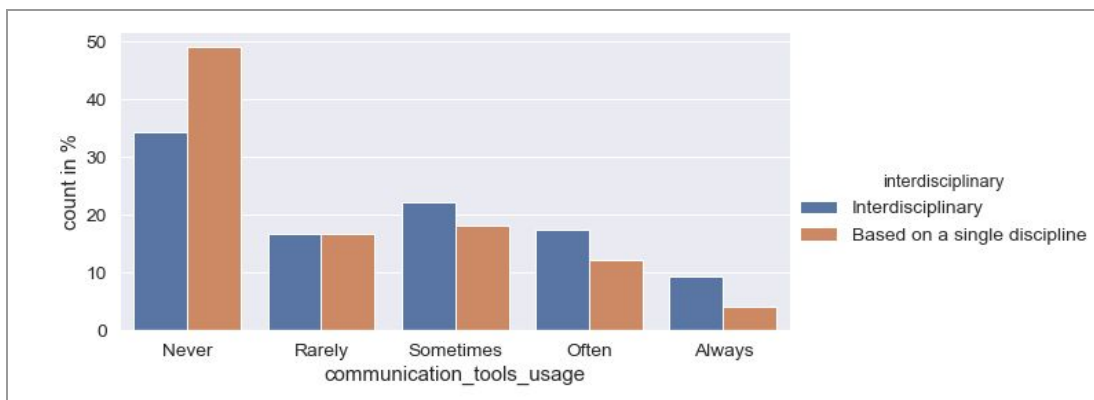
FIGURE 33. PERCEPTION OF THE USE OF COMMUNICATION TOOLS FOR THE INTERDISCIPLINARITY DEMOGRAPHIC

Likewise if we look at the **use of general social networks** (e.g. Facebook, Figure 34.) or **research websites** (Figure 35.) we can see differences from the descriptive graphs. For instance in the second case (research websites) we conducted a non parametric t-test (*H0: The two groups have the same distribution of scores*) resulting in U=79321.5, p=0.004, confirming the observation that the two groups present a different distribution (*reject H0*). With the conclusion again that scholars working on a single discipline tend to be slightly more conservative toward the use of digital technologies also for networking and communication.
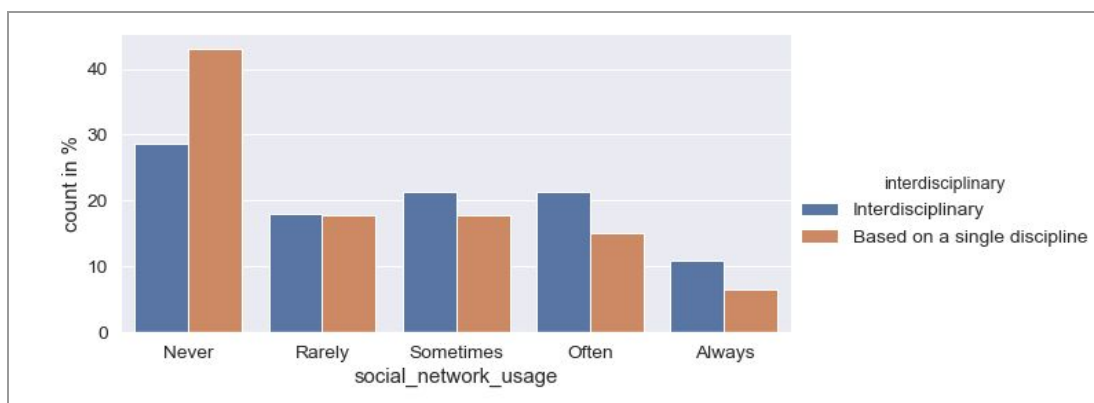
FIGURE 34. PERCEPTION OF THE USE OF SOCIAL NETWORKS FOR THE INTERDISCIPLINARITY DEMOGRAPHIC
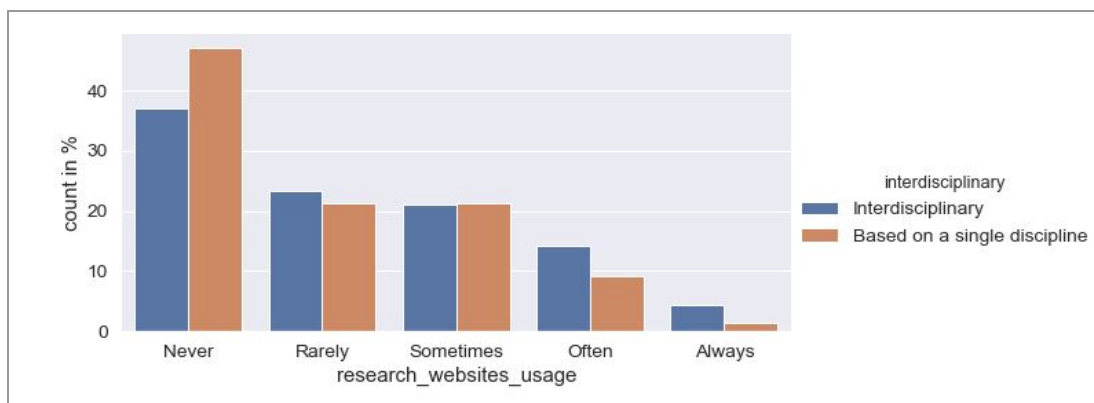
FIGURE 35. PERCEPTION OF THE USE OF RESEARCH WEBSITES FOR THE INTERDISCIPLINARITY DEMOGRAPHIC

7.3 Career Level

Coming to the **career level,** some further interesting observations can be made. In relation to the **use of emails** (Figure 36.), by far the preferred communication/networking tools, we can see that people at High Career level show the stronger Always response (well above 60% of all the response for this demographic), with research students instead remaining below 40%. The same can be seen in the graph about **mailing lists** (Figure 37.), with in this case students clearly

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showing much lower use of mailing lists. This may not be due to differences in working practices but from the fact that students may have a much smaller network of professional collaboration and possibility to contact colleagues directly by email. However this just remains an hypothesis which cannot be confirmed with current data, and further research would be necessary to confirm this. Furthermore, a non parametric correlation test (Spearman) was conducted (with H*0: that there is a correlation between career levels and the use of emails*) resulting in a coefficient of 0.175 (p=0.000) showing that there is a positive correlation, with people at higher levels of their careers using emails more than those at lower levels.
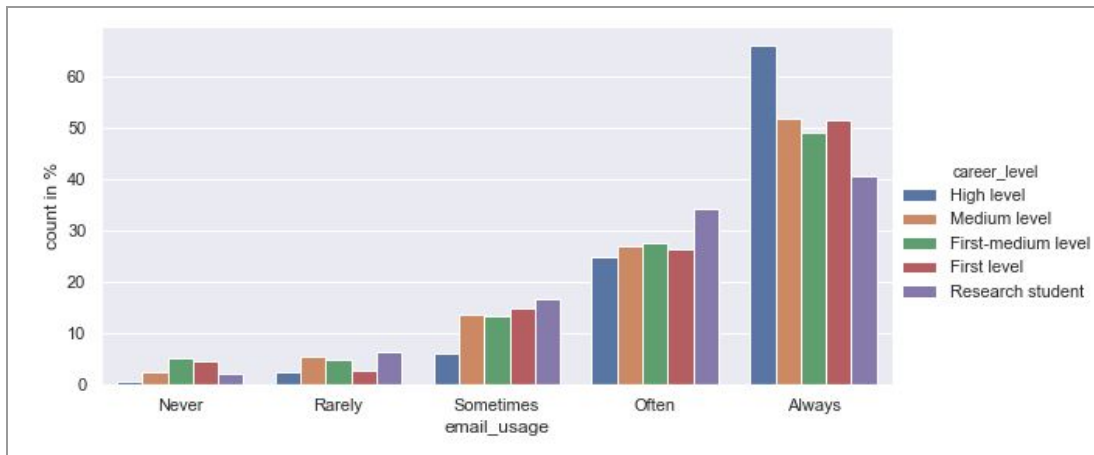
FIGURE 36. PERCEPTION OF THE USE OF EMAILS FOR THE CAREER LEVEL DEMOGRAPHIC
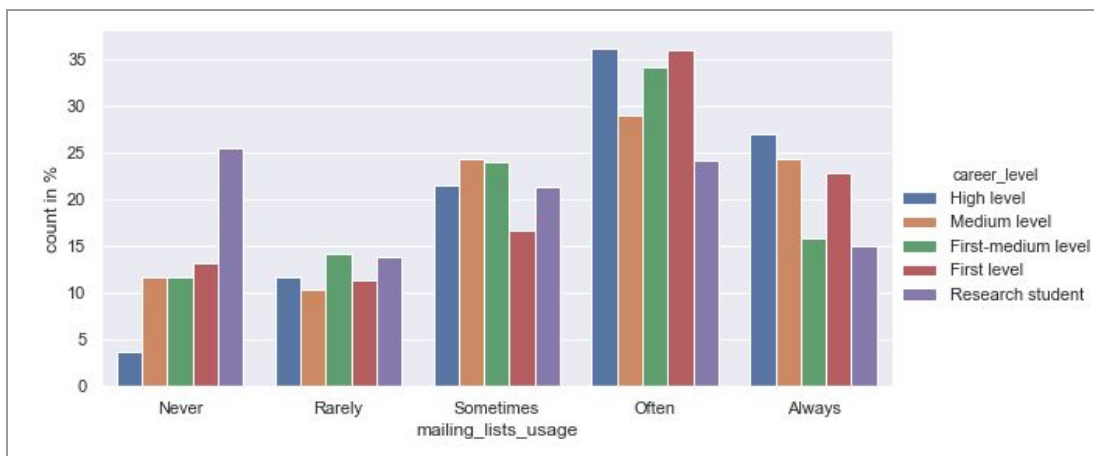
Figure 37. PERCEPTION OF THE USE OF MAILING LISTS FOR THE CAREER LEVEL DEMOGRAPHIC

Younger researchers (Students and First level) show a marginally wider **use of generalist social network websites** (Figure 38.). However, as can be seen in the graph, there are larger Never responses for Medium Level, High Level and First Medium Level and relative good use of them

(including Always, Often and Sometimes) for First Level and Research Students. A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the use of generalist social networks*) resulting in a coefficient of -0.124 (p=0.000) showing that there is mild negative correlation, with people at higher levels of their careers using generalist social networks a bit less than those at lower level.
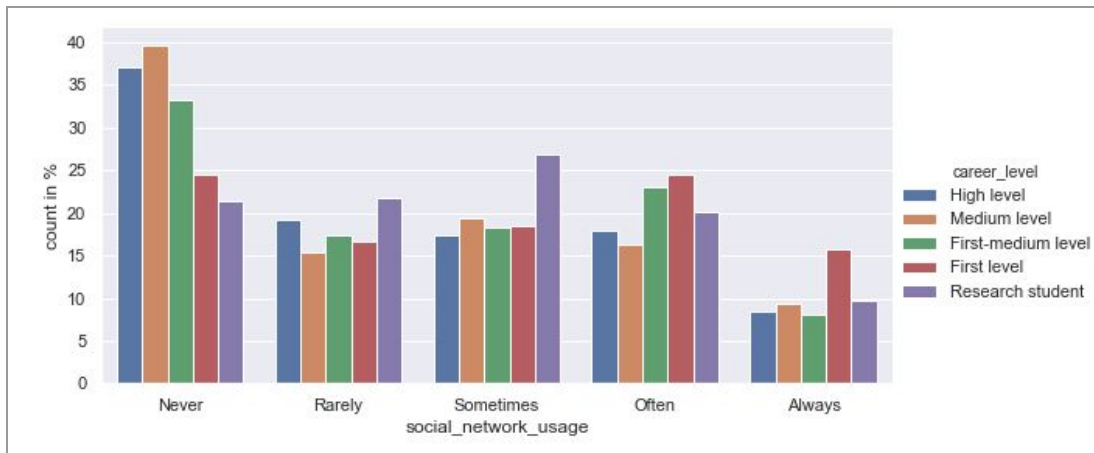

Figure 38. Perception of the use of social networks for the career level demographic

The same cannot be said however if we look at **research social networks** (e.g. researchgate, academia.edu). In Figure 39., the situation is slightly more articulated, we see people at the beginning of their careers (Research Students, First level) displaying the largest Never responses and overall a small number of positive responses (Often and Always). A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the use of research social networks*) resulting in a coefficient of 0.100 (p=0.002) showing that there is mild positive correlation, with people at higher levels of their careers using research social networks a bit more than those at lower level.
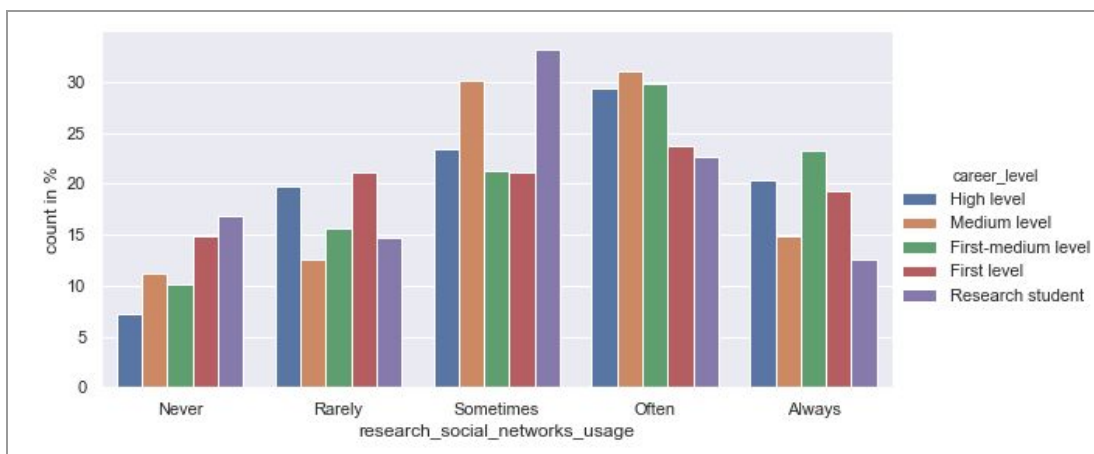

Figure 39. Perception of the use of research social networks for the career level demographic

7.4 Block 3 - Main take-away points

The second block of the questionnaire tried to answer the question of "what are the main priorities of SSH researchers toward collaboration and networking tools?". The **main take-away points** from the analysis presented in this section are as follows:

☐ The email is by far the most common and used tool for networking/communication, followed by mailing lists. Other tools are emerging as relevant such as communication tools (e.g. apps), while others clearly are not very relevant (such as research forums).

☐ There are no relevant differences across the research techniques in terms of use of tools for networking/collaboration.

☐ Scholars working on a single discipline tend to be slightly more conservative (less prone) toward the use of digital technologies also for networking and communication, if compared to interdisciplinary scholars. For example scholars working on a single discipline use less communication tools (e.g. whatsapp) for their networking than interdisciplinary scholars.

☐ At the career level, there is a mild positive correlation with people at higher levels of their careers using emails or research social networks more than those at lower levels. Whilst people at higher levels of their careers use generalist social networks less (negative correlation).

8| BLOCK 4 - PERCEPTION TOWARD THE TOOLS FOR MANAGEMENT OR RETRIEVAL

The block 4 of the questionnaire was composed of a set of likert items aimed at measuring **the perception of SSH researchers toward the use of tools for the management or the retrieval of data or material** such as publications or datasets for example. The 5 options for this block were Never, Rarely, Sometimes, Often, Always. The goal was to explore the problem of "what are the main priorities of SSH researchers toward the tools for management of discoveries?". In particular, the following items were considered:

☐ Disciplinary academic databases (such as the Social Science Research Network, SSRN) (n=909) [**academic_databases_usage**]

☐ Open access directories (such as doaj or zenodo) (n=910) [**open_access_directories_usage**]

☐ Generalist archives of publications (such as national libraries) (n=905) [**generalist_archives_publications_usage**]

- [ ] Disciplinary archives of publications (such as Humanities Commons or SocArXiv) (n=908) [**disciplinary_archives_publications_usage**]

- [ ] Source code repositories (such as github) (n=909) [**source_code_repository_usage**]

- [ ] Shadow libraries (such as SciHub) (n=901) [**shadow_libraries_usage**]

- [ ] Large digitized collections (such as Europeana) (n=913) [**digitized_collections_usage**]

- [ ] and search engines and discovery tools (such as google scholar) (n=913) [**scientific_search_engines_publications_usage**]

Figure 40. shows the global results of this block (sorted by Always reponses). Overall, digitized collections (n=463, 51%) and scientific search engines (n=568, 64%) are the preferred option for the management or retrieval of discoveries, showing the larger number of positive responses (Always and Often), whilst other options seem to be far less popular in terms of positive responses for example Open Access directories (n=195, 21.5%) or disciplinary archives (n=199, 22%). Source code repositories are the least preferred option (<20%).
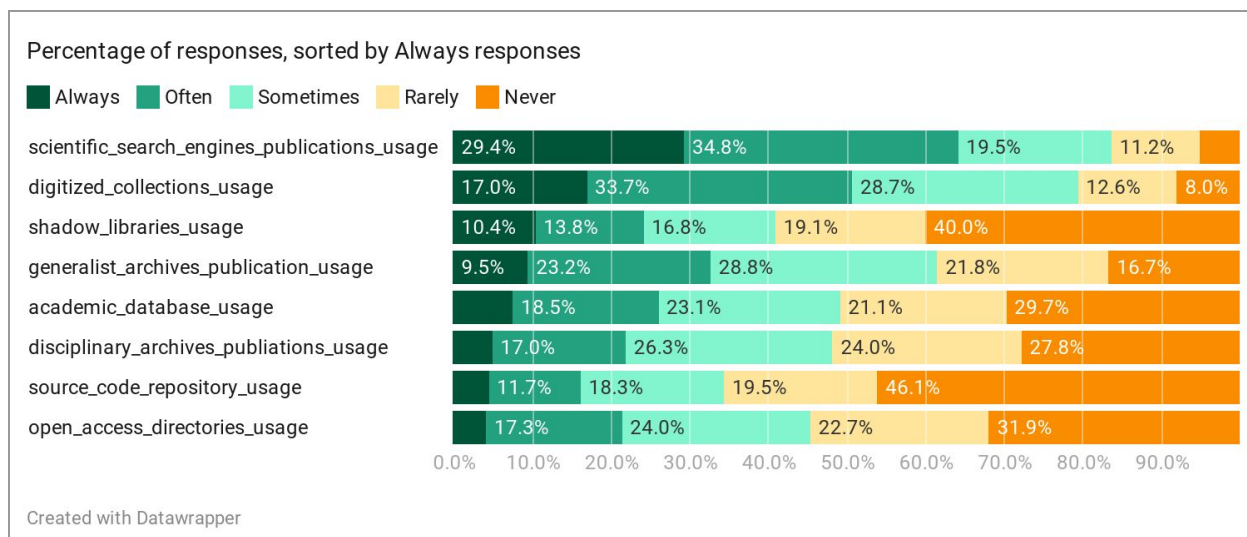
Figure 40. Perception of the use of tools for management and retrieval of discoveries

8.1 Interdisciplinarity

Like for previous discussions, looking at different demographics however shows differences in potential working practices on the management and retrieval of discoveries. For example for the **interdisciplinary demographic** it appears from the graph (Figure 41.) that researchers

working on a single discipline make marginally less **use of Open Access Directories** (n=76, ~38.5% of Always, Often and Sometimes) if compared to interdisciplinary researchers (n=336, ~47%). A non parametric t-test was conducted between the two groups (*H0: The two groups have the same distribution of scores*), resulting in U=77893, p=0.014, confirming a different distribution (*reject H0*).
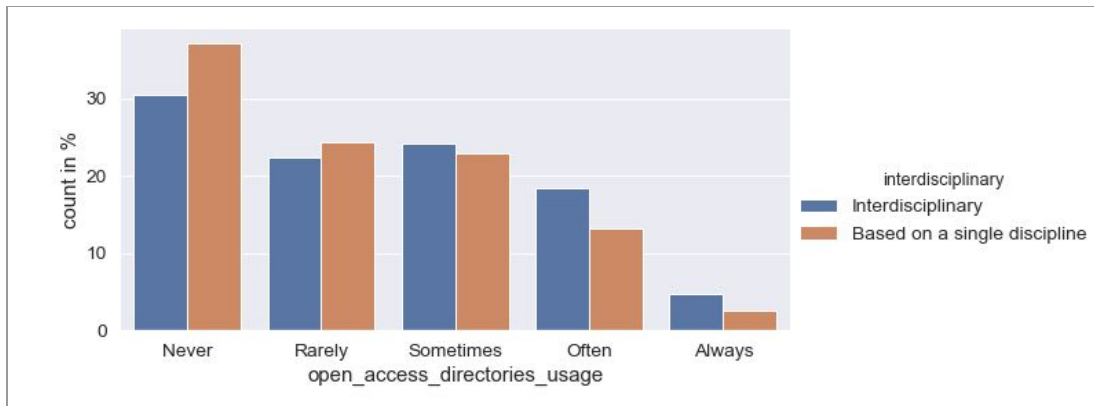

Figure 41. PERCEPTION OF THE USE OF OPEN ACCESS DIRECTORIES FOR THE INTERDISCIPLINARY DEMOGRAPHIC

One might expect then that to the question about the **use of disciplinary archives** (Figure 42.), there is more use from researchers working on a single discipline. However the graph shows that for Always and Often the two groups present an almost even number of responses (marginally above 20%), whilst researchers working on a single discipline also have the largest Never responses (in percentage, above 30%). A non parametric t-test was conducted between the two groups (*H0: The two groups have the same distribution of scores*), resulting in U=74006, p=0.197, confirming that the two groups present the same distribution (*accept H0*).
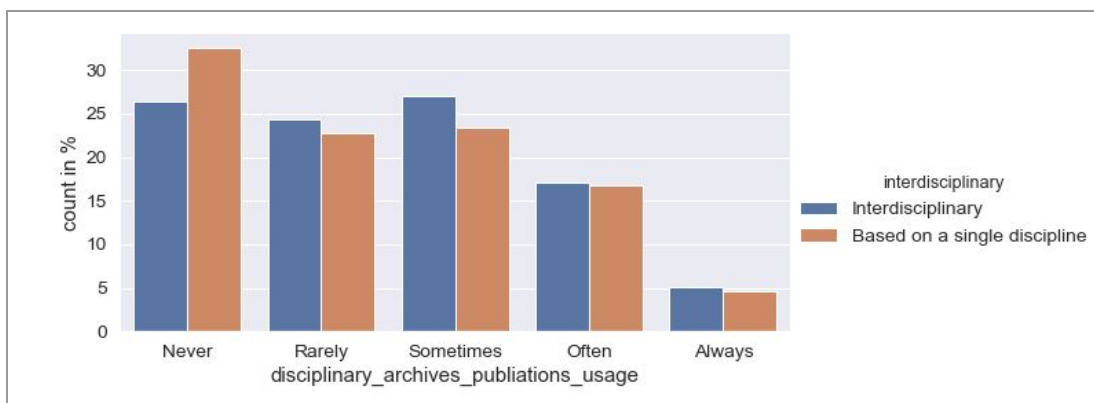
Figure 42. PERCEPTION OF THE USE OF DISCIPLINARY ARCHIVES FOR THE INTERDISCIPLINARY DEMOGRAPHIC

8.2 Research Techniques

Turning to the **research techniques demographic**, some differences can be seen in a number of responses. We consider the question on **Open Access** (Figure 43.). Some differences are perceivable in the positive responses (Always, Often) but these appear marginal. However qualitative researchers have the largest set of Never responses (n=170) with 36.5% of them stating they never use open access directories compared to for example 26.5% (n=46) of quantitative researchers and 26% (n=64) for quali-quantitative.
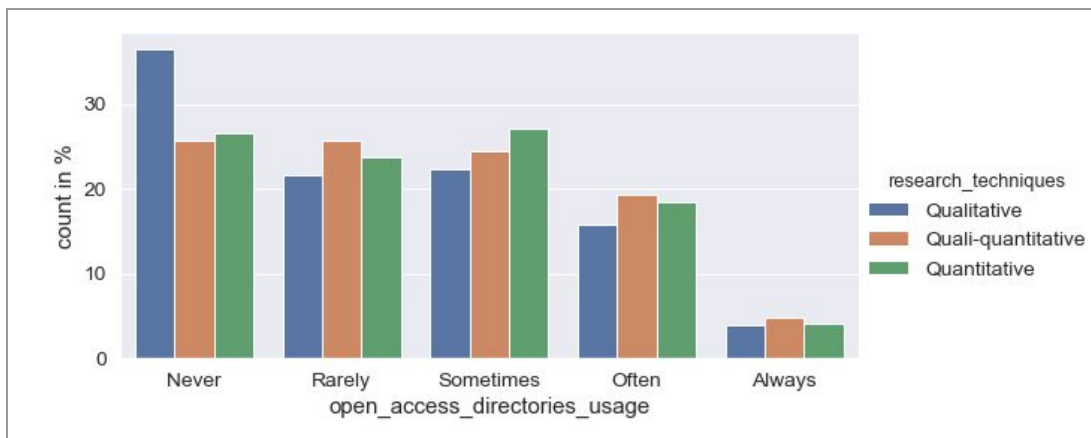
Figure 43. Perception of the importance of open access for the research techniques demographic

On the other hand, qualitative researchers do clearly make a much more intense **use of generalist archives for publications** (Figure 44.) if compared to both quantitative and quali-quantitative researchers. Indeed ~68% of qualitative researchers (n=319) use these sometimes or more compared to for example ~54% of quantitative researchers (n=93). A non parametric t-test was conducted between the qualitative and quantitative groups (*H0: The two groups have the same distribution of scores*), resulting in U=52242.5, p=0.000, confirming that the two groups present a different distribution (*reject H0*) for this question.
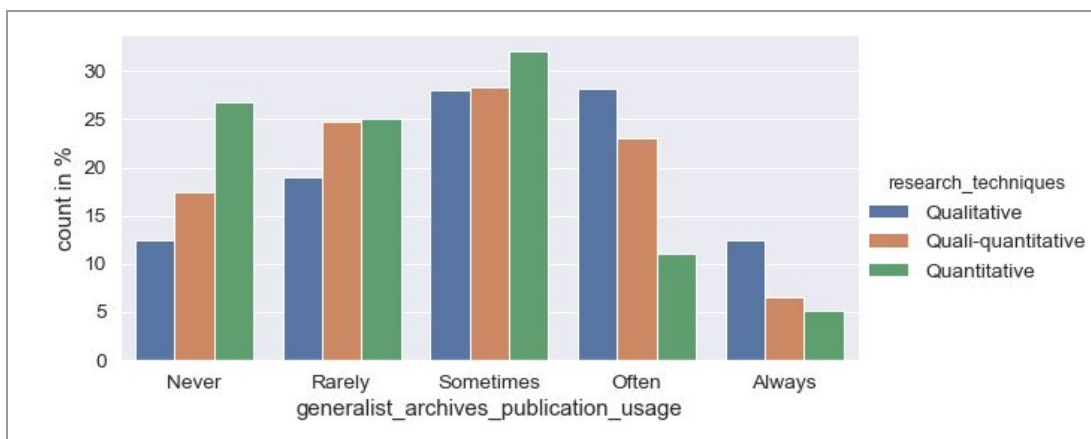

Figure 44. Perception on the use of generalist archives for the research techniques demographic

Whilst instead for **disciplinary archives** (Figure 45.) the differences between these two groups are not that evident as we can see from the graph and indeed a non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=41306.5, p=0.630, confirming that the two groups (qualitative/quantitative) present the same distribution (*accept H0*). The survey data cannot answer as to why there is for some questions a statistical difference and for others there is not, but the groups have in some instances different patterns for management or retrieval while in other cases they present the same patterns.

For some questions, the differences however could be explained. For instance to the question on the **use of source code repositories** (Figure 46.). Although these repositories are not widely used in general, quantitative researchers do use them more than qualitative researchers. The explanation may be that qualitative research does not require much programming, whilst quantitative research does to a certain extent (e.g. code in R for statistical analysis). A non parametric t-test was conducted between the qualitative and quantitative groups (*H0: The two groups have the same distribution of scores*), resulting in U=26171, p=0.000, confirming that the two groups present a different distribution (*reject H0*). A non parametric t-test was conducted between the quali-quantitative and quantitative groups, resulting in U=24074.5, p=0.017, showing that also between these two groups there is a different distribution. Quantitative researchers do make much more use of source code repositories than the other groups.
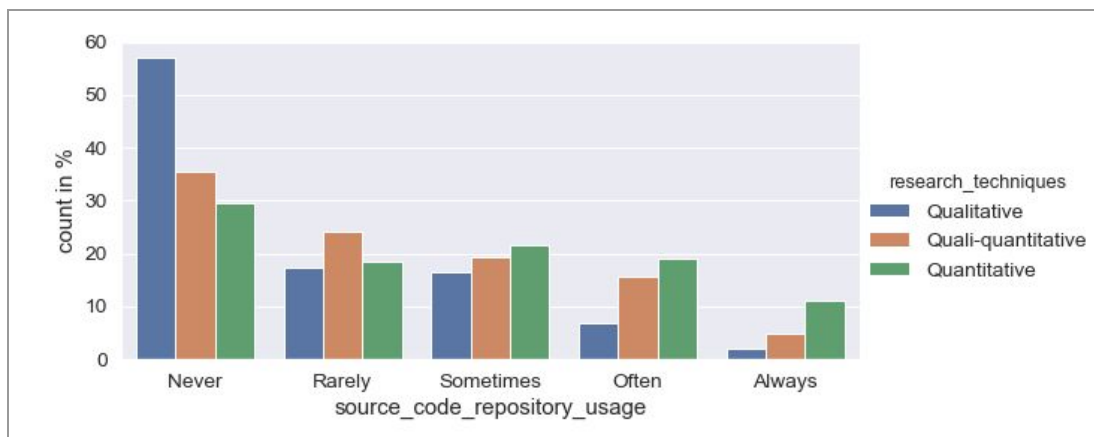
FIGURE 46. PERCEPTION ON THE USE OF SOURCE CODE REPOSITORIES FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

8.3 Main Discipline

Now we will discuss some insights from the **discipline demographic**, looking again at the 5 with most responses in the questionnaire. To the question on the **use of generalist archives** , we can see from Figure 47. that Historians and scholars working in Literature make much more use of this type of archives than, for example, Linguists and Sociologists. A similar pattern emerges on the question on the **use of digitized collections** (Figure 48.), where again Historians and scholars in the field of Literature do seem to make a much more wide-spread use of this type of resources. This difference may be attributed to the different working practices and topics whereby Historians, for instance, need to make a much more widespread use of archives than for example Sociologists in the management of discoveries, as we have seen also in the previous block. For **disciplinary archives** (Figure 49.) however the situation is not the same, where instead we see Library and Information Science scholars using these types of archives more often. Actually people working in this discipline make more use (compared to the other considered disciplines) of most of the resources covered by the questions of this block, as can be seen in the graph related to the **use of open access directories** (Figure 50.). Perhaps being a discipline deeply tied with the use of information technologies, make scholars in Library and Information Sciences more open and prone to the use digital tools for management and retrieval of information
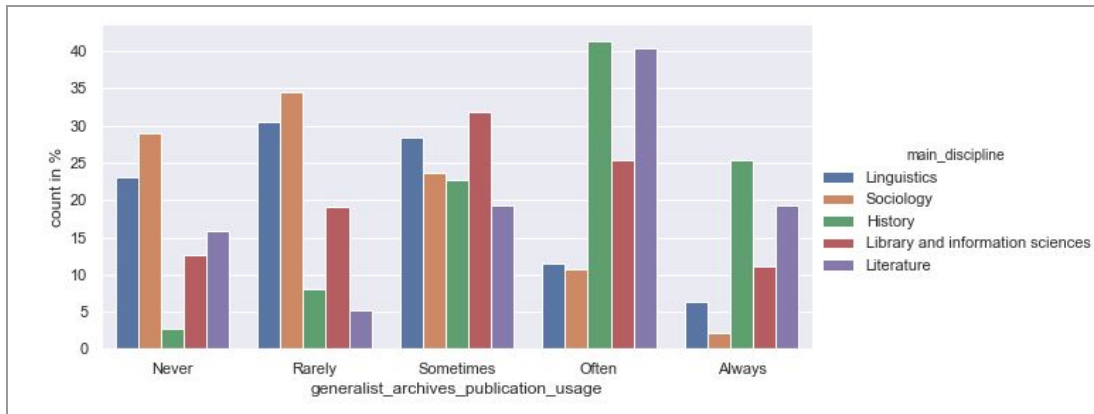
FIGURE 47. PERCEPTION ON THE USE OF GENERALIST ARCHIVES FOR THE DISCIPLINE DEMOGRAPHICS (THE FIVE WITH MOST RESPONSES)
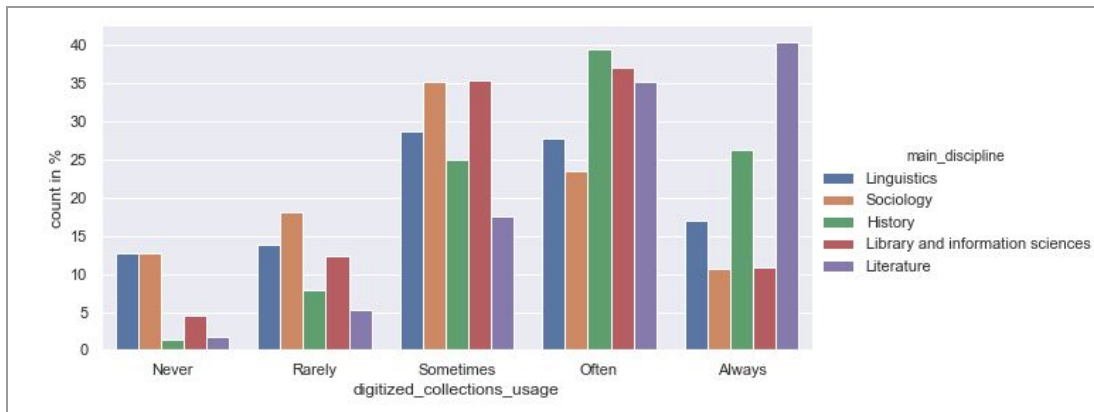

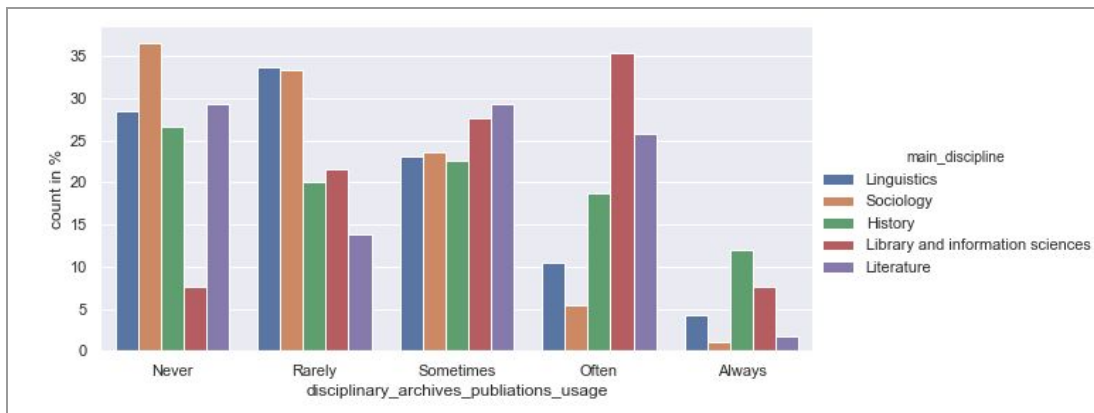FIGURE 48. PERCEPTION ON THE USE OF DIGITIZED COLLECTIONS FOR THE DISCIPLINE DEMOGRAPHICS

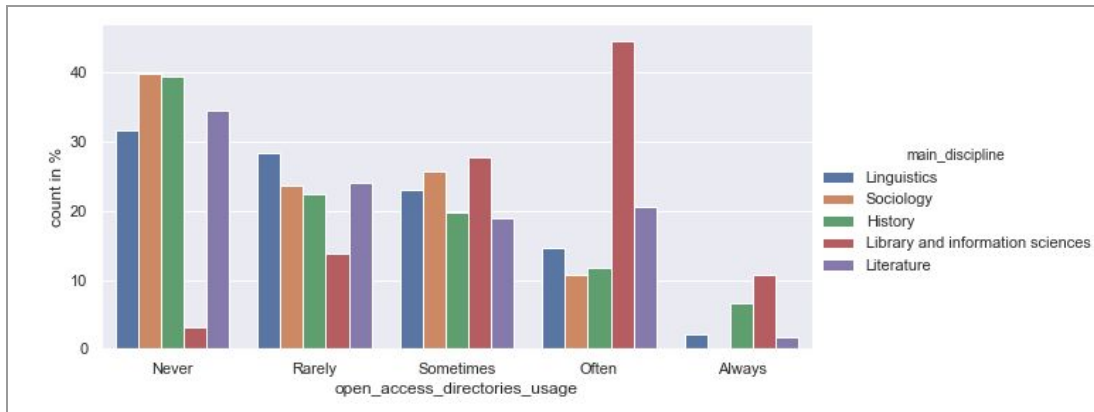FIGURE 49. PERCEPTION ON THE USE OF DISCIPLINARY ARCHIVES FOR THE DISCIPLINE DEMOGRAPHICS

FIGURE 50. PERCEPTION ON THE USE OF OPEN ACCESS DIRECTORIES FOR THE DISCIPLINE DEMOGRAPHICS

8.4 Career Level

For the **career level demographic**, there are some differences in relation to some of the questions. For instance if we consider the question on **open access directories** (Figure 51.), we can see that people toward the beginning of their careers use these directories less, as can be seen in the Never responses and in the Often responses in particular. A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the use of open access directories*) resulting in a coefficient of 0.125 (p=0.000) showing that there is mild positive correlation, between career level and the use of these directories.
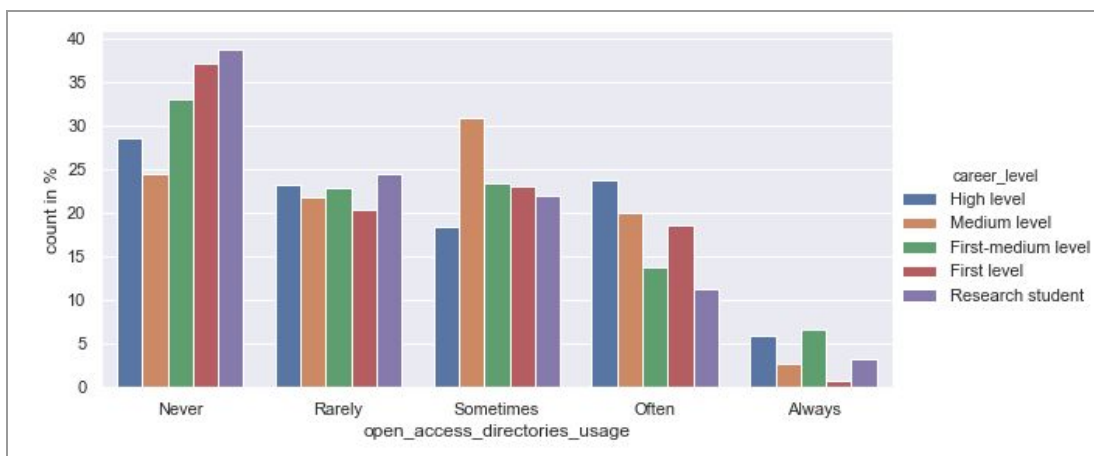

FIGURE 51. PERCEPTION ON THE USE OF OPEN ACCESS DIRECTORIES FOR CAREER LEVEL DEMOGRAPHIC

However if we look at other questions, such types of correlations are not necessarily present. For instance in relation to the use of **shadow libraries** (Figure 52.). A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the use of shadow libraries*) resulting in a coefficient of -0.058 (p=0.083) resulting in the

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rejection of the hypothesis showing that there is no correlation, between career level and the use of these libraries.
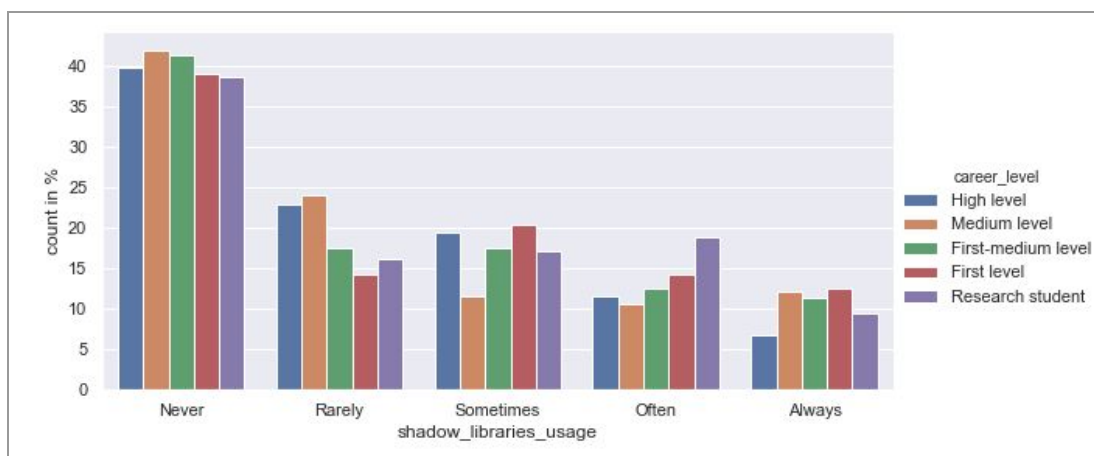

FIGURE 52. PERCEPTION ON THE USE OF SHADOW LIBRARIES FOR CAREER LEVEL DEMOGRAPHIC

In other cases (Figure 53.), for example in relation to the **use of digitized collections**, the correlation is very feeble. A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the use digitized collections*) resulting in a coefficient of 0.071 (p=0.032) and the acceptance of the hypothesis.
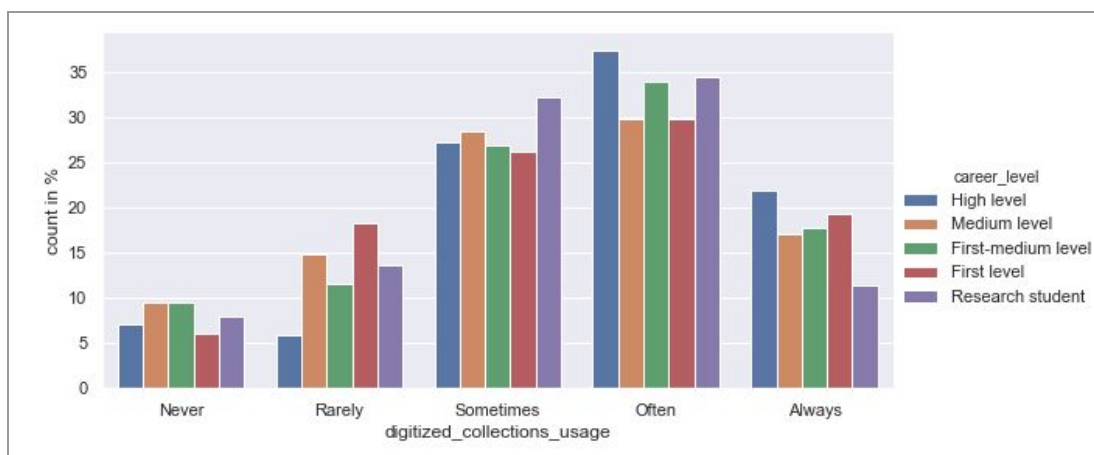

FIGURE 53. PERCEPTION ON THE USE OF DIGITIZED COLLECTIONS FOR CAREER LEVEL DEMOGRAPHIC

8.5 Block 4 - Main take-away points

This block of the questionnaire tried to answer the question of "what are the main priorities of SSH researchers toward the tools for management of discoveries?". The **main take-away points** from the analysis presented in this section are as follows:

☐ Digitized collections and scientific search engines are the preferred options for management or retrieval of discoveries, showing the larger number of positive responses. Whilst other options seem to be far less popular in terms of positive responses for example Open Access directories.

☐ In relation to the research techniques, the groups have in some cases different patterns for management or retrieval of discoveries, for instance in the use of generalist archives, while in other cases they present the same patterns, for instance in the use of shadow libraries.

☐ There are disciplinary differences in relation to the management and retrieval of discoveries, which again are related to the use of archives for research, where for example Historians or scholars in Literature use archives more than other disciplines such as Sociology.

☐ In terms of career level, sometimes we have significant correlations for example between career level and the use of Open Access directories. However in other instances there are no correlations, for example between career level and the use of shadow libraries.

9| Block 5 - Digital Literacy/Skills in discovery practice

The block 5 of the questionnaire was composed of Likert items measuring **the perception of SSH researchers toward the digital/literacy skills toward discovery.** The 5 options for this block were Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree. In this block of the questionnaire the goal was to investigate "what are the main priorities of SSH researchers toward digital literacy and the acquisition of skills?". The following items were investigated:

☐ possessing knowledge/skills to use digital technologies for the research (n=914) [**digital_research_tools_skills**]

☐ possessing knowledge/skills for using digital repositories (n=913) [**digital_repositories_skills**]

☐ plans for the acquisition of new knowledge/skills in digital technologies (n=912) [**learn_skills**]

☐ ability/confidence in the integration of multiple tools in research (n=910) [**digital_tools_ability**]

☐ considering the capability of integration and use of tools to be onerous in terms of effort (n=910) [**digital_tools_integration_capability**]

☐ being aware of new research tools that appear (n=913) [**digital_tools_awareness**]

☐ interest in experimenting with new research tools (n=913) [**digital_tools_experimenting_importance**]

As we can see in Figure 54., ~84 % of the respondents (n=769 of Strongly Agree and Agree) perceive they possess the necessary skills for the use of digital technologies. Overall the responses to the other questions are similar with positives all above >60% with the exclusion of the question related to the capacity to integrate different digital tools into the discovery/research process. Indeed, only 24% of respondents (n=220) Agree or Strongly Agree that they are capable of integrating multiple tools in the work process. To a lesser extent, also the question related to the awareness of new digital tools presents a marginally low number of Strongly Agree (n=94, 10%) and just above 53% of positive responses.

Percentage of responses, sorted by Strongly Agree responses

■ Strongly Agree ■ Agree ■ Undecided ■ Disagree ■ Strongly Disagree

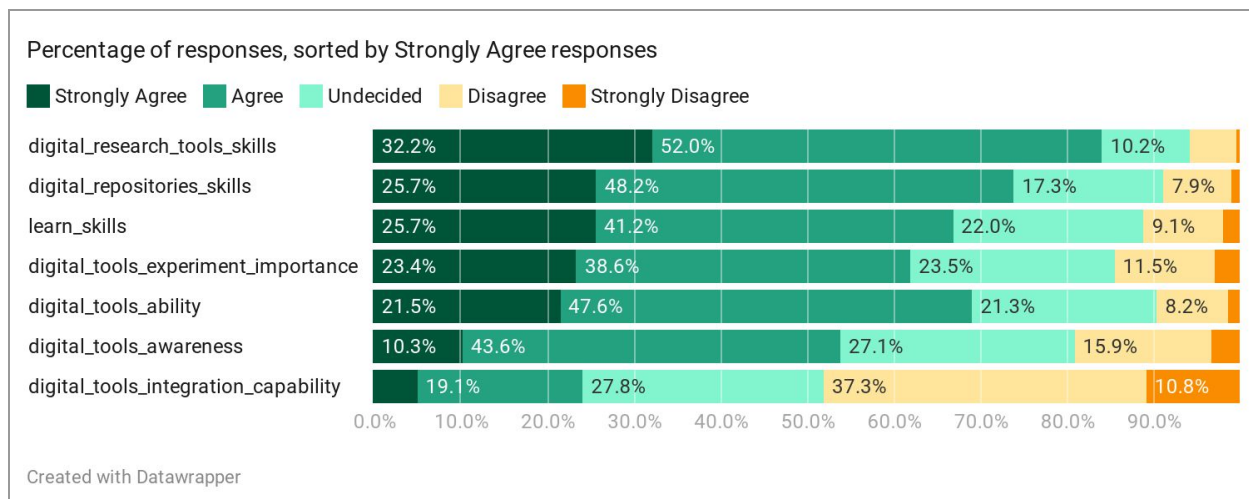|	Strongly Agree	Agree	Undecided	Disagree
digital_research_tools_skills	32.2%	52.0%	10.2%	
digital_repositories_skills	25.7%	48.2%	17.3%	7.9%
learn_skills	25.7%	41.2%	22.0%	9.1%
digital_tools_experiment_importance	23.4%	38.6%	23.5%	11.5%
digital_tools_ability	21.5%	47.6%	21.3%	8.2%
digital_tools_awareness	10.3%	43.6%	27.1%	15.9%
digital_tools_integration_capability	19.1%	27.8%	37.3%	10.8%

Created with Datawrapper

FIGURE 54. PERCEPTION TOWARD DIGITAL LITERACY OF SSH RESEARCHERS

9.1 Research Techniques

We look now at some of these questions, through some of the demographics, starting with the **research techniques**. From the perspective of the perception of **possessing appropriate skills** (Figure 55.) differences appear in particular if we look at the qualitative (and quali-quantitative) on one side and the quantitative on the other. A non parametric t-test was conducted between the qualitative and quantitative groups (*H0: The two groups have the same distribution of scores*), resulting in U=34115.5, p=0.001, confirming that the two groups present a different distribution (*reject H0*). This difference can perhaps be explained by the consideration that

quantitative research requires specific computational skills, (e.g. programming, coding, text-mining, database, analytics etc...), whereas for qualitative research this is less so.
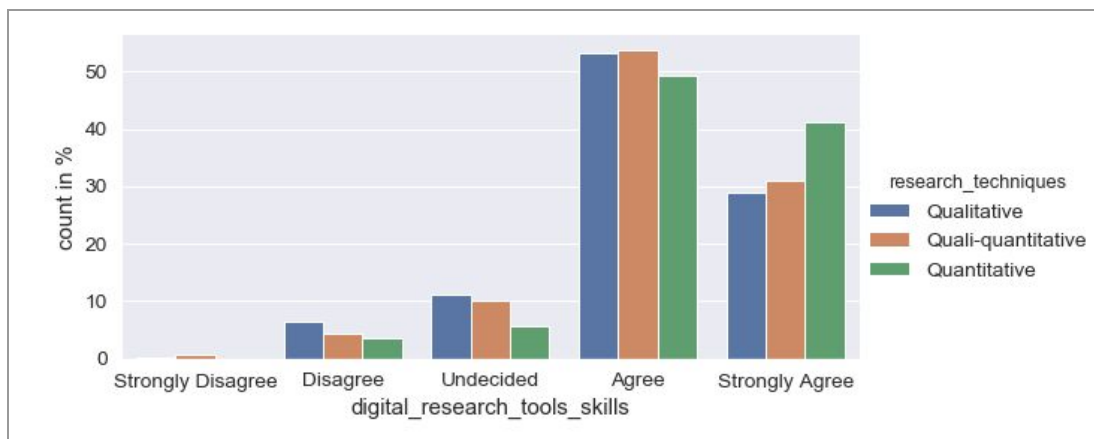
However there do not seem relevant differences between the three groups (qualitative, quali-quantitative and quantitative researchers), in relation to the **skills in the use of digital repositories** (Figure 56.) and the intention to **learn new skills in the future** (Figure 57.).
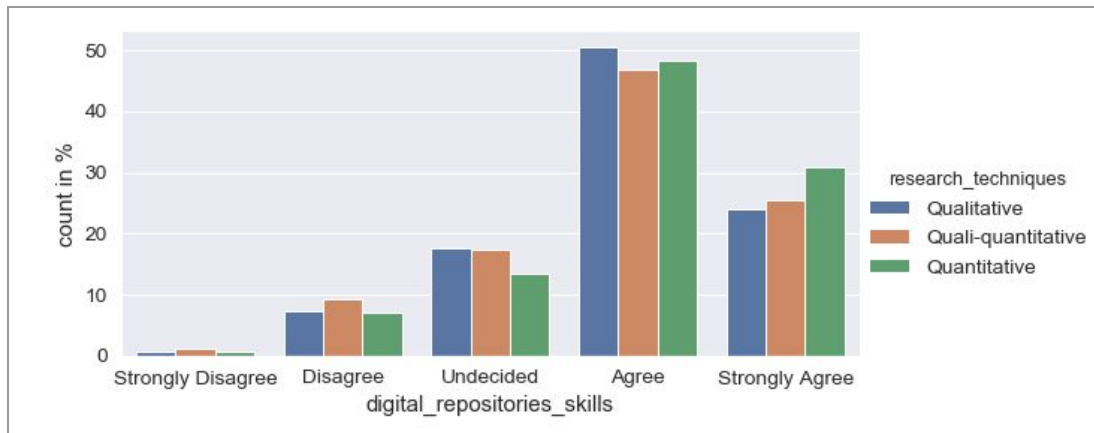
D3.1 Iteration on User Needs
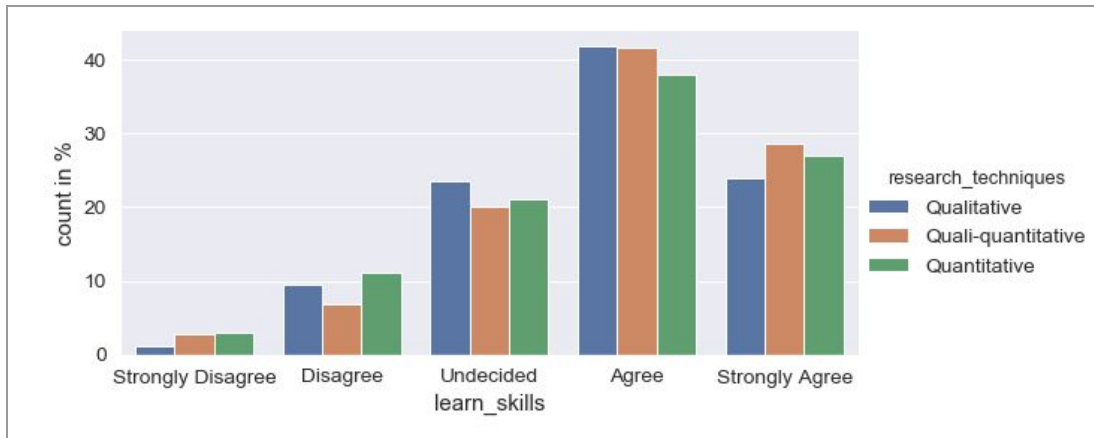
FIGURE 57. INTENTION OF LEARNING NEW SKILLS IN THE USE OF DIGITAL TOOLS FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

Where there are further some perceivable differences, is in the question about the **awareness of new research tools** (Figure 58.). As we can see from the graph, quantitative researchers perceive they are more aware than qualitative researchers about new research tools that become available. A non parametric t-test was conducted between the two groups qualitative/quantitative (*H0: The two groups have the same distribution of scores*), resulting in U=35128, p=0.006, confirming a different distribution (*reject H0*) for this question.
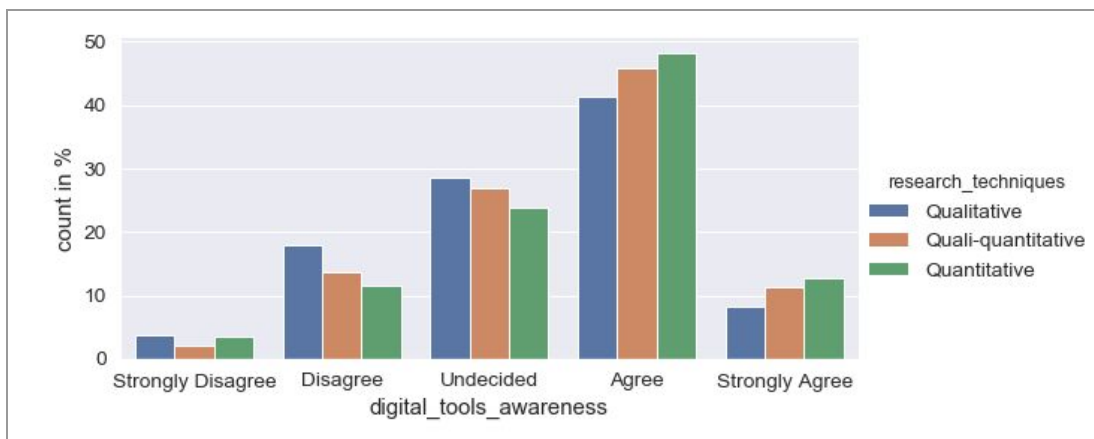
FIGURE 58. PERCEPTION OF THE AWARENESS ABOUT NEW DIGITAL TOOLS FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

9.2 Interdisciplinarity

From the perspective of the **interdisciplinarity demographic**, the results (Figures 59., 60., 61.) are similar to some of those we have seen for the research technique demographic. Although interdisciplinary researchers tend to have slightly more responses (in percentage) in the Strongly Agree category, researchers working on a single discipline tend to have more Agree responses. Indeed, for example a non parametric t-test was conducted between the two groups in relation to the question on **digital skills acquisition**, Figure 61. (*H0: The two groups have the*

same distribution of scores), resulting in U=73677, p=0.332, confirming that the two groups present the same distribution (*accept H0*) for this question.
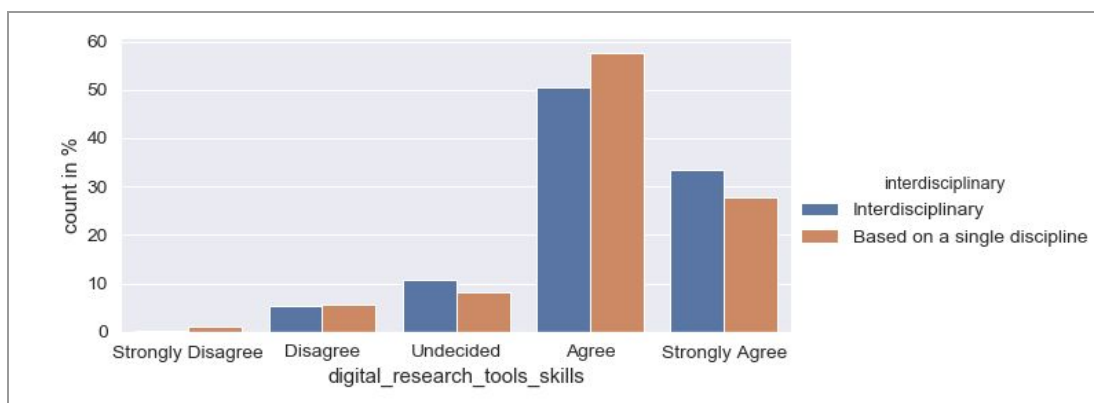
FIGURE 59. PERCEPTION TOWARD THE POSSESSION OF SKILLS IN THE USE OF DIGITAL TOOLS FOR THE INTERDISCIPLINARITY DEMOGRAPHIC
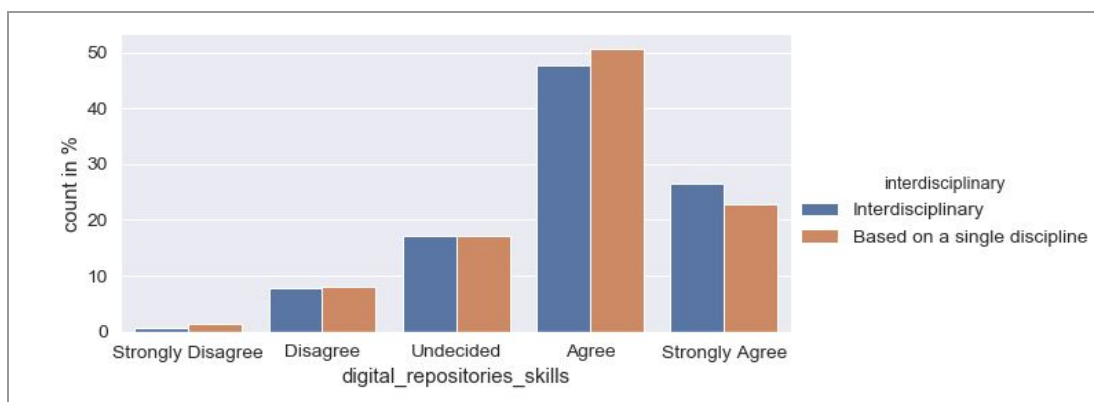

FIGURE 60. PERCEPTION TOWARD THE POSSESSION OF SKILLS IN THE USE OF DIGITAL REPOSITORIES FOR THE INTERDISCIPLINARY DEMOGRAPHIC
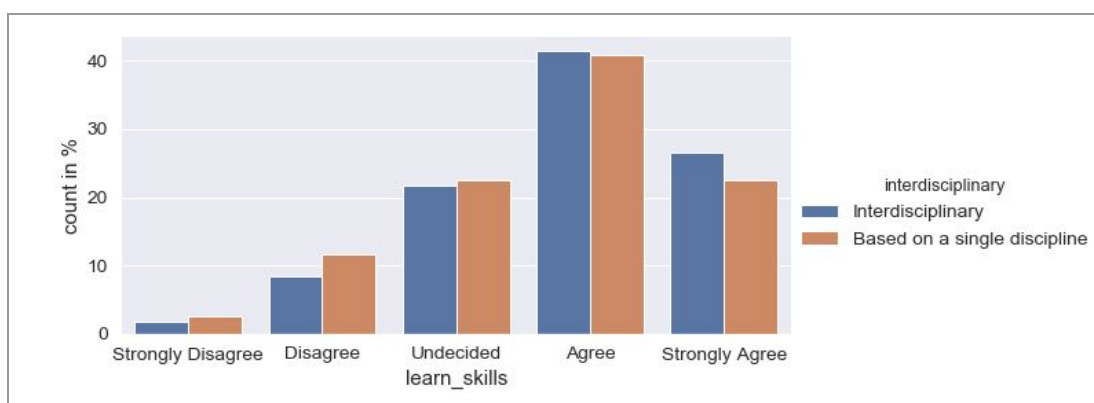

FIGURE 61. INTENTION OF LEARNING NEW SKILLS IN THE USE OF DIGITAL TOOLS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

In relation to the interdisciplinary demographic, the question where there are relevant differences is the one on the **capacity/importance to experiment with new digital tools** coming into fruition (Figure 62.). As we can see interdisciplinary researchers have provided a higher number of positive responses (Strongly Agree and Agree) if compared to the other group. A non parametric t-test (*H0: The two groups have the same distribution of scores*), resulted in $U=82171$, $p=0.000$, confirming that the two groups present a different distribution (*reject H0*).
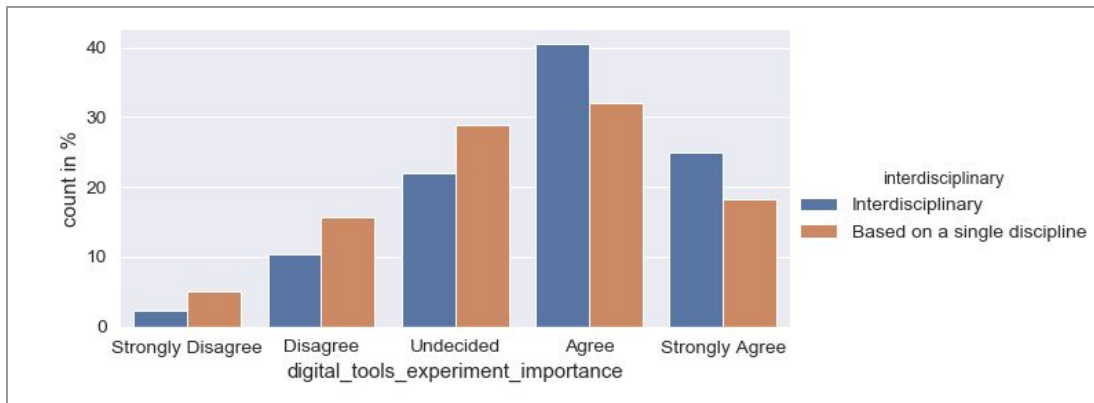

FIGURE 62. PERCEPTION OF THE IMPORTANCE OF EXPERIMENTING WITH NEW TOOLS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

9.3 Career Level

From the **career-level** demographic, it is interesting to look first at the perception of **possessing the necessary digital skills** (Figure 63.). A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the perception of possessing digital skills*) resulting in a coefficient of 0.010 ($p=0.976$), this showing that there is no correlation (*reject H0*).
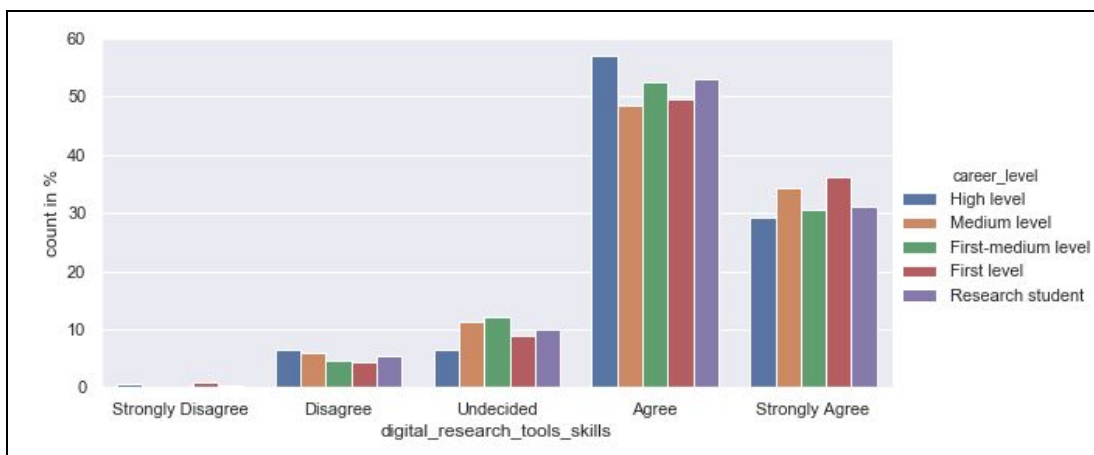

FIGURE 63. PERCEPTION TOWARD THE POSSESSION OF SKILLS IN THE USE OF DIGITAL TOOLS FOR THE CAREER LEVEL DEMOGRAPHIC

However if we look at the **intention to acquire new digital skills** (Figure 64.), differences appear, especially if we look at the Strongly Agree responses. A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the intent of learning new skills*) resulting in a coefficient of -0.140 (p=0.000) showing that there is mild negative correlation, with people at higher levels of their careers having less plans to acquire new digital skills in the future.
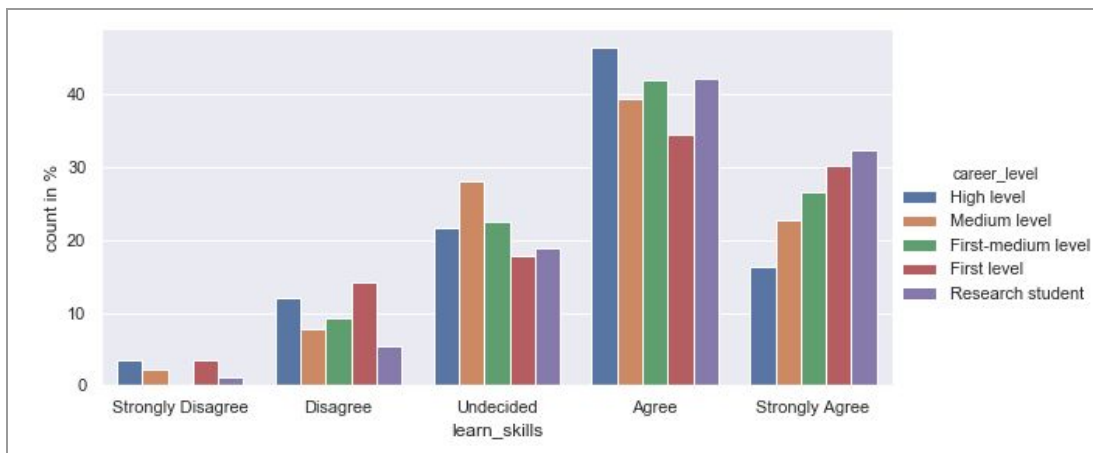

FIGURE 64. INTENTION OF LEARNING NEW SKILLS IN THE USE OF DIGITAL TOOLS FOR THE CAREER LEVEL DEMOGRAPHIC

9.4 Main Discipline

We will now look briefly at the **discipline demographic**, using again the responses from Linguistics, Sociology, Library and Information Sciences, History and Literature (that is the 5 disciplines with most responses). To the question on the **skills in using digital tools** (Figure 65.). Linguists and scholars working on Library and Information Sciences appear to perceive that they possess the necessary skills if compared to slightly lower responses from scholars working in the field of Literature (i.e. for Literature 75% of positive responses, n=44, whilst for Library and Information Sciences we have 94% of positive responses, n=62).
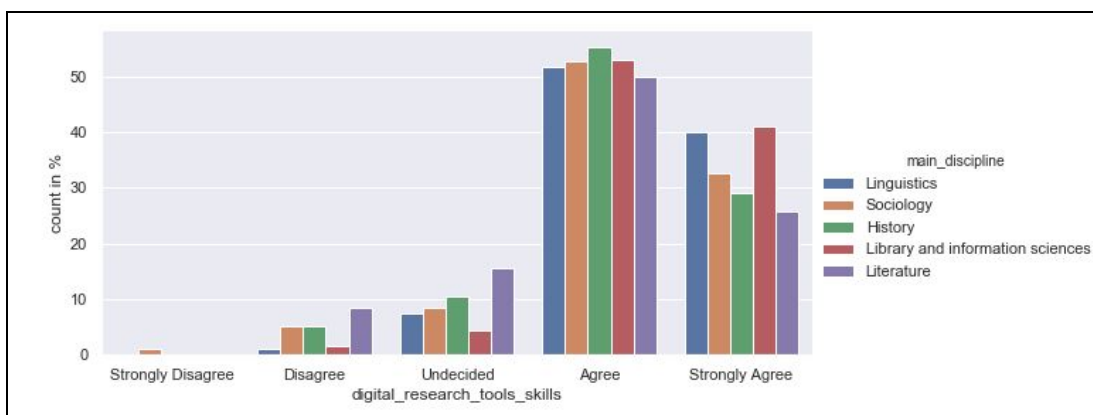

FIGURE 65. PERCEPTION TOWARD THE POSSESSION OF SKILLS IN THE USE OF DIGITAL TOOLS FOR THE DISCIPLINE DEMOGRAPHIC

Looking at the intent to **learn new digital skills** (Figure 66.), the situation however appears slightly different. It is clear from the graph that scholars working in History (76.6%, n=56) and Literature (70%, n=41) have a strong intention of acquiring new skills in the near future, together with Linguists (71.5%, n=68) if compared to Sociologists (56%, n=53). Historians and scholars in Library and Information Science also show the largest Strongly Agree responses which appear relevant for example if compared with Sociology. Thus, there can be differences across disciplines on the intention to acquire new skills for using digital technologies.
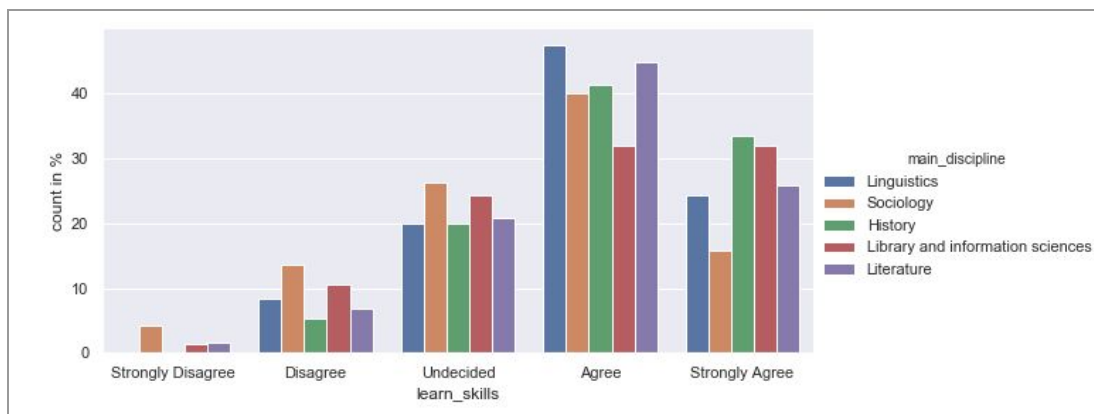

FIGURE 66. INTENTION OF LEARNING NEW SKILLS IN THE USE OF DIGITAL TOOLS FOR THE DISCIPLINE DEMOGRAPHIC

9.5 Block 5 - Main take-away points

This block of the questionnaire tried to answer the question of ""what are the main priorities of SSH researchers toward digital literacy and the acquisition of skills?". The **main take-away points** from the analysis presented in this section are as follows:

☐ A large majority of respondents perceive they possess the necessary skills for the use of digital tools for their work. This probably shows that SSH scholars now feel confident with their skills and perceive they can master the digital tools they need for research. However only a quarter of respondents perceive they possess the capacity to integrate different digital tools into the discovery/research process.

☐ In relation to research techniques, the perception of possessing appropriate skills appears different between qualitative and quantitative scholars. Quantitative scholars perceive they possess these skills more than the qualitative group does.

☐ In relation to the interdisciplinary demographic, the question where there are relevant differences is the one on the capacity/importance to experiment with new digital tools coming into fruition. Interdisciplinary researchers have provided a higher number of

positive responses if compared to the scholars working in a single discipline. Whilst in other areas differences between the two groups are not appearing as relevant.

☐ For the career level, there is no correlation between the career level and the perception of the possession of appropriate digital skills. However people at higher levels of their careers appear to have less intention to acquire new digital skills in the future, or put in another way there is a negative correlation between the career level and the intention to acquire new skills in the future.

☐ There can be differences across disciplines on the intention to acquire new skills for using digital technologies, with scholars in some disciplines being less interested than others. However the present data cannot explain why there is this difference and no firm conclusion can be made about this specific observation.

10 | BLOCK 6 - DISCOVERY PRACTICES AND THEIR CONNECTION WITH TRIPLE

A further section of the questionnaire contained a set of likert-items focusing on measuring **the perception of the digital discovery needs and associated practices**. The 5 options for this block were Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree. In this block of the questionnaire the goal was to investigate "what are the main discovery practices/priorities of SSH researchers?". The items included:

☐ the importance of discoverability (n=912) [**discoverability_importance**]

☐ availability of discovery tools for their own subject of research (n=910) [**discovery_tools_subject_availability**]

☐ availability of discovery tools in their own language (n=909) [**discovery_tools_literature_mother_tongue_availability**]

☐ having problems in accessing literature or data when discovered (n=910) [**resource_access_problems**]

☐ easiness to identify academic literature (n=909) [**literature_identification_easiness**]

☐ ease of formulating queries, in a search engine (n=907) [**query_formulation_easiness**]

☐ difficulties in producing a literature overview (n=909) [**literature_overview_difficulty**]

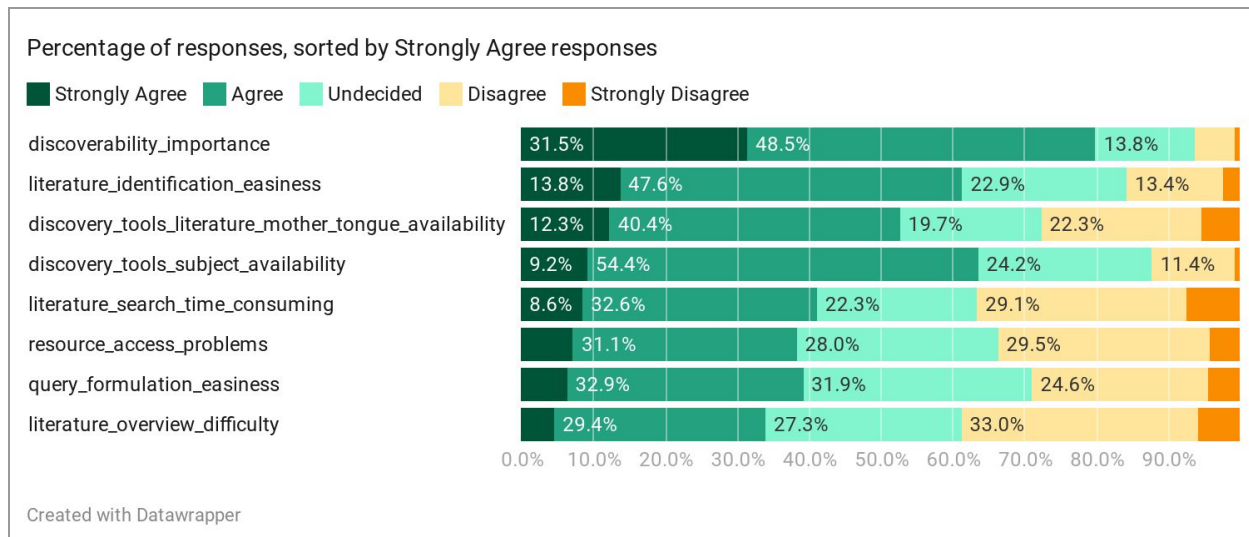☐ taking too much time to search academic literature (n=911) [**literature_search_time_consuming**]

Percentage of responses, sorted by Strongly Agree responses

Legend: Strongly Agree · Agree · Undecided · Disagree · Strongly Disagree

	Strongly Agree	Agree	Undecided	Disagree
discoverability_importance	31.5%	48.5%	13.8%	
literature_identification_easiness	13.8%	47.6%	22.9%	13.4%
discovery_tools_literature_mother_tongue_availability	12.3%	40.4%	19.7%	22.3%
discovery_tools_subject_availability	9.2%	54.4%	24.2%	11.4%
literature_search_time_consuming	8.6%	32.6%	22.3%	29.1%
resource_access_problems		31.1%	28.0%	29.5%
query_formulation_easiness		32.9%	31.9%	24.6%
literature_overview_difficulty		29.4%	27.3%	33.0%

Created with Datawrapper

FIGURE 67. PERCEPTION TOWARD DIGITAL DISCOVERY PRACTICES

Responses for all these questions appear very similar as we can see in the Figure 67., except for question on the discoverability importance, where we see a much higher Strongly Agree response in comparison with the others, with almost 80% positive responses (Strongly Agree and Agree, n=729). This is important for the TRIPLE project as it signals that scholars across all the demographics perceive discoverability to be a priority for their research work in general. To the question on availability of discovery tools for literature in the mother tongue there are 52.5% of positive responses (n=479), that is, marginally more than half of respondents think there are enough tools in their own language. To the question on the possibility to access resources once these have been discovered (e.g. accessing the pdf of a paper once found, or downloading a dataset) only 38% gave positive responses (n=349). That is only just a third of respondents believe they can access their discoveries.

10.1 Interdisciplinarity

We will start considering the **interdisciplinary demographic**. To the question on the **importance of discoverability** (Figure 68.), there are no relevant differences between the two groups as can be seen from the graph. Both groups consider discoverability important, with 80.5% (n=575) of interdisciplinary scholars providing positive responses (Strongly Agree and Agree) and 78% (n=154) of those based on a single discipline.
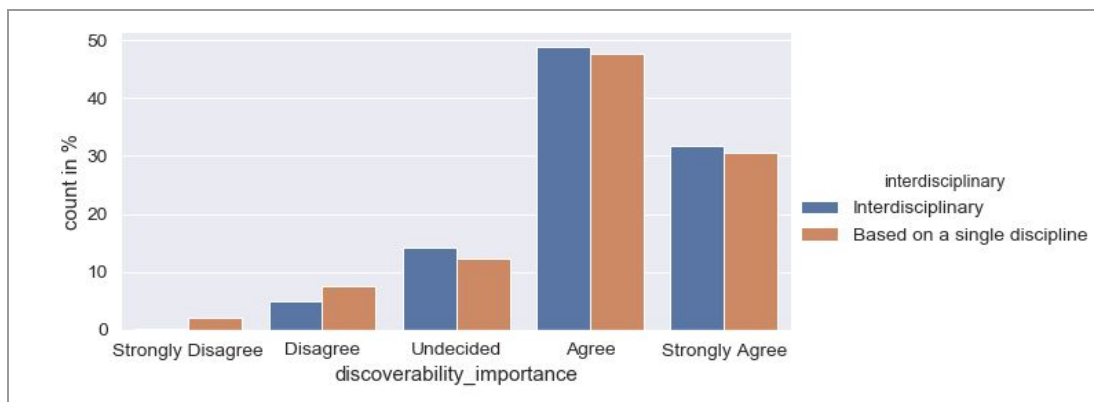
FIGURE 68. PERCEPTION TOWARD THE IMPORTANCE OF DISCOVERABILITY FOR THE INTERDISCIPLINARY DEMOGRAPHIC

Looking at **the availability of discovery tools** with the specific disciplinary subject in which one is working, again positive responses dominate (Figure 69.). However there are some differences between the groups. Scholars working in a single discipline perceive, at least marginally, that there are more tools available for them (72.5%, n=143 of Strongly Agree and Agree), if compared with the other group (61%, n=436). A non parametric t-test (*H0: The two groups have the same distribution of scores*), resulted in U=63437, p=0.024, confirming that the two groups present a different distribution (*reject H0*). While the questionnaire does not provide information for explaining this, it may be hypothesised that working at interdisciplinary level makes things slightly more complicated for people who need to work across disciplinary boundaries, rather than on a well defined discipline where scholars perceive that research/discoverability tools may be generally available.
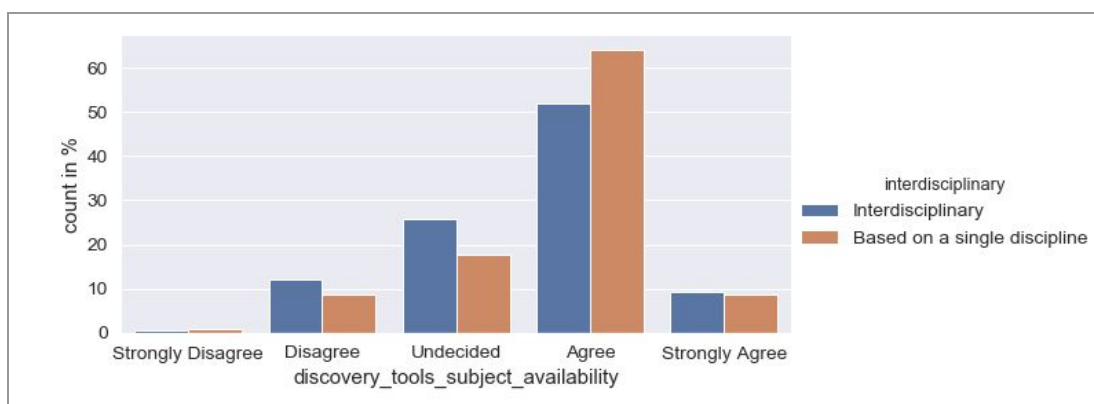
FIGURE 69. PERCEPTION TOWARD THE AVAILABILITY OF DISCOVERY TOOLS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

To the questions around the **practices of identification of literature**, **formulating queries**, **getting an overview of literature** and t**he discovery being too time consuming** there are no relevant differences to report between the two groups. As an example, we can see the responses to the question on the **ease of formulating search queries** (Figure 70.), where the two groups display a practically identical distribution. A non parametric t-test (*H0: The two groups have the same distribution of scores*), resulted in U=71148, p=0.556, confirming that the two groups present the same distribution (*accept H0*) for this question.
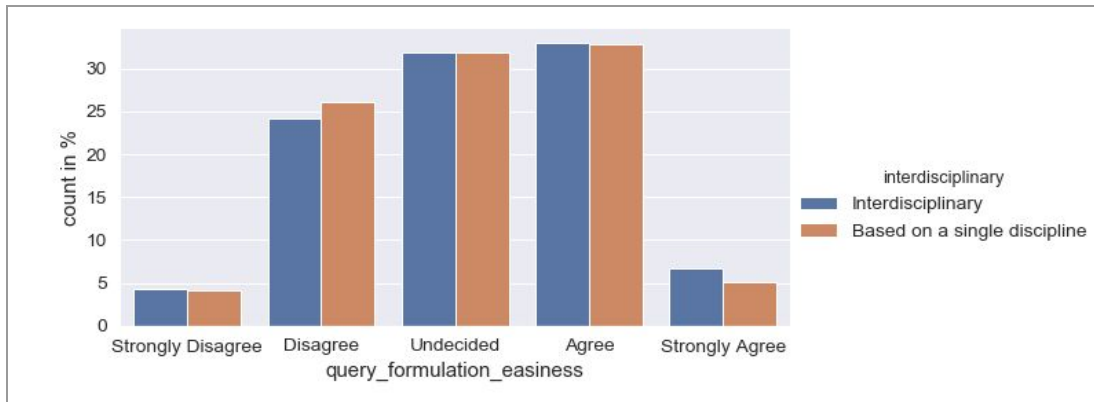
D3.1 Iteration on User Needs

FIGURE 70. PERCEPTION TOWARD THE EASINESS OF FORMULATING QUERIES FOR THE INTERDISCIPLINARY DEMOGRAPHIC

10.2 Research Techniques

We will look now at the **research techniques demographic**. To the question on the **availability of discovery tools on the specific subject of research** (Figure 71.), what we can notice is the lower number of Agree responses for the quali-quantitative researchers (compared with the other two groups), which at the same time present higher Undecided and Disagree responses. This somehow appears in line with the previous observation made for interdisciplinary scholars, where people working in-between areas may perceive there are less discovery tools available for their subject. A non parametric t-test was conducted between the quantitative and quali-quantitative groups (*H0: The two groups have the same distribution of scores*), resulting in U=24521, p=0.003, confirming that the two groups present a different distribution (*reject H0*).
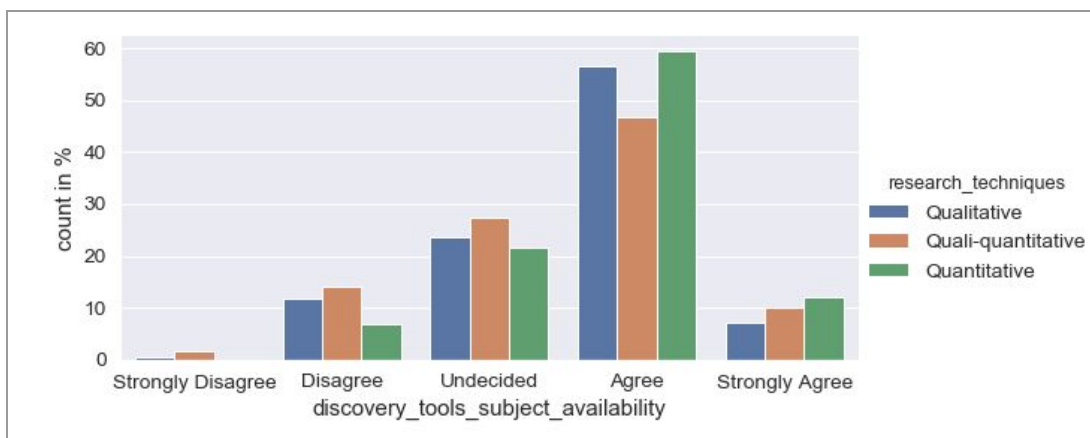
FIGURE 71. PERCEPTION TOWARD THE AVAILABILITY OF DISCOVERY TOOLS FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

Moving on, the question related to the **ease of formulating queries** (Figure 72.) shows some differences, especially if we look at the Strongly Agree and Agree responses where we see ~35.5% (n=167) for qualitative researchers, ~40.5% (n=100) for quali-quantitative and ~46.5%

(n=80) for quantitative researchers. There clearly are thus differences among the groups. A non parametric t-test was conducted between qualitative and quantitative researchers (*H0: The two groups have the same distribution of scores*), resulting in U=34278, p=0.003, confirming that the two groups present a different distribution (*reject H0*). It seems that quantitative researchers may find it relatively easier to formulate queries than for example qualitative researchers.
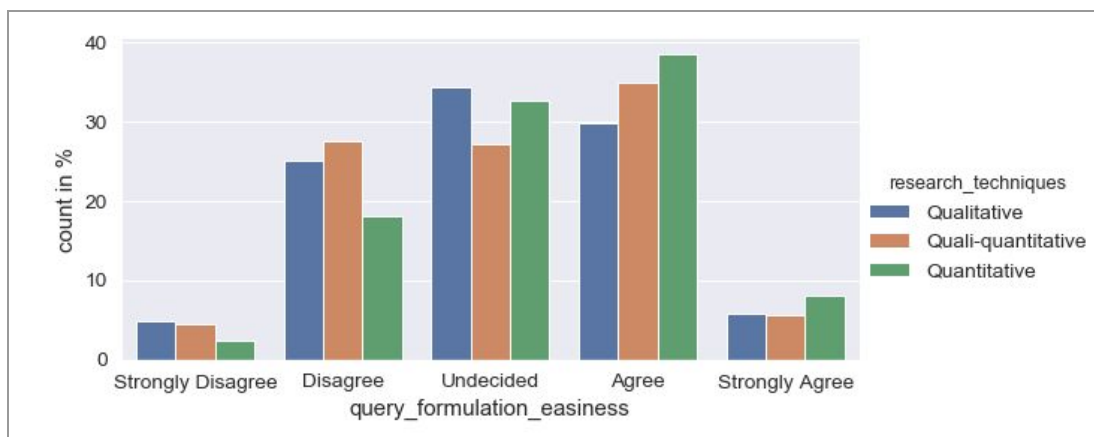

FIGURE 72. PERCEPTION ON THE EASE OF FORMULATING DISCOVERY QUERIES FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

10.3 Career level

We will look now at the **career level demographic**. To the question about the **importance of discoverability** (Figure 73.), all the groups provided strong positive responses, all above 75%.
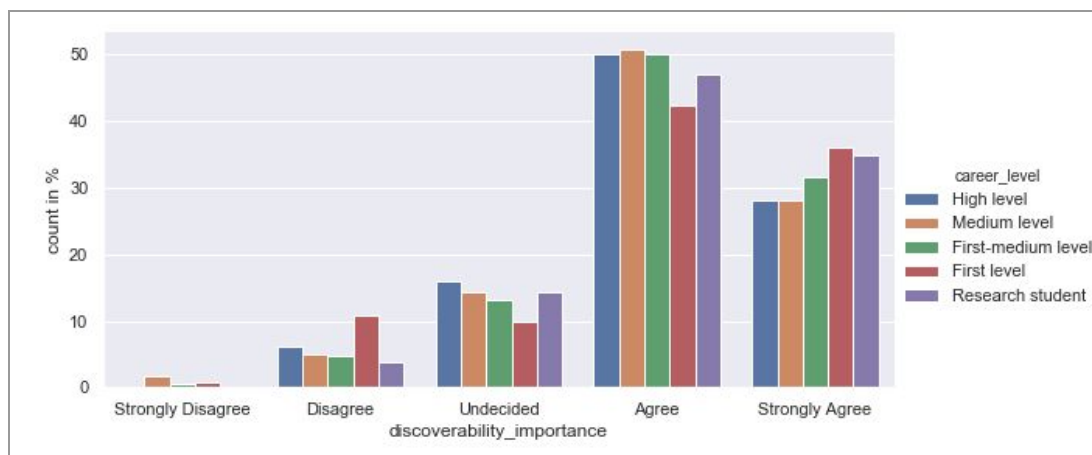
FIGURE 73. PERCEPTION ON THE IMPORTANCE OF DISCOVERABILITY FOR THE CAREER LEVEL DEMOGRAPHIC

To the question on the **difficulties in accessing a resource, once this has been discovered** (Figure 74.), we see an almost symmetrical situation between positive and negative responses. What is noteworthy is that there seems to be a connection between the career level and resources access with scholars at lower levels finding it more difficult to access the discoveries if compared to higher career levels. A non parametric correlation test (Spearman) was

D3.1 Iteration on User Needs

conducted (with *H0: that there is a correlation between career levels and the perception of having problems in accessing a discovered resource*) resulting in a coefficient of -0.134 (p=0.000) showing that there is mild negative correlation, with people at higher levels of their careers having less problems in accessing the discoveries (e.g. a paper, a dataset).
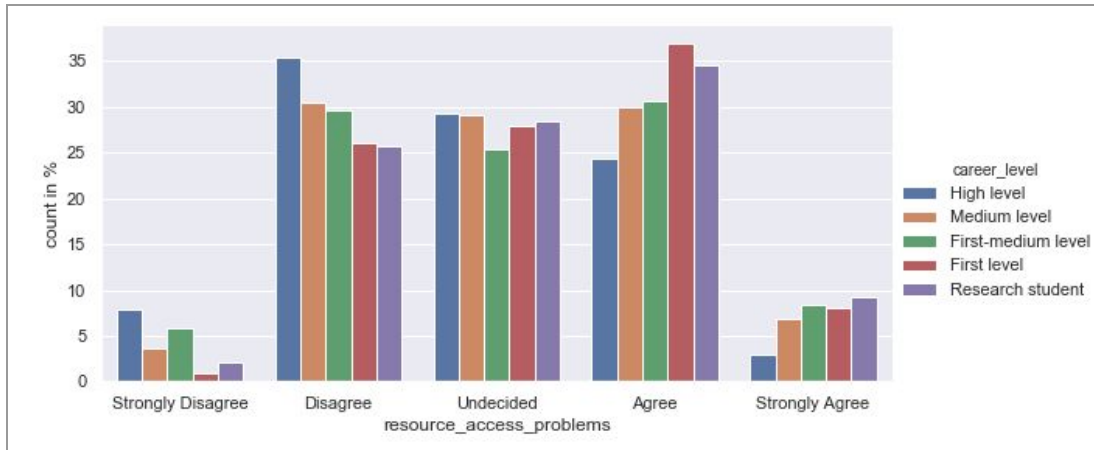

FIGURE 74. PERCEPTION ON THE PROBLEMS IN ACCESSING DISCOVERIES FOR THE CAREER LEVEL DEMOGRAPHIC

The situation appears similar if we look at the other questions, in particular those related to the discovery process. For example, Figure 75. shows the responses to the question on **the difficulties in getting an overview of relevant literature for a research topic**. Scholars at lower levels find this more difficult than colleagues at higher levels. A non parametric correlation test was conducted (with *H0: there is a correlation between career levels and the perception of difficulties in getting a proper overview of literature*) resulting in a coefficient of -0.095 (p=0.004) showing that there is a very mild negative correlation, with people at higher levels of their careers having less problems in producing an overview of literature. More than being related to the current discovery tools, however these responses may reflect the capacity of more established scholars to have a clear idea about the evolution of a defined research field.
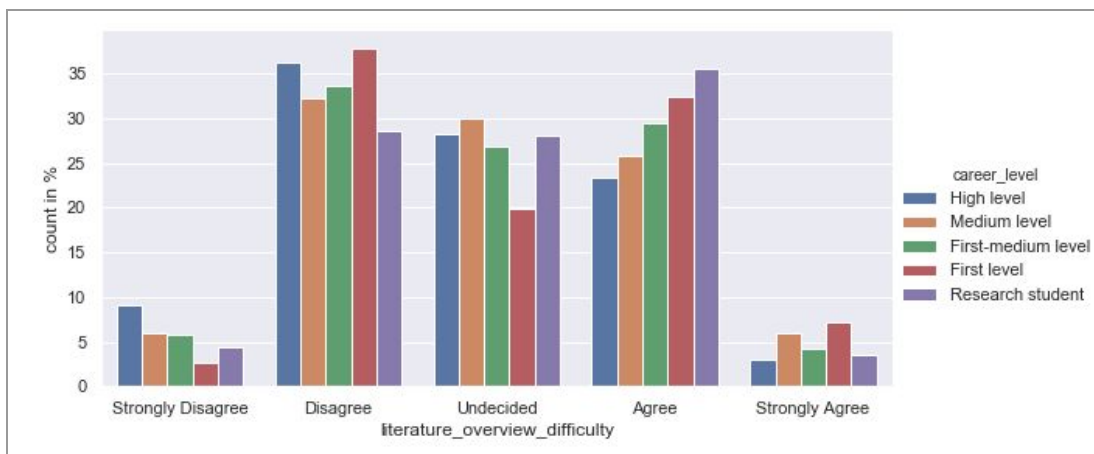

FIGURE 75. PERCEPTION ON THE DIFFICULTY OF GETTING AN OVERVIEW OF LITERATURE FOR THE CAREER LEVEL DEMOGRAPHIC

To the question on whether **doing a literature search is too time consuming** (Figure 76.), the pattern is similar to the previous question and what is in particular notable are the difficulties for the research students, with 60% (n=128) stating they Strongly Agree or Agree that it is too time consuming for them to get to search for literature. A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the perception that getting an overview of literature is too time consuming*) resulting in a coefficient of -0.141 (p=0.000) showing that there is a mild negative correlation, with people at higher levels of their careers finding it less onerous to make a literature search in terms of time compared to colleagues at lower career levels.
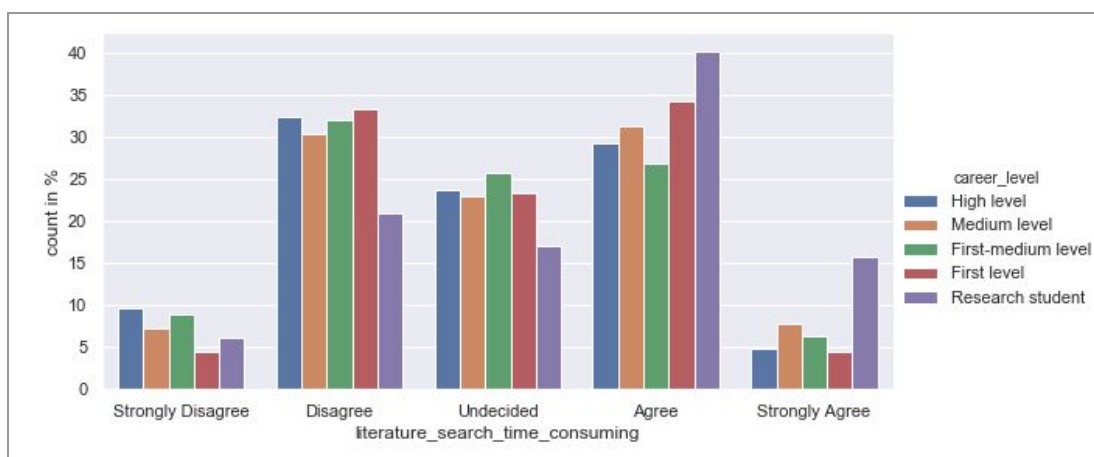
FIGURE 76. PERCEPTION ON DOING A LITERATURE REVIEW BEING TOO TIME CONSUMING FOR THE CAREER LEVEL DEMOGRAPHIC

10.4 Main Discipline

We will look now briefly at the **discipline demographic**. However this time rather than just look at the five disciplines with most responses, we will look at more disciplines (14 to be precise), in order to have a set of more granular observations. It needs to be stated again that for some of these there are as little as 20 responses (e.g. Media Studies, Philosophy) and thus the results should be taken only as descriptive. This is also the reason why thus far we did concentrate on the five disciplines with most responses.

In relation to the **availability of discovery tools in the specific subject discipline** in Figure 77., while we can generally see a high positive response (Strongly Agree and particularly Agree), for some disciplines there are however many Undecided (for example in Archaeology and Prehistory or Literature) reaching 30% of responses. For some, 20% or more are Disagree responses in particular for Social Anthropology and Ethnology and Media Studies. This shows that whilst scholars in most disciplines perceive there are discovery tools for their subject, for some this may not always be the case and there is substantial variation. Indeed for Social Anthropology and Ethnology positive responses are 45.5% (n=16), compared to for example 66.5% (n=62) for Linguistics or 79% (n=19) for Philosophy.
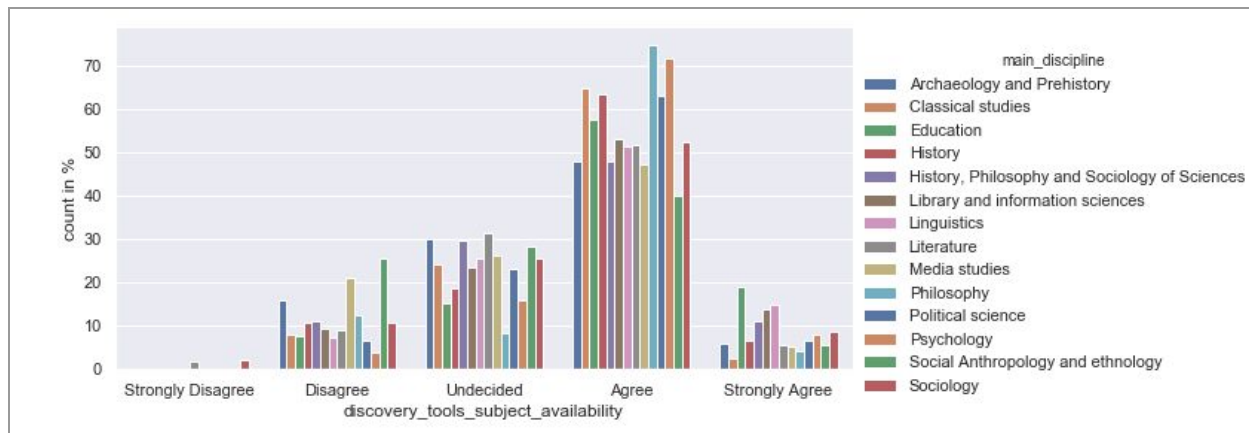
FIGURE 77. PERCEPTION TOWARD THE AVAILABILITY OF DISCOVERY TOOLS FOR THE MAIN SUBJECT FOR THE DISCIPLINE DEMOGRAPHIC (14 DISCIPLINES)

To the question on the **ease of formulating discovery queries** (Figure 78.) we see strong positive responses (especially Agrees) for Political Science, Psychology then followed by Archaeology, History and Sociology. Whilst low positive responses (and conversely more negative responses) are present in Media Studies, Philosophy, Literature, then followed by History, Philosophy and Sociology of Science and Linguistics. Although this conclusion would deserve further investigations, it seems that, on average, Social Science scholars find it easier to formulate search/discovery queries than scholars in the Humanities.
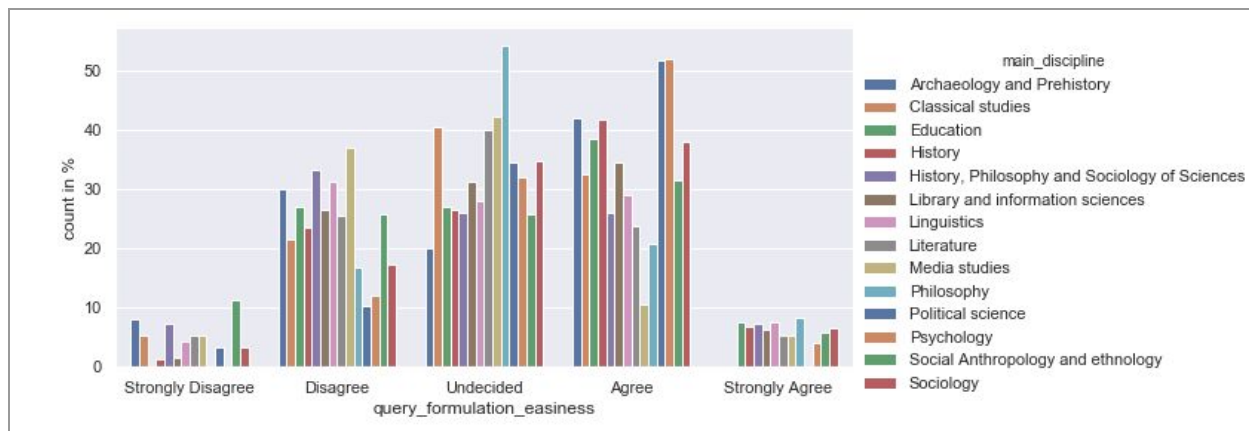
FIGURE 78. PERCEPTION ON THE EASINESS OF FORMULATING DISCOVERY QUERIES FOR THE DISCIPLINE DEMOGRAPHIC (14 DISCIPLINES)

10.5 Country of Work

A final question will be considered for this block in relation to the **country of work demographic**. In particular the question about the **availability of tools for finding literature in**

the mother tongues (Figure 79.) and we will consider a graph with 14 countries (with most responses), where again we should consider the limit that for some countries, the number of responses is relatively low (e.g. for Bulgaria is 10 and Ireland 11). Also, the demographic question has collected the country of work and not the country of birth or the main spoken language, thus the representation may also be partial. Nonetheless we can clearly see a differentiation between people working in English Speaking Countries (with the highest number of Strongly Agree responses, for UK and Ireland), German speaking countries (Austria, Germany and Switzerland[10]) and French speaking countries (France and Switzerland) on one side with quite relevant Agree responses and the others. Indeed, for other countries we have a relatively higher negative response[11] (Strongly Disagree and Disagree) which include Poland, Greece, Portugal, Italy and Bulgaria. There clearly is a gap which is due perhaps to the "strength" of the language of the country in relation to publishing tradition and international recognition.
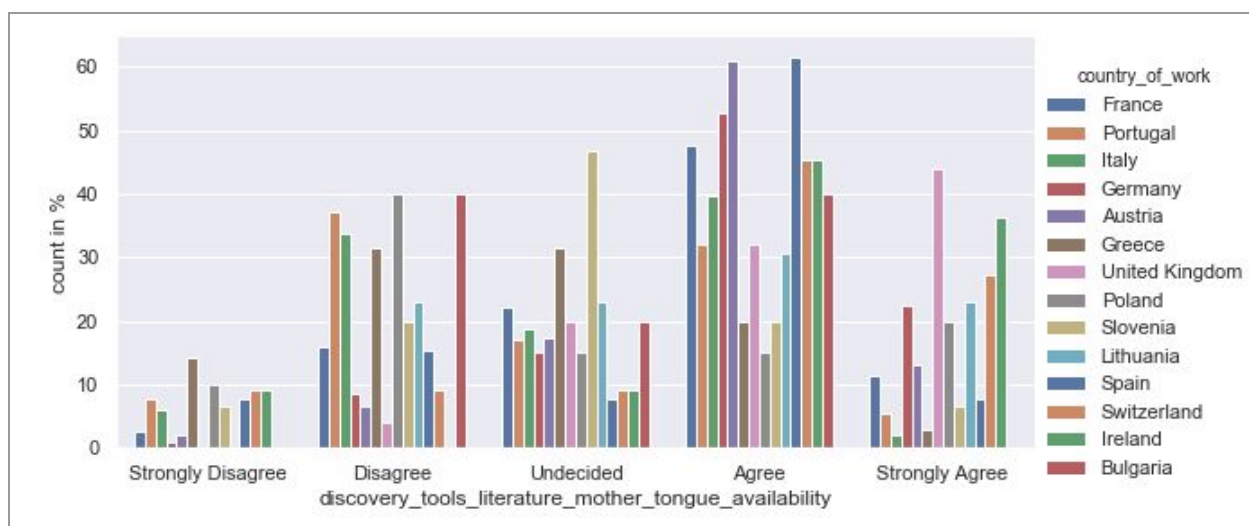
FIGURE 79. PERCEPTION ON THE THE AVAILABILITY OF DISCOVERY TOOLS IN THE MOTHER TONGUE FOR THE COUNTRY OF WORK DEMOGRAPHIC (14 DISCIPLINES)

10.6 Block 6 - Main take-away points

This block of the questionnaire tried to answer the question of "what are the main discovery practices of SSH researchers?". The **main take-away points** from the analysis presented in this section are as follows:

☐ While discovery is seen as important by most respondents, accessing resources once these have been discovered (e.g. accessing the pdf of a paper once found, or downloading a dataset) still remains difficult for most.

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[10] Considering that in Switzerland also French and Italian are national languages, together with German.
[11] If compared with English, German and French speaking countries.

D3.1 Iteration on User Needs

☐ Scholars based on a single discipline perceive that there are more discovery tools available to them, if compared with interdisciplinary scholars.

☐ Researchers using a mix of quantitative and qualitative techniques work in between areas and it appears that they also find it slightly more difficult to have a recognised set of discovery tools available for their work.

☐ People at higher levels of their career perceive they are more at ease with discovery practices compared with those at lower levels, as seen from a number of correlations.

☐ It seems that, on average, Social Science scholars find it easier to formulate search/discovery queries than scholars in the Humanities (although this conclusion would deserve further investigations based on more data which is not available from the questionnaire).

☐ There is some relation between languages and the availability of tools for literature searches, with English, German and French speaking countries (of work) having more tools available than some of the other countries we have considered (e.g. Poland, Greece, Italy).

11| BLOCK 7 - COLLABORATION PRACTICES AND TRIPLE

A further block of questions explored the **priorities of SSH scholars for collaboration and networking**. The 5 options for this block were Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree. In this block of the questionnaire the goal was to investigate "what are the main collaboration practices/priorities of SSH researchers?". The following issues were asked:

☐ capacity to interact with colleagues with real time communication tools (n=901) [**colleagues_interaction_capability**]

☐ capacity to interact with other stakeholders using the same tools (n=899) [**stakeholders_interaction_capability**]

☐ capacity to share material with others using online repositories (n=901) [**sharing_material_capability**]

☐ ease of finding (other researchers as) collaborators using networking tools (n=896) [**find_collaboration_easiness**]

☐ ease of finding stakeholders for research using networking tools (n=892) [**find_stakeholder_easiness**]

☐ ease of disseminating research results using existing tools (n=900) [**research_results_dissemination_easiness**]

☐ ease for other researchers to find the respondents own research/results (n=899) [**research_discoverability_researchers_easiness**]

☐ and finally the ease for other stakeholders to find the respondents own research/results (n=895) [**research_discoverability_stakeholders_easiness**].

Percentage of responses, sorted by Strongly agree responses

■ Strongly Agree ■ Agree ▢ Undecided ▢ Disagree ■ Strongly Disagree

	Strongly Agree	Agree	Undecided	Disagree
sharing_materials_capability	27.1%	58.3%	10.3%	
colleagues_interaction_capability	26.9%	50.5%	14.4%	
research_results_dissemination_easiness	14.1%	48.7%	26.4%	8.6%
research_discoverability_researchers_easiness	9.9%	48.3%	28.1%	10.9%
stakeholders_interaction_capability	26.7%	35.5%	23.5%	
research_discoverability_stakeholders_easiness	32.2%	37.0%	17.5%	
find_collaboration_easiness	26.9%	37.7%	24.3%	
find_stakeholders_easiness	18.8%	37.9%	30.3%	10.0%

Created with Datawrapper

FIGURE 80. PERCEPTION TOWARD PRACTICES OF COLLABORATION AND NETWORKING

Some preliminary observations from Figure 80. can be drawn. At first, while it seems that SSH researchers can interact easily with colleagues (~77%, n=697 - of positive responses, Strongly Agree and Agree), they are finding it more difficult to interact with other stakeholders such as SMEs, policy makers (~34%, n=306 of Strongly Agree and Agree), with the majority remaining undecided (35.5% n=319). However, finding research collaborators and finding stakeholders for participation to research present a rather similar pattern Both have a large majority of undecided responses (37.7% and 37.9%) and a relative high number of negative responses (~30.5% for collaborators and just above 40% for other stakeholders), although SSH scholars still find it easier to find collaborators than stakeholders for e.g. participation to research projects. The other interesting aspect is related to the question on the ease with which others (other researchers, collaborators or stakeholders) can easily find one's research (that is, how easy is for someone to find the respondent's research). Cleary SSH researchers perceive that it is much easier for other researchers (58% of positive responses) to find their (the respondent)

research than it is for other stakeholders (just a little less than 39% of positive responses), with the number of undecided at ~28% in the first case and 37% in the second.

11.1 Research Techniques

We will start by looking at the **research techniques demographic**. The question on the **capacity to interact with colleagues** (Figure 81.) there are not very relevant differences, although quantitative researchers appear to have a higher number of Strongly Agree responses if compared with the other two groups, whilst qualitative and quali-quantitative have a few more Undecided responses than the quantitative group. A non parametric t-test was conducted between qualitative and quantitative researchers (*H0: The two groups have the same distribution of scores*), resulting in U=35244, p=0.018, showing that these two groups present a different distribution (*reject H0*). Thus it would seem that quantitative researchers are more capable than their qualitative counterparts to interact with colleagues (at least from their perception).
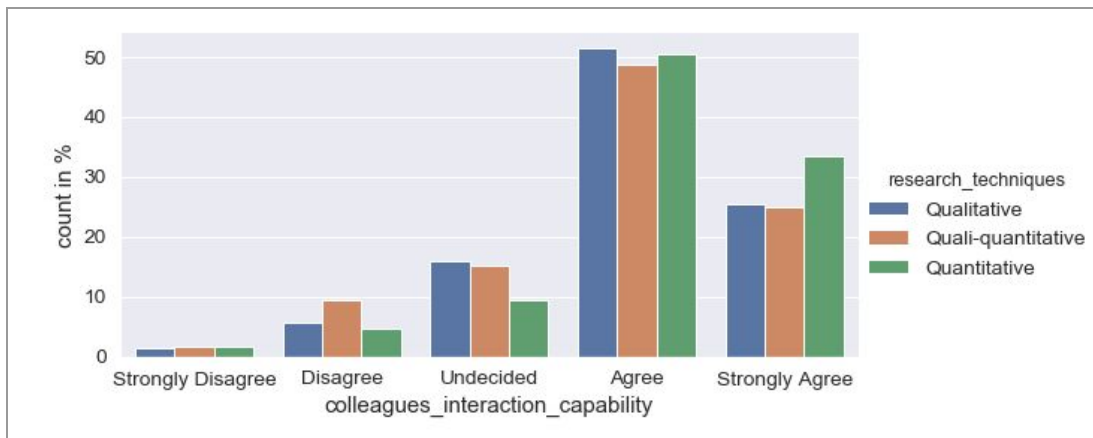
FIGURE 81. PERCEPTION OF THE CAPACITY TO INTERACT WITH COLLEAGUES FOR THE RESEARCH TECHNIQUE DEMOGRAPHIC

In terms of the **capacity to interact with other stakeholders** (Figure 82.), the situation is similar to the previous question. In this case, quantitative researchers display a slightly higher Agree response than the two other groups which on the other hand have a marginally higher rate of Undecided responses and also negative responses (both Strongly Disagree and Agree). It is also clear that in all the three groups, ⅓ or more of respondents are undecided on whether they can interact properly with other stakeholders. A non parametric t-test was conducted between qualitative and quantitative researchers (*H0: The two groups have the same distribution of scores*), resulting in U=38288.5, p=0.457, showing that these two groups present the same distribution (*accept H0*).
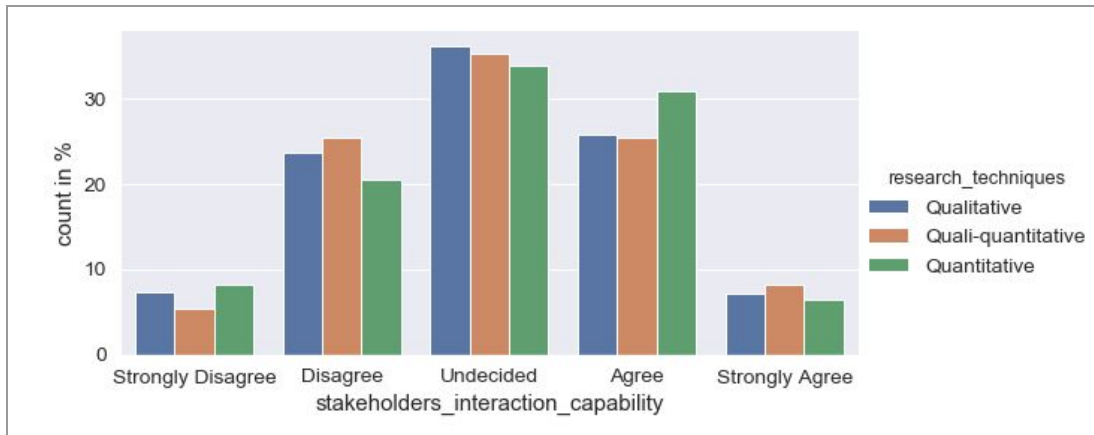
F‌IGURE 82. P‌ERCEPTION OF THE CAPACITY TO INTERACT WITH OTHER STAKEHOLDERS FOR THE RESEARCH TECHNIQUE DEMOGRAPHIC

Figure 83. shows the responses to the question on **the capacity to find stakeholders for participating in research** (e.g. projects). Clearly for this question, negative responses (Strongly Disagree and Disagree responses) are dominant with nearly 37% (n=171) of qualitative researchers, 40.6% (n=89) of quali-quantitative researchers and 47.6% (n=80) of quantitative researchers. Moreover, many also are Undecided across the three groups with qualitative researchers in particular at 40% (n=185). Thus SSH researchers across the different techniques perceive that it is not easy for them to find other stakeholders. This is despite the fact that, to the question on **whether other stakeholders can easily find their research**, responses are relatively positive (see Figure 84.). Indeed, for this question, we can see that while Undecided responses are still substantial (with notably 40% of quantitative researchers), positive responses (providing Strongly Agree and Agree responses) are higher than the negative with 36.8% (n=171) of qualitative researchers, 45% (n=109) of quali-quantitative researchers and 35.8% (n=61) of quantitative researchers. It thus seems that the perception of SSH researchers across the different techniques is that other stakeholders can, to an extent find their research, however, involving stakeholders in research activities is much more difficult.
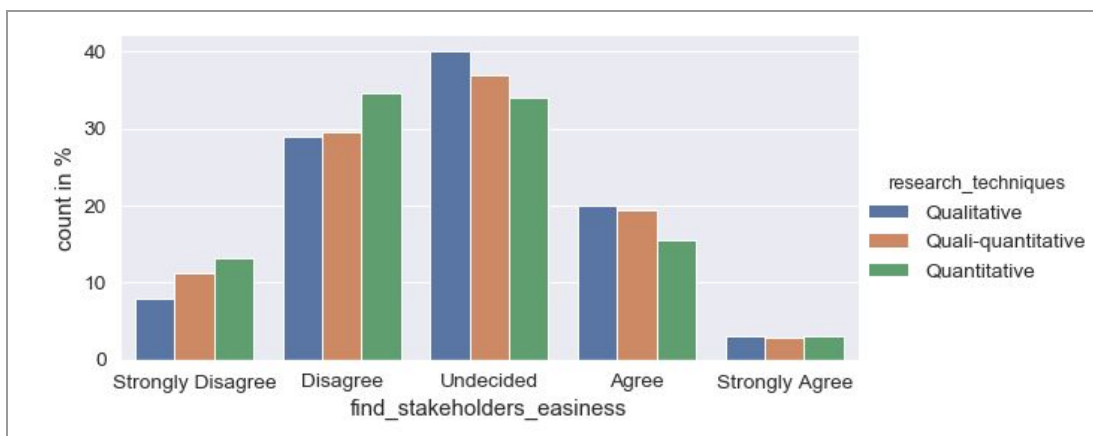
F‌IGURE 83. P‌ERCEPTION OF THE EASE OF FINDING STAKEHOLDERS FOR THE RESEARCH TECHNIQUE DEMOGRAPHIC
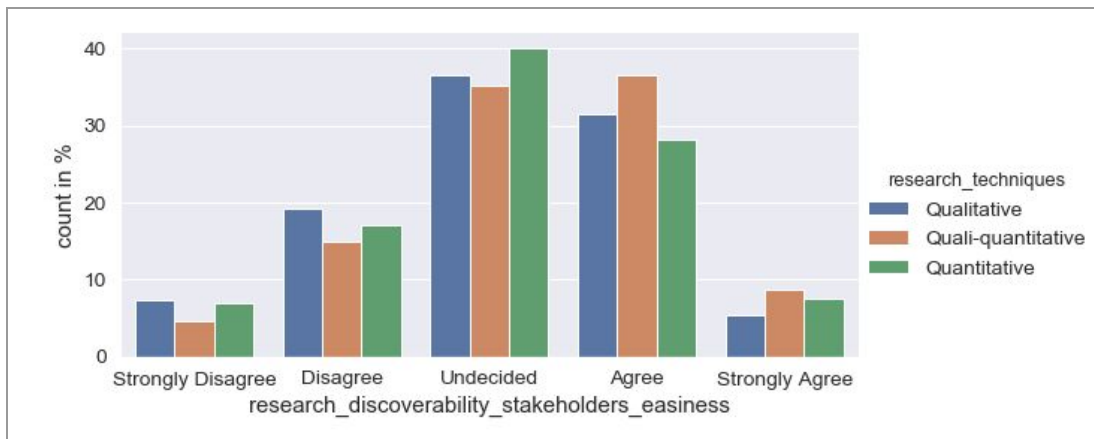
FIGURE 84. PERCEPTION OF THE EASE FOR OTHER STAKEHOLDERS TO FIND THE RESEARCH OF THE RESPONDENTS, FOR THE RESEARCH TECHNIQUE DEMOGRAPHIC

11.2 Interdisciplinarity

We consider now the **interdisciplinary demographic**. In terms of the **capacity to interact with colleagues** (Figure 85.), we can see a high Strongly Agree response for interdisciplinary scholars (partially offset but a slightly higher Agree for those based on a single discipline). It is however also clear that interdisciplinary scholars have lower responses in Undecided, Disagree and Strongly Disagree. A non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=80570.5, p=0.000, showing that these two groups present a different distribution (*reject H0*). It appears then that interdisciplinary scholars are marginally more capable to interact with colleagues than the single discipline scholars.
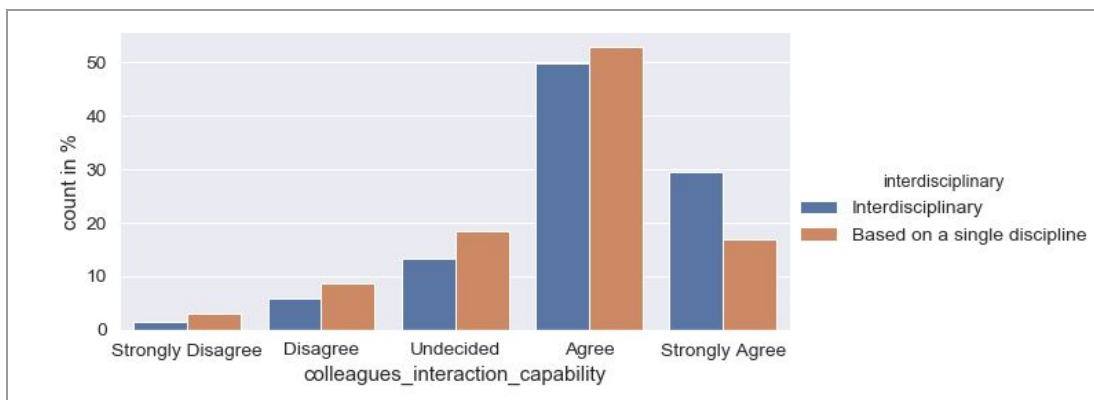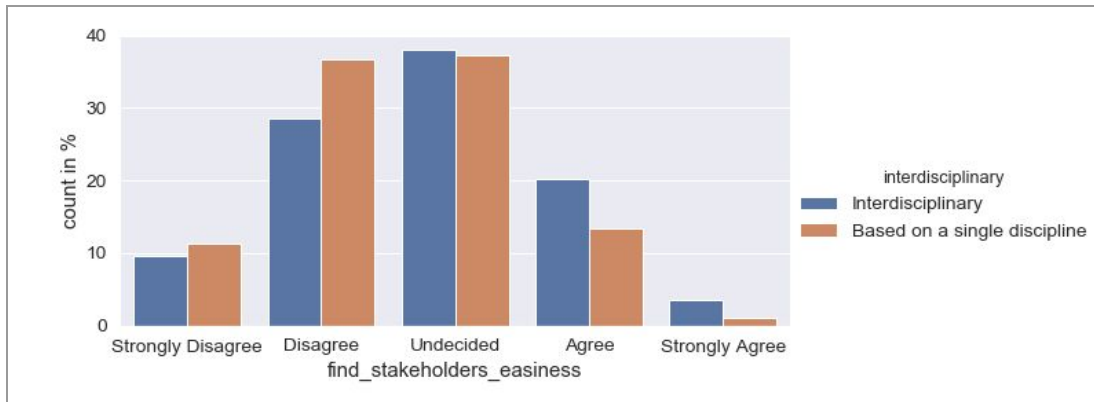

FIGURE 85. PERCEPTION OF THE CAPACITY TO INTERACT WITH COLLEAGUES FOR THE INTERDISCIPLINARY DEMOGRAPHIC

Looking at Figure 86. on the **capacity to interact with other stakeholders**, interdisciplinary scholars have marginally higher positive responses (Strongly Agree and Agree), whilst those based on a single discipline have marginally higher responses for the other elements (Undecided, Disagree and Strongly Disagree). A non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=75649, p=0.021, showing that these two groups present a different distribution (reject H0). It appears that interdisciplinary scholars are marginally more capable to interact with other stakeholders than the other group.
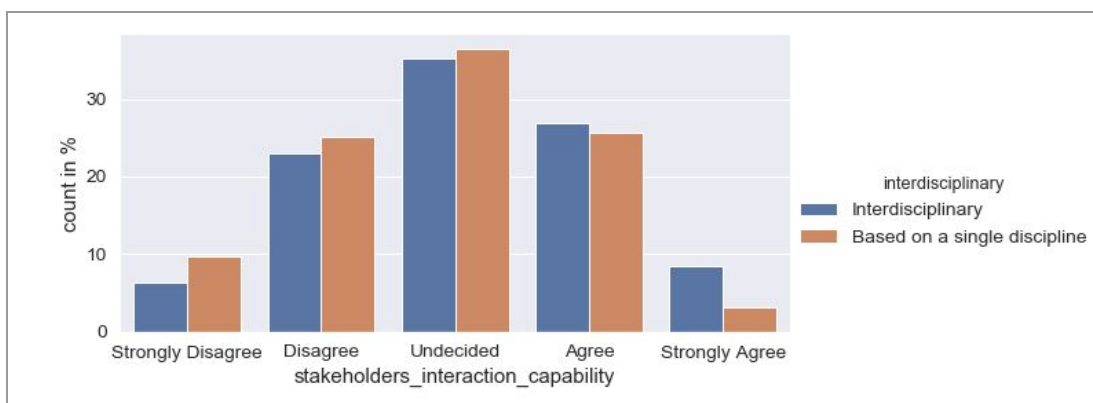
FIGURE 86. PERCEPTION OF THE CAPACITY TO INTERACT WITH OTHER STAKEHOLDERS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

Looking now again at the questions on whether these two groups can **easily find other researchers for collaboration** (Figure 87.) or **other stakeholders** (Figure 88.) to involve them in their research, we can see the same pattern, with interdisciplinary scholars having marginally higher Strongly Agree and Agree responses for both questions.
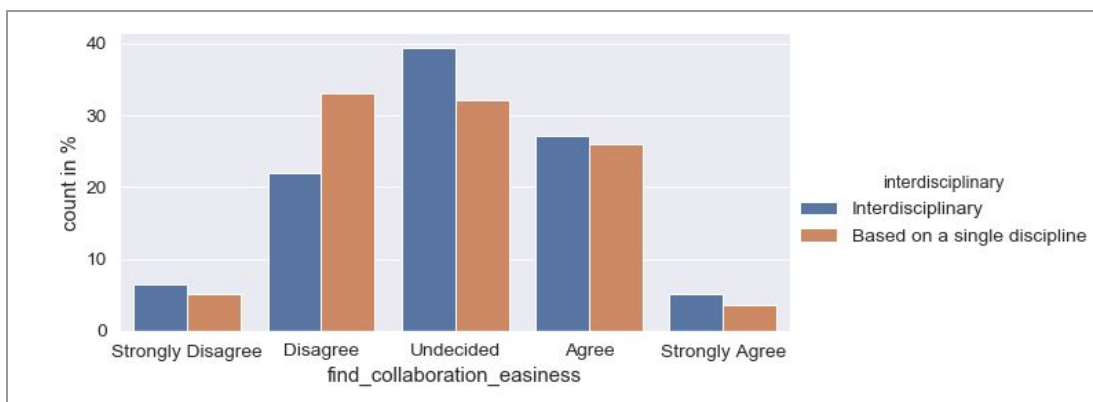
FIGURE 87. PERCEPTION OF THE CAPACITY TO INTERACT WITH OTHER STAKEHOLDERS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

For the question on **finding stakeholders** for research (Figure 88.), a non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=76391.5, p=0.003, showing that these two groups present a different distribution (*reject H0*).

D3.1 Iteration on User Needs

FIGURE 88. PERCEPTION OF THE EASINESS TO FIND STAKEHOLDERS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

11.3 Career Level

We will look now at the **career level demographic**. As one could expect there may be some relations between the career level and capacity to interact with others, with younger scholars having perhaps more difficulties if compared to scholars at higher levels of their career. To the question on the **capacity to interact with colleagues** (Figure 89.), differences are not substantial as we can see from the graph (Spearman p=0.129 for this question, with thus no correlation).
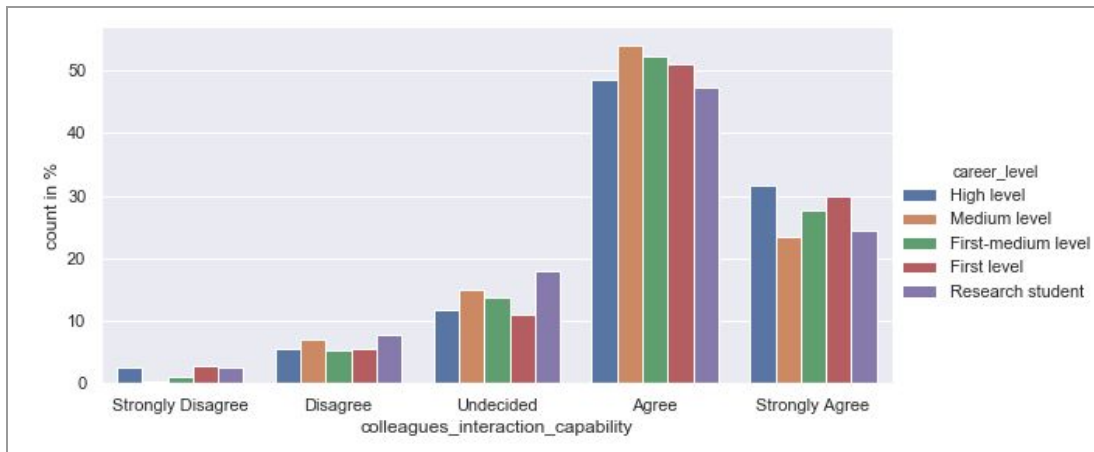
FIGURE 89. PERCEPTION OF THE CAPACITY TO INTERACT WITH COLLEAGUES FOR THE CAREER LEVEL DEMOGRAPHIC

However, looking at the **capacity to interact with other stakeholders** (Figure 90.), we see that people at higher levels show the largest positive response (Strongly Agree and Agree, 38%, n=61), with researchers at first level showing less positive responses (28%, n=31). A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the capacity to interact with stakeholders*) resulting in a coefficient of 0.80 (p=0.017) showing that there is a very feeble positive correlation, with people at higher

levels of their careers finding less difficult to interact with other stakeholders if compared to colleagues at lower career levels.
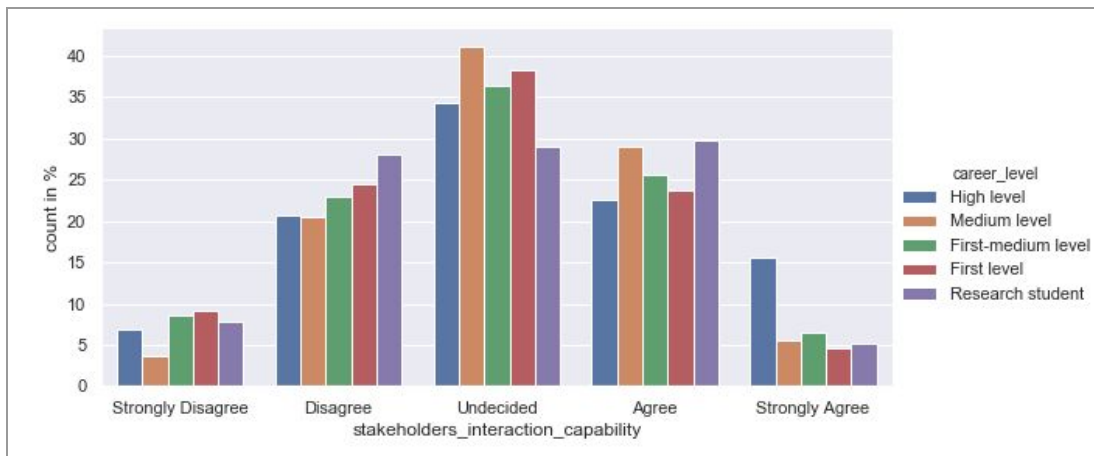
FIGURE 90. PERCEPTION OF THE CAPACITY TO INTERACT WITH OTHER STAKEHOLDERS FOR THE CAREER LEVEL DEMOGRAPHIC

However, the previous feeble correlation is not necessarily revelatory of the situation. For example, there is no correlation between career level and **the ease of finding collaborators** (coefficient 0.034, p=0.36) **or stakeholders** (coefficient 0.024, p=0.474). If we look at the **ease of finding collaborators** (Figure 91.) or **stakeholders** (Figure 92.) for research, the main take-away lesson is that perhaps one group struggles, more than the others. This group are researchers at the first level of their career (e.g. post-doctoral researchers), with much more substantial negative responses (Strongly Disagree and Disagree) for both questions and in the case of stakeholders interaction a much lower positive response (<15%) if compared to all the other groups, including students. We have noted earlier in the deliverable that researchers at the first level of their career also struggle in other areas, such as the use of research platforms or research search engines. This group in particular, may therefore require specific attention in the construction of the GOTRIPLE platform with solutions aimed at supporting them more, as they move toward the subsequent steps of their career.
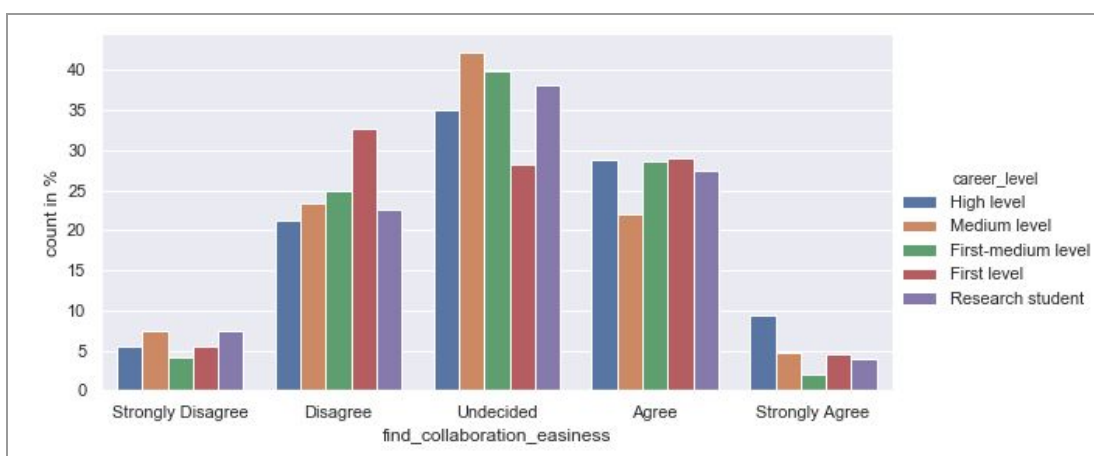
FIGURE 91. PERCEPTION OF THE EASINESS TO FIND COLLABORATORS FOR THE CAREER LEVEL DEMOGRAPHIC

D3.1 Iteration on User Needs
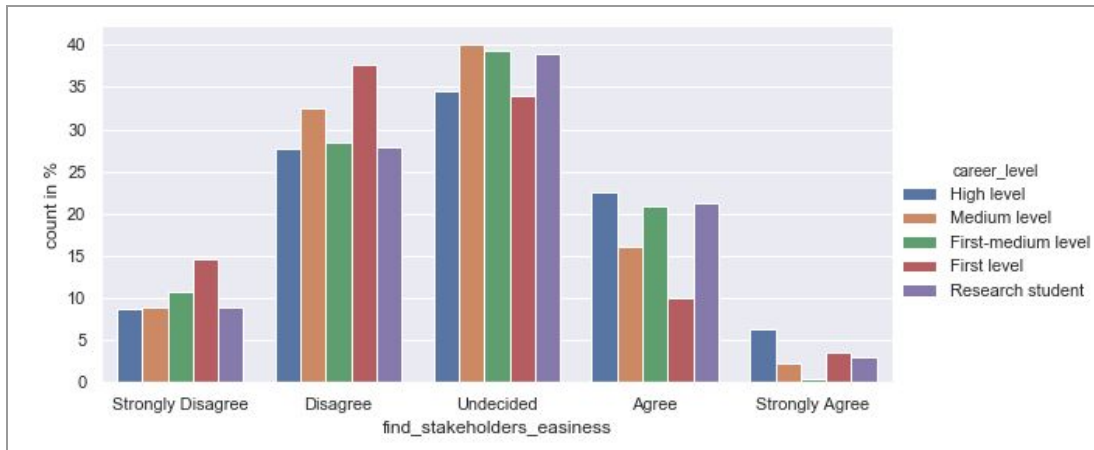
FIGURE 92. PERCEPTION OF THE EASINESS TO FIND STAKEHOLDERS FOR THE CAREER LEVEL DEMOGRAPHIC

The previous consideration also extends, to an extent, the question on whether **other people (researchers or stakeholders) can discover the research** of the respondents (Figures 93. and 94.), but it is wider and relates to correlations between career level and the perception of whether others can discover the respondent research outputs. For the first question, a non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the capacity of other researchers to discover the respondent research*) resulting in a coefficient of 0.135 and p=0.000. There is indeed a correlation with researchers at lower levels perceiving that it is more difficult for other researchers to find their (the respondent) research. For the question related to stakeholders (Figure 94.), a non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the capacity of other researchers to discover the respondent research*) resulting in a coefficient of 0.108 and p=0.000 showing that there is indeed a correlation with researchers at lower level perceiving that it is more difficult for other stakeholders to find their (the respondents) research.
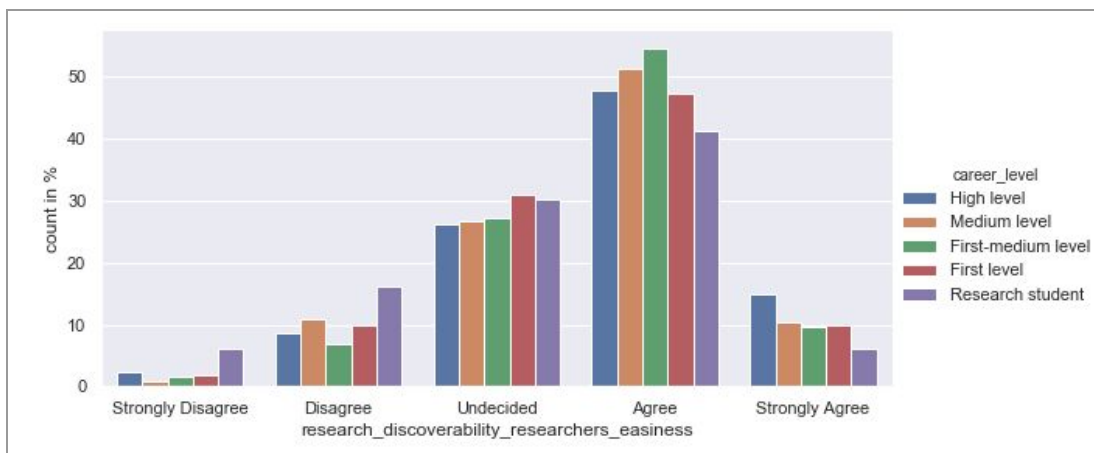
FIGURE 93. PERCEPTION OF THE EASINESS FOR OTHER RESEARCHERS TO FIND THE RESPONDENT RESEARCH FOR THE CAREER LEVEL DEMOGRAPHIC
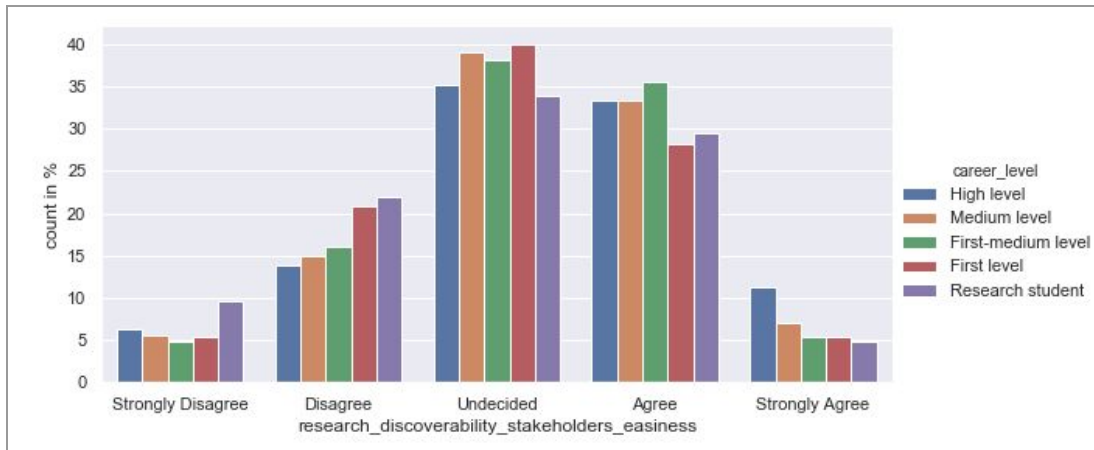
FIGURE 94. PERCEPTION OF THE EASINESS FOR OTHER STAKEHOLDERS TO FIND THE RESPONDENT RESEARCH FOR THE CAREER LEVEL DEMOGRAPHIC

11.4 Main Discipline

We conclude by looking at the **disciplinary demographic**, again using the responses from the five most represented disciplines. We will start in particular from the question on the **capacity to interact with other stakeholders** (Figure 95.). We can see many Undecided responses ranging from 29.6% of Sociologists to nearly 43% for Library and Information Sciences. Library and Information Sciences however also have the largest set of positive responses at 41% (n=27). For Sociology, History and Linguistics negative responses appear marginally higher than positive responses. Overall, the main take-away lesson is that it is not immediately easy for any of these disciplines to interact with other stakeholders, whilst most respondents are undecided.
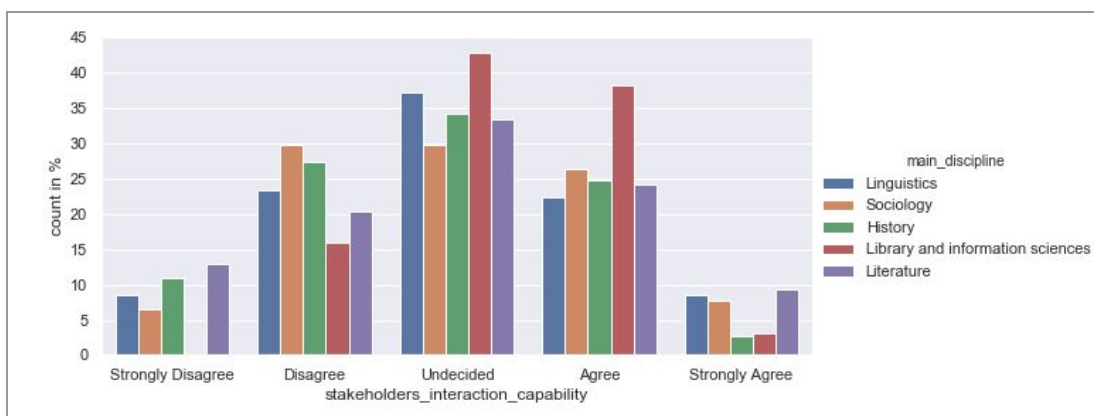
FIGURE 95. PERCEPTION OF CAPACITY TO INTERACT WITH OTHER STAKEHOLDERS FOR THE DISCIPLINE DEMOGRAPHIC

Looking at the question on the **capacity to find collaborators** (e.g. for research initiatives/projects), we see in Figure 96. again substantial Undecided responses, going from nearly 48% for Linguistics (n=45) to 33.3% of History (n=24). History and Library and Information Sciences are the disciplines where finding collaborators seems easier if compared

D3.1 Iteration on User Needs

to the low responses of the other three. Sociology also has the largest negative response with 41.5% (n=37), in the Strongly Disagree and Disagree, followed by Literature at 35% (n=19). There clearly are some disciplinary differences, however it is difficult to attribute them to specific aspects (e.g. work practices) from the available data. Regardless, many respondents appear Undecided. These aspects would deserve further investigation in the future, since the current data does not allow for a firm answer to these problems.
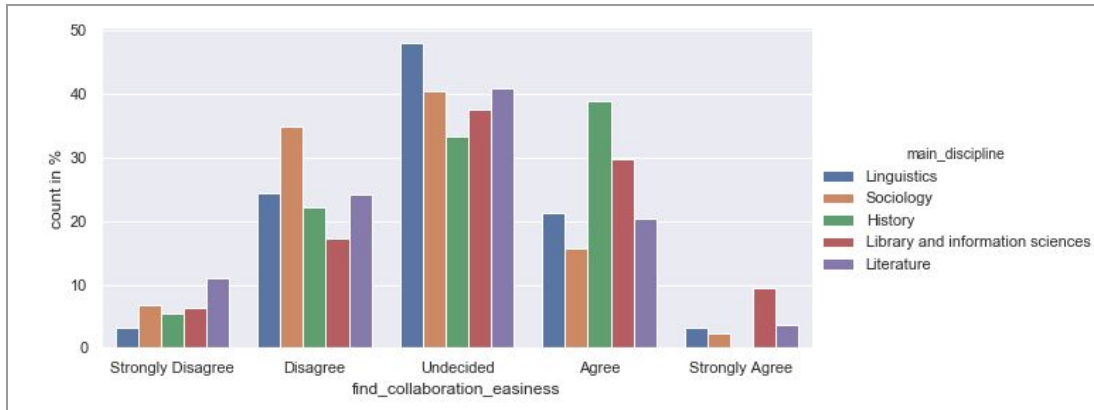
FIGURE 96. PERCEPTION OF THE EASINESS TO FIND COLLABORATORS FOR THE DISCIPLINE DEMOGRAPHIC

To the question on **the capacity to find stakeholders** (e.g. for participation in research projects, Figure 97.), again Undecided responses dominate for the five disciplines considered, ranging from nearly 43% of Library and iInformation Science (n=27) to 34% for Sociology (n=31). Negative responses are also higher than positive ones for all the disciplines with in particular Sociology, Linguistics and Literature all above 40%. Generally all the disciplines considered (except perhaps Library and Information Sciences) seem to struggle to find stakeholders in order to have them participate in research activities.
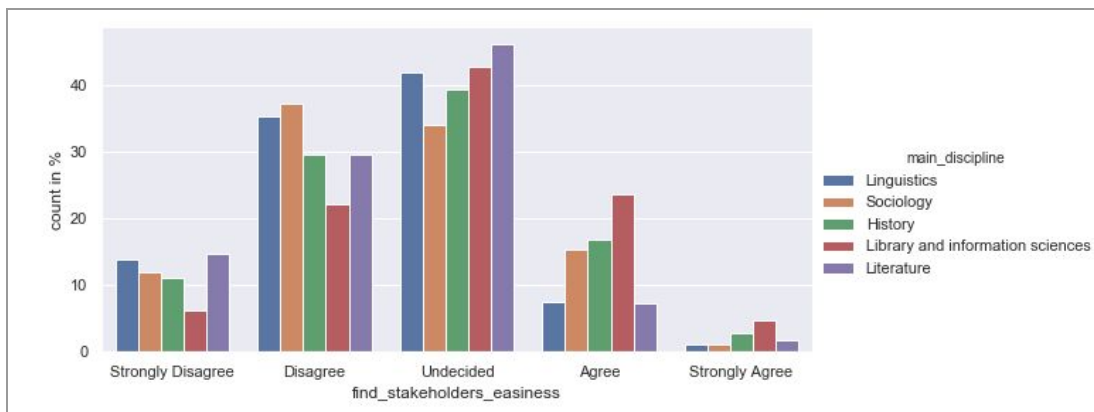
FIGURE 97. PERCEPTION OF THE EASINESS TO FIND STAKEHOLDERS FOR THE DISCIPLINE DEMOGRAPHIC

Lastly, we will consider the question on whether (respondents think that) **other stakeholders can find the respondent research** (Figure 98.). Overall we can see again large Undecided responses going from 53.7% for Literature (n=29) to 30.7% for Sociology (n=28), however this

time positive responses appear higher for four out of five of the disciplines considered, if compared to negative responses with Library and Information Sciences well above 50%, Sociology nearing 40% and History and Linguistics above 30%. Only Literature lags a bit behind with 22% (n=12) positive responses and Literature also has an almost equal negative response at 24% (n=13).
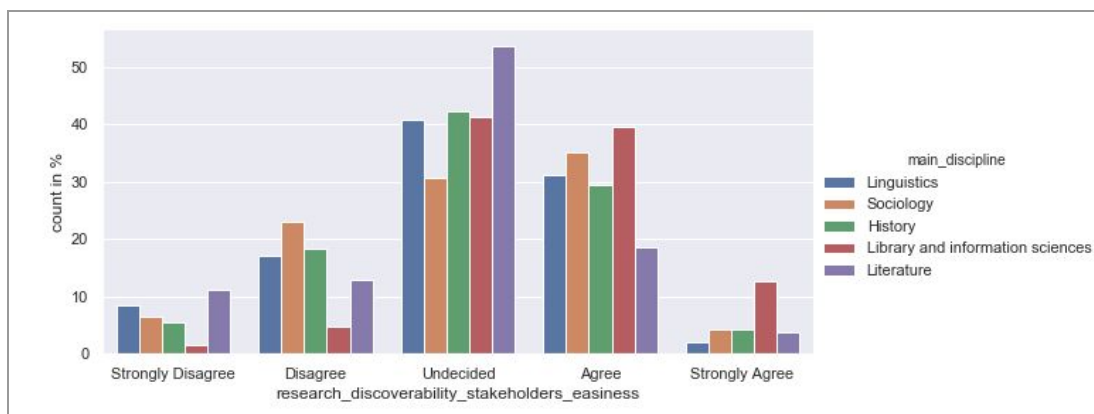

FIGURE 98. PERCEPTION OF THE EASINESS FOR OTHER STAKEHOLDERS TO FIND RESEARCH FOR THE DISCIPLINE DEMOGRAPHIC

11.5 Block 7 - Main take-away points

This block of the questionnaire tried to answer the question of "what are the main collaboration practices/priorities of SSH researchers?". The **main take-away points** from the analysis presented in this section are as follows:

☐ At a general level it appears that SSH scholars are capable of collaborating with colleagues, but struggle substantially in the capacity to collaborate with other stakeholders.

☐ SSH researchers across the different techniques perceive that it is not easy for them to find other stakeholders to participate in research endeavours (e.g. projects). SSH researchers across the different techniques also perceive that other stakeholders can, to an extent, find their (the respondents) research.

☐ For interdisciplinary scholars it is easier, on average, to collaborate with other people (colleagues/stakeholders) than it is for scholars working on a single discipline. However many in both groups remain undecided.

☐ In terms of career level, there is in particular a significant positive correlation between career level and the perception that others (researchers, stakeholders) can find the respondent research. The conclusion is then that GOTRIPLE may need to look at how to support younger scholars better with their research dissemination.

D3.1 Iteration on User Needs

☐ At disciplinary level, there do not seem to be relevant differences. Actually a main common similarity is that many remain undecided (across the five disciplines considered) in terms of their capacity to collaborate with others.

12| BLOCK 8 - LOOKING AT THE FUTURE OF TRIPLE

The final block of likert-items for the questionnaire related to the future of TRIPLE and **the perception of the future needs toward discovery of SSH researchers**. This block in particular was designed with the intent to locate the GOTRIPLE platform and its services in the context of some pressing immediate needs. The 5 options for this block were Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree. In this block of the questionnaire the goal was to investigate "what are the future discovery needs of SSH researchers in relation to GOTRIPLE?". It included questions on:

☐ whether better discovery tools are needed (n=899) [**better_discovery_tools_needed**]

☐ the facilitation of research that could be provided by the integration of several tools (n=886) [**research_tools_integration_needed**]

☐ the possibility for SSH researchers to influence the design of discovery tools (n=888) [**digital_tools_design_influence**]

☐ the importance for SSH researchers to manage their professional online profiles (n=888) [**professional_profile_management_importance**]

☐ the importance for digital research tools to be entirely open source (n=886) [**digital_tools_open_source_importance**]

☐ on whether interdisciplinarity will be increasingly important in the respective research field (n=883) [**interdisciplinarity_importance**]

☐ the belief that research will be increasingly crowdfunded in the future (n=885) [**crowd_funding_possibility**]

☐ and the belief in the need for more personalised recommendations from their own trusted network (n=886) [**gain_personalized_recommendations**]
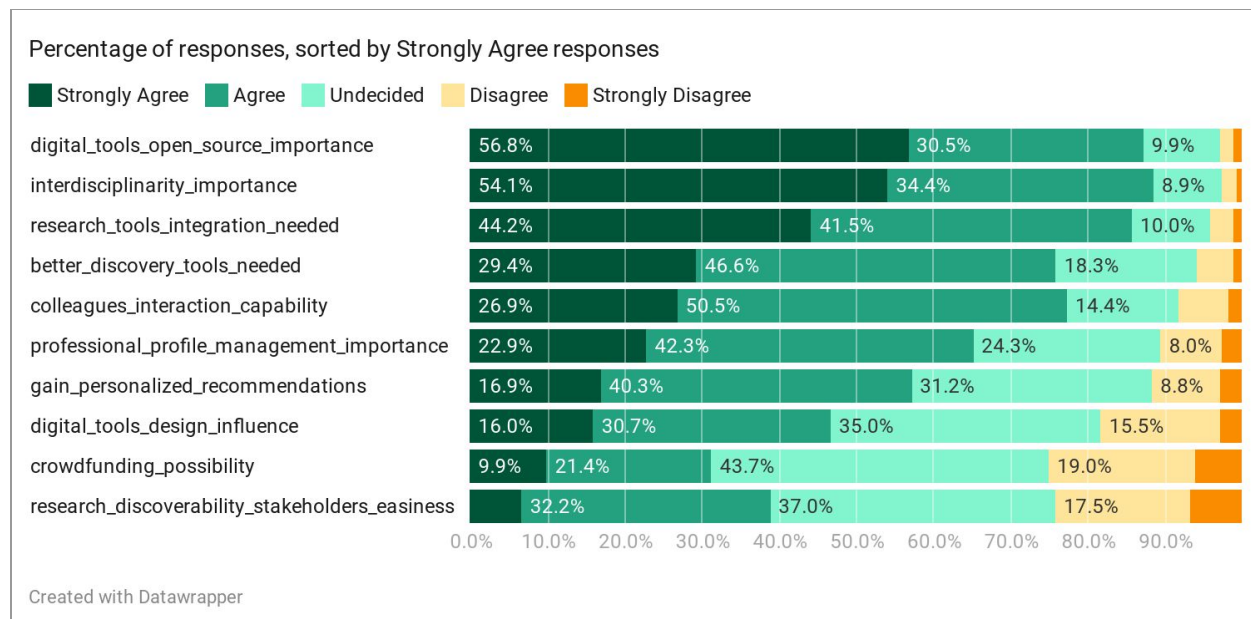
Percentage of responses, sorted by Strongly Agree responses

Legend: Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree

	Strongly Agree	Agree	Undecided	Disagree
digital_tools_open_source_importance	56.8%	30.5%	9.9%	
interdisciplinarity_importance	54.1%	34.4%	8.9%	
research_tools_integration_needed	44.2%	41.5%	10.0%	
better_discovery_tools_needed	29.4%	46.6%	18.3%	
colleagues_interaction_capability	26.9%	50.5%	14.4%	
professional_profile_management_importance	22.9%	42.3%	24.3%	8.0%
gain_personalized_recommendations	16.9%	40.3%	31.2%	8.8%
digital_tools_design_influence	16.0%	30.7%	35.0%	15.5%
crowdfunding_possibility	9.9%	21.4%	43.7%	19.0%
research_discoverability_stakeholders_easiness		32.2%	37.0%	17.5%

Created with Datawrapper

FIGURE 99. IMMEDIATE FUTURE NEEDS OF SSH RESEARCHERS IN TERMS OF DISCOVERY

As we can see from Figure 99., we have a prevalence of positive responses for most questions. These are encouraging since GOTRIPLE will be a novel discovery platform, integrating a number of innovative tools. SSH researchers also signalled the importance for research tools to be open source (just above 87% Strongly Agree and Agree responses) and of interdisciplinary research (88.5% of positive responses). Also obtaining recommendations from their trusted network is seen as important (marginally above 57% of Strongly Agree and Agree responses). Again these are needs that the GOTRIPLE platform has the ambition to meet, the latter for example via the Trust Building System and a recommender system. Where perhaps there is more uncertainty is toward the future of research being crowdfunded (with marginally above 31% of positive responses and a large number of Undecided at 43.7%).

12.1 Research Techniques

We will start looking at these questions in more details starting with the **research techniques demographic**. The distribution of responses for this demographic is not much different from the general distribution of responses (Figure 99) and overall for all the questions there do not seem to be relevant differences among the three groups (qualitative, quantitative, quali-quantitative). Just as an example, to both the question on **the need for better discovery tools** (Figure 100.) and on **the need to have several tools integrated in one environment** (Figure 101.), all the three groups present a very similar distribution across the groups, with a majority of positive responses, with all the groups above 70% for the first question and 80% for the second.
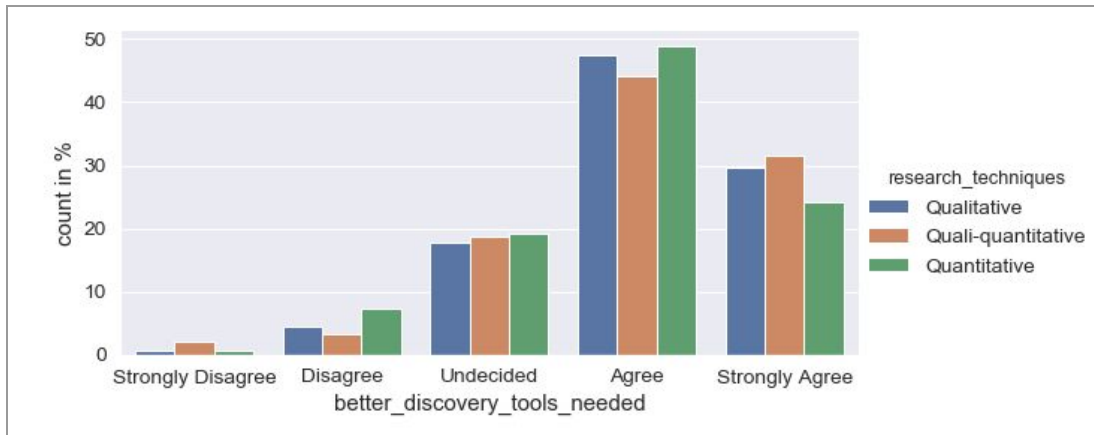
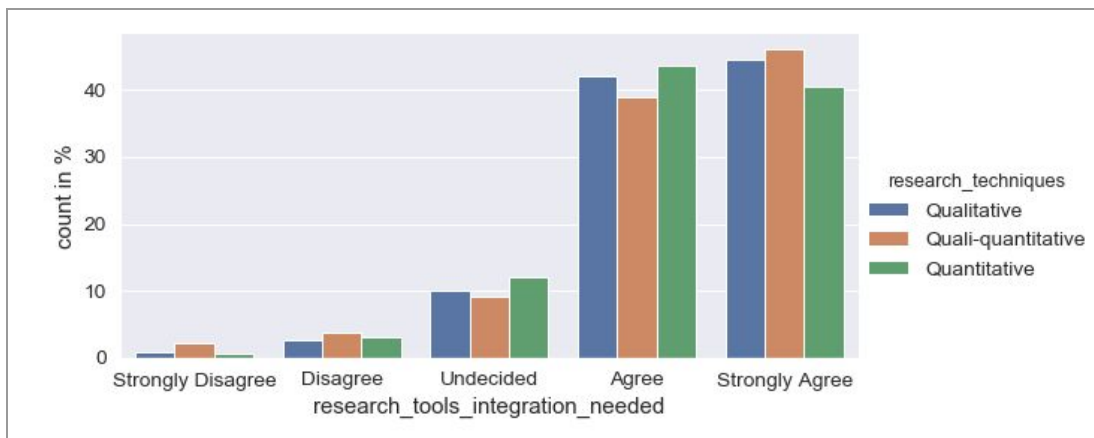FIGURE 100. PERCEPTION OF THE NEED OF BETTER DISCOVERY TOOLS FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

FIGURE 101. PERCEPTION OF THE NEED FOR THE INTEGRATION OF TOOLS FOR THE RESEARCH TECHNIQUES DEMOGRAPHIC

12.2 Interdisciplinarity

We will now look at the **interdisciplinary demographic**. We start from the question on **the need for better discovery tools** (Figure 102.). Responses reflect the main graph (Figure 99.), we see however a marginally higher positive response for interdisciplinary scholars, whilst scholars based on a single discipline have a higher Undecided and Disagree response. A non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=72743.5, p=0.065, showing that the two groups present the same distribution (*accept H0*).
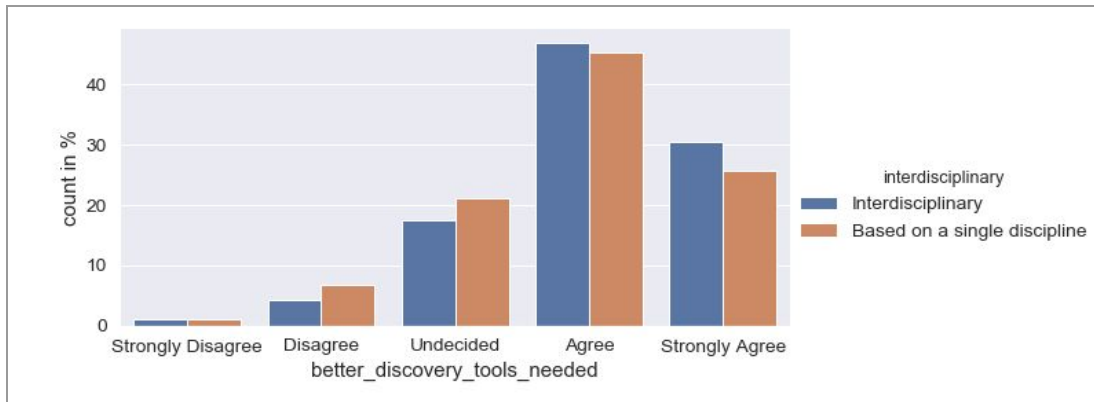
FIGURE 102. PERCEPTION OF THE NEED OF BETTER DISCOVERY TOOLS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

To the question on whether these two groups have an **interest in influencing the design of the digital tools they use** for the research (Figure 103.), we see clearly that interdisciplinary scholars present a higher number of positive responses (49%, n=341), if compared to the other group (38%, n=74). At the same time scholars based on a single discipline have higher responses in both Undecided and in the negative responses. A non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=77441, p=0.001, showing that these two groups present a different distribution (*reject H0*). It would seem then that interdisciplinary scholars are marginally keener than the other group toward the possibility to influence the design of digital tools (i.e. to participate to codesing).
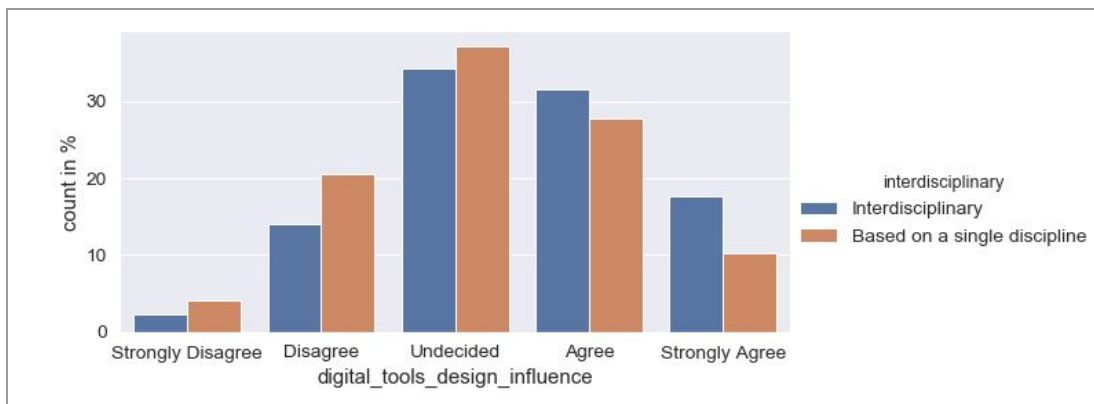
FIGURE 103. PERCEPTION OF THE INTEREST TO INFLUENCE THE DESIGN OF DIGITAL TOOLS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

It is worth now looking at the question on the **importance of interdisciplinarity for the near future** (Figure 104.). For this question, it is interesting to note that also nearly 70% of scholars based on a single discipline (n=134) have provided positive responses and thus perceive the importance of interdisciplinarity and that 24.5% (n=47) remain Undecided.
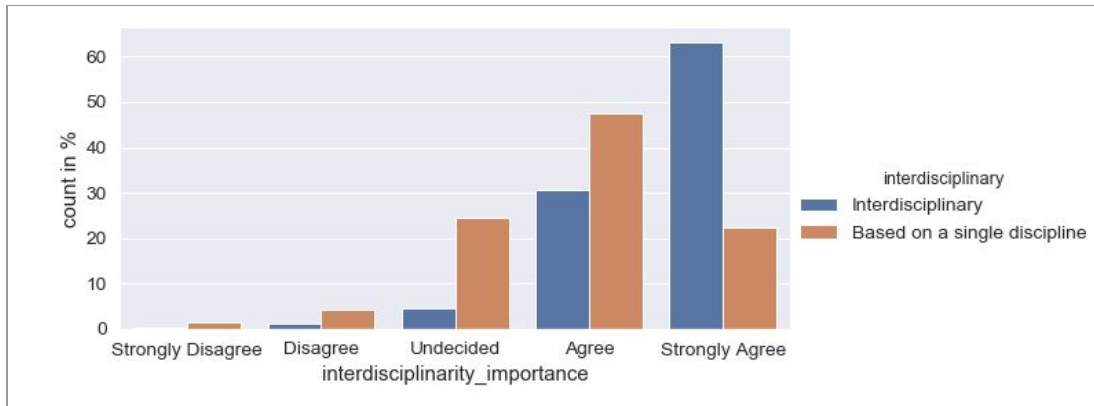
FIGURE 104. PERCEPTION OF THE IMPORTANCE OF INTERDISCIPLINARITY FOR THE INTERDISCIPLINARY DEMOGRAPHIC

To both the question on the **possibility for crowdfunding research** (Figure 105.) and **obtaining personalised recommendations** (Figure 106.), we see in both cases that interdisciplinary scholars present a marginally higher positive response, whereas scholars based on a single discipline have (again in both cases) marginally higher Undecided and negative responses. To the question about the crowdfunding of research (Figure 105.), both groups present more than 40% of Undecided responses. To the question on personalised recommendations (Figure 106.), both groups present more than 50% of positive responses (nearing 60% for interdisciplinary scholars). For the question on gaining personalised recommendations, a non parametric t-test was conducted (*H0: The two groups have the same distribution of scores*), resulting in U=73350, p=0.027, showing that these two groups present a different distribution (reject H0). This further confirms that perhaps scholars based on a single discipline are marginally more conservative than their interdisciplinary colleagues toward novel digital tools.
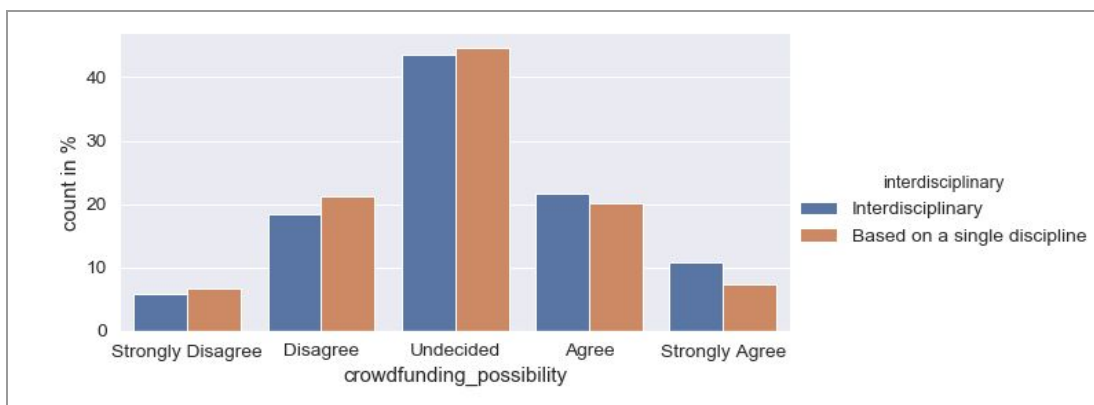
FIGURE 105. PERCEPTION OF THE NEED FOR THE CROWDFUNDING OF RESEARCH FOR THE INTERDISCIPLINARY DEMOGRAPHIC
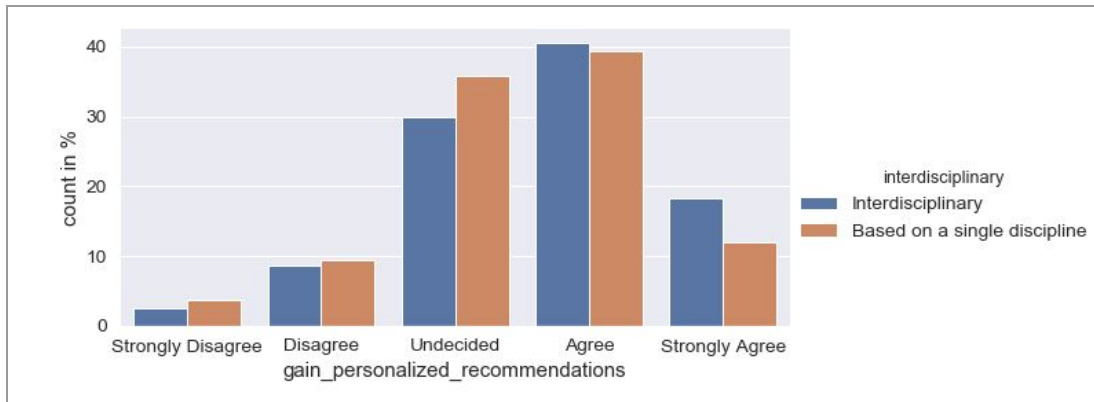
FIGURE 106. PERCEPTION OF THE NEED FOR PERSONALISED RECOMMENDATIONS FOR THE INTERDISCIPLINARY DEMOGRAPHIC

12.3 Career Level

We consider now the **career level demographic**. To the question about t**he need for better discovery tools** (Figure 107.), we see that research students are the group that most of all perceive the relevance of this need (with Strongly Agree responses at 40% compared to for example below 20% for researchers at High Level). A non parametric correlation test (Spearman) was conducted (with *H0 that there is a correlation between career levels and the need for better discovery tools*) resulting in a coefficient of -0.121 (p=0.000) showing that there is a negative correlation (*accept H0*), with people at lower levels of their careers perceiving they are more in needs of better discovery tools than those at higher level of their career.
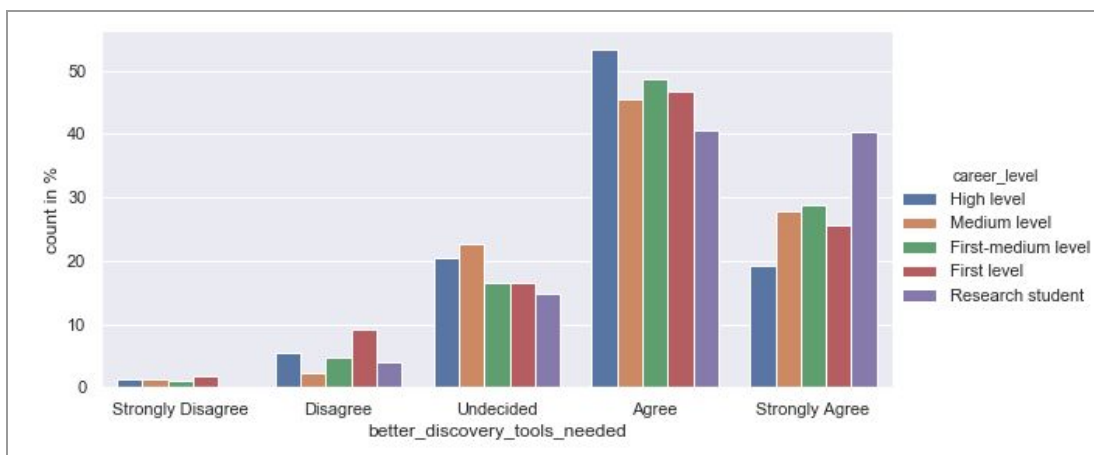
FIGURE 107. PERCEPTION OF THE NEED OF BETTER DISCOVERY TOOLS FOR THE CAREER LEVEL DEMOGRAPHIC

To the question on whether people at different levels of their careers see **the need to influence the design of the digital tools they use** (Figure 108.), we can see large Undecided response, reaching marginally above 40% for researchers at Medium Level (e.g. Associate Professors), with lowest Undecided at 28% for researchers at the first level (e.g. postdocs). However there

D3.1 Iteration on User Needs

do not seem to be important differences in positive responses, whilst in negative responses only researchers at Medium Level have less responses (~13% of Strongly Disagree and Disagree), compared for example to 23% for researchers at First Level. A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the interest in influencing the design of digital tools*) resulting in a coefficient of 0.008 (p=0.804) showing that there is no correlation (*reject H0*).
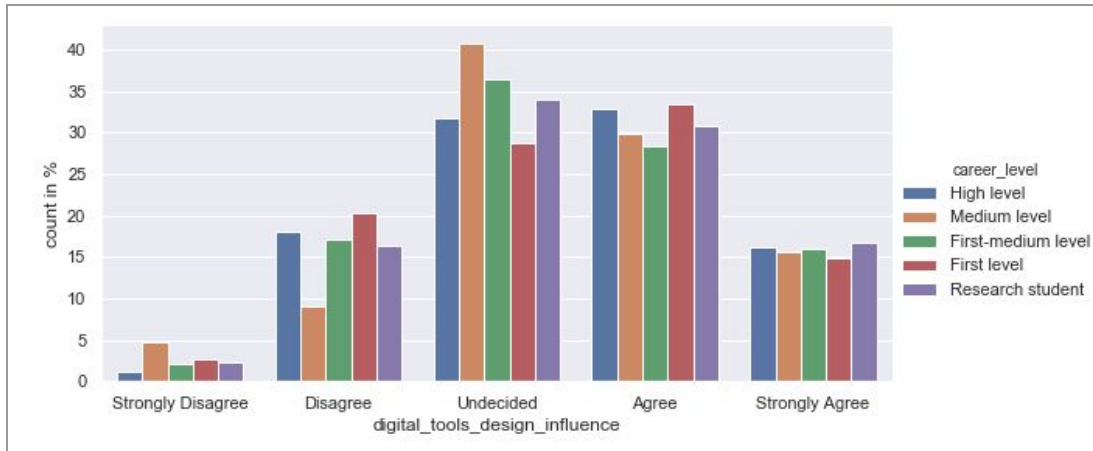
To the question on **interdisciplinarity importance** (Figure 109.), a non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the importance of interdisciplinarity*) resulting in a coefficient of -0.074 (p=0.028) showing that there is a very feeble negative correlation with researchers at lower level perceiving interdisciplinarity as more important.
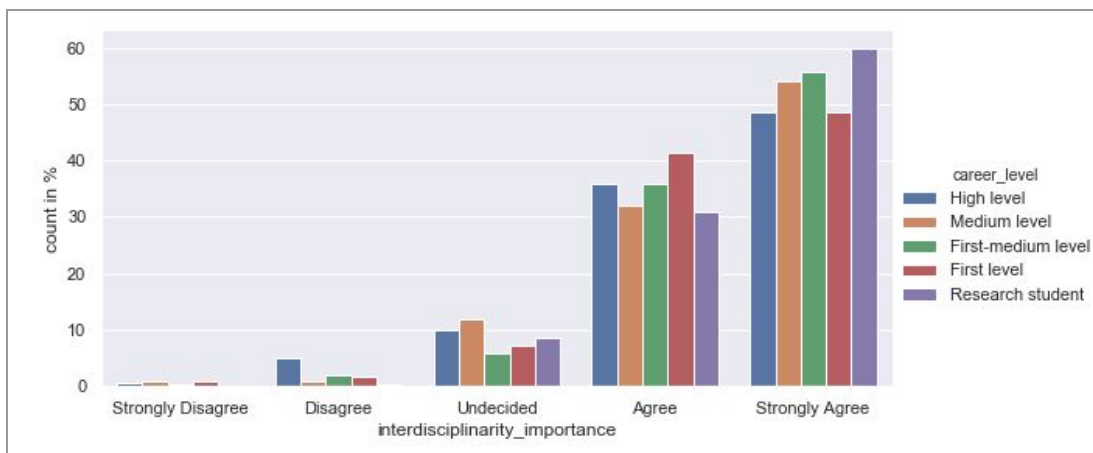
FIGURE 109. PERCEPTION OF THE IMPORTANCE OF INTERDISCIPLINARITY FOR THE CAREER LEVEL DEMOGRAPHIC

For this demographic, we will lastly consider the question on **the need to receive personalised recommendations from the trusted network** (Figure 110.). We see that research students present the highest positive response (Strongly Agree and Agree) at 69% (n=152), whilst people

at High Level have the lowest at 50% exactly (n=80). The Undecided response also seems to correlate negatively with career levels. A non parametric correlation test (Spearman) was conducted (with *H0: that there is a correlation between career levels and the importance of receiving personalized recommendations*) resulting in a coefficient of -0.146 (p=0.000) showing that there is a mild negative correlation with researchers at lower level perceiving more the need to receive personalised recommendations (*accept H0*), compared to researchers at higher levels of their career.
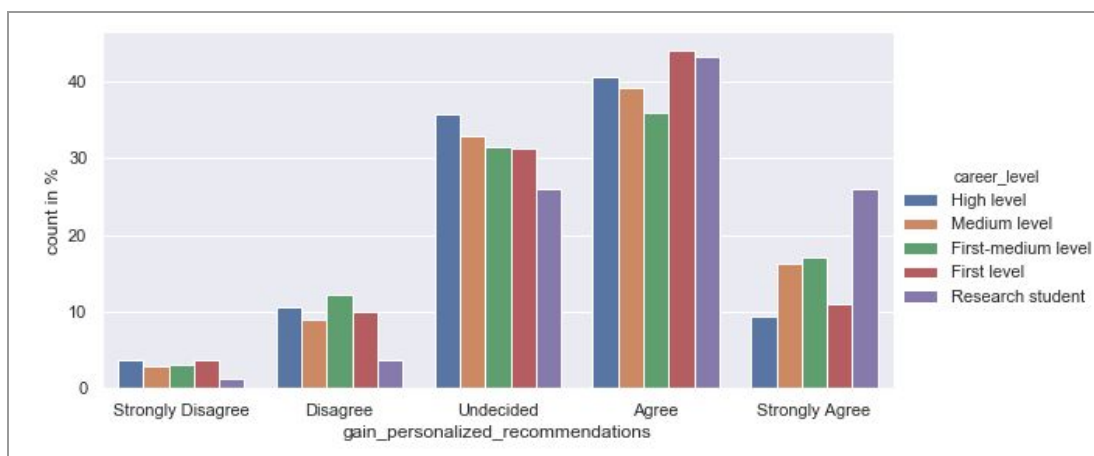
FIGURE 110. PERCEPTION OF THE NEED FOR PERSONALISED RECOMMENDATIONS FOR THE CAREER LEVEL DEMOGRAPHIC

12.4 Main Discipline

Lastly we consider the **disciplinary demographic**, looking again at the five disciplines with most responses. We start with the question on **the need for better discovery tools** (Figure 111.). Although positive responses are dominant for all the considered disciplines, we can see perhaps a pattern with Linguists and Sociologists having the least positive responses, if compared to the other three disciplines. Linguistics has 67.7% of positive responses (n=63) compared to nearly 85% for Literature (n=45). Likewise, Linguistics and Sociology have marginally higher Undecided as well as negative responses compared to the other three disciplines. There is, again, here a difference between disciplines working predominantly with archives (e.g. History, Literature), which need better discovery tools than disciplines which make less use of archived materials.

D3.1 Iteration on User Needs
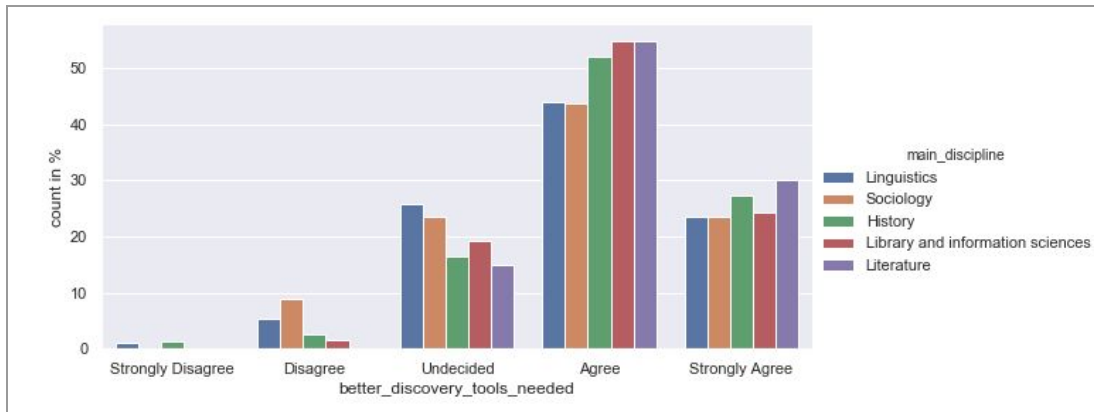
FIGURE 111. PERCEPTION OF THE NEED OF BETTER DISCOVERY TOOLS FOR THE DISCIPLINE DEMOGRAPHIC (5 DISCIPLINES WITH MOST RESPONSES)

The question on the **crowdfunding of research** (Figure 112.), as we noted, attracted generally not many positive responses, with a large part of researchers remaining Undecided. However in both positive and negative responses we can see disciplinary differences. Linguists (20.6%, n=19) and Sociologists (21.3, n=19) have the lowest positive responses, if compared to History (28.7%, n-23). Linguistics also presents the highest undecided (54.3%, n=50), whilst Sociologists have the highest negative responses (33.7%, n=30).
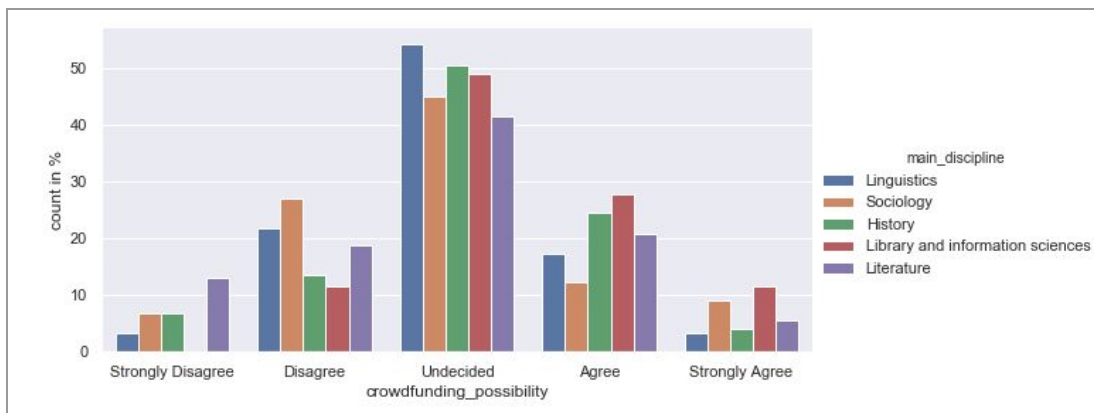
FIGURE 112. PERCEPTION OF THE NEED FOR THE CROWDFUNDING OF RESEARCH FOR THE DISCIPLINE DEMOGRAPHIC

Overall, what can be concluded is that it is difficult to draw insights on whether there are disciplinary differences in relation to the needs for these innovative tools.

12.5 Block 8 - Main take-away points

This block of the questionnaire tried to answer the question of "what are the future discovery needs of SSH researchers in relation to GOTRIPLE?". The **main take-away points** from the analysis presented in this section are as follows:

☐ SSH researchers signalled a generally positive response toward the need for better discovery tools in the future, for the integration of several tools in a single platform and for these tools to be open source. This is encouraging for the TRIPLE project and for the development of the GOTRIPLE platform.

☐ Interdisciplinary scholars appear keener to be involved in shaping the digital tools they use, if compared to the scholar working on a single discipline. Moreover, some of the results of this block further confirm that scholars working on a single discipline are marginally more conservative toward novel digital tools if compared to interdisciplinary scholars.

☐ There is a negative correlation between career level and the need for better discovery tools: scholars at lower levels of their career appear more in need of better discovery tools than those at higher levels of their career. However at all levels people are interested in shaping the digital tools they use (no correlation).

☐ There is, again in this block, a difference between disciplines working predominantly with archives (e.g. History, Literature) and the others. The former two appear more in need to have better discovery tools than disciplines which make less use of archived materials. Nonetheless it is difficult to draw firm insights on whether there are disciplinary differences in relation to the needs for innovative tools.

13| CONCLUDING REMARKS

This deliverable has reported on the results of the questionnaire on the end-user needs conducted as part of the WP3 activities. Each of the sections/blocks of the questionnaire as presented above was accompanied by a conclusion with identification of the main take-away points. We will not repeat those points here in the conclusion of the document and the readers can refer to each section to learn about the main findings from each block. In this conclusion, we will instead concentrate on highlighting a number of general/global patterns running across most of the blocks. We should also remind, that the key problem for the questionnaire was to answer the following main research question: "**what is the perception of end-users on their discovery practices, networking practices, research tools and use and management of resources?**". These global patterns are an answer to the main question and are as follows:

☐ Some groups appear more "conservative" than others in the use of digital technologies, discovery tools and networking/collaborations. With the term conservative we mean scholars that, while seeing the relevance of digital discovery tools, they also use these tools less or see them as marginally less important for their work than other comparable groups. This spells that SSH researchers are not homogeneous in the adoption of digital tools,

because there may be groups which are more open to digital innovations and to work with others, whilst other groups are slightly more closed. The GOTRIPLE design may need to consider this issue and the design should be inclusive for all the groups concerned, facilitating the work of those who are more conservatives, whilst at the same time supporting in full the groups that are more open to innovation and collaboration. Among other identified insights there was:

- o Quite clear differences exist between SSH researchers who claim to work at interdisciplinary level and researchers who claim to work on a single discipline. The latter group does seem generally slightly more conservative toward digital technologies or collaboration (e.g. for discovery or communication) if compared to the former.

- o Very often also qualitative researchers appear slightly more conservative if compared to quantitative and also quali-quantitative colleagues. This was clear in some of the questions around the use of discovery tools (e.g. scientific search engines), but also in around collaboration or the possession of skills for the use of digital technologies. This may be attributed to the fact that qualitative working practices require less use of digital tools, if compared to quantitative research practices.

- o It also appears that scholars at lower levels of their career are more prone toward the acquisition of new digital skills, than scholars at higher levels of their career. In this case, it is the latter group thus which appears more conservative.

☐ We have seen that often there are negative correlations between the career level and the research practices. Often scholars at lower levels find it more difficult to perform discovery activities if compared to colleagues at higher levels and also struggle more to collaborate with or find other stakeholders. Especially scholars at the First Level of their career (i.e. postdocs) seem the group that more than others struggles in a number of areas, such as networking. It is important for GOTRIPLE to be designed in a way that can support early-career scholars in succeeding with their research endeavours and that the tools offered by the platform do not instead contribute to increase further their struggles.

☐ We have also seen that in terms of disciplines, there are different discovery practices. Albeit we used the five disciplines with most responses in the analysis, some patterns have emerged. Most notably disciplines whose research work is largely based on the use of archived material (e.g. History), differ in their discovery practices from the disciplines which use less archives (e.g. Sociology). Whilst this may be a known phenomenon, it may have implications for the design of a platform which caters for all the SSH disciplines. A good

balance will need to be kept between supporting discovery through archives and discovery by other means, without favouring one or the other approach, at the risk, otherwise, of alienating certain disciplines from the GOTRIPLE platform.

☐ We have seen that the majority of respondents perceive that having better discovery tools and a series of tools integrated into a single environment are important priorities for their near future. GOTRIPLE can answer these needs, and the questionnaire gave confirmation thus that the project and its approach are timely and relevant for the SSH research community.

☐ Some other relevant, non demographic based, global findings, include the following: (a) emails and mailing lists are still by far the preferred communication/networking tools for SSH researchers; (b) social network websites are only marginally popular as communication and networking tools; (c) most researchers still struggle to find other stakeholders for collaboration; (d) there is overall a perceived good level of digital literacy and capacity to use digital tools for research; (e) there are still difficulties for SSH researchers in accessing their discoveries (that is e.g. accessing the pdf of a paper or a dataset once discovered); (f.) most researchers are still undecided about the opportunity of crowdfunding research. These global findings will need to be considered carefully for the design of the GOTIRPLE platform. In particular we would like to note the problem of the difficulties of SSH scholars in interacting with other stakeholders, for which tailored solutions may be needed. Moreover, as a remark, this problem appears to affect scholars at the first level of their career (e.g. postdocs) in particular. Again it is advisable that GOTRIPLE is designed paying particular attention to the issues that this group faces.

The present study comes with a number of limits. We have noticed that the questionnaire was distributed using a snowball approach. While this led to good response overall (n=925), the sample comes with some biases, since it was not possible to control (e.g. via randomisation or stratification) the responses. For some demographic categories the response was relatively low, for example for several disciplines (as seen in Figure 8.) we have less than 20 responses. To overcome this problem we decided to use the five disciplines with most responses in the analysis of the main discipline demographic. While this has allowed some consistency in the analysis, it also risks the introduction of some biases if broad lessons around the discipline demographic are extrapolated. Likewise responses from some countries are dominating others (most notably France and Portugal) and we are aware that this might have introduced some bias in the analysis. Moreover, a-posteriori, some aspects of the questionnaire could have been designed differently. At the time of preparation we distinguished between discovery practices and management of discovery (Block 2 and Block 4), since this was an approach we used also in qualitative interviewing. However some of the questions for these two blocks ended up being

very similar in their formulation (i.e. a questionnaire does not allow the same plasticity of a qualitative interview), perhaps not leading to the expected outcomes. Overall, however, the questionnaire conducted for Task 3.1 of the TRIPLE has produced a wealth of knowledge and insights which will be put into good use for the creation of the GOTRIPLE platform.

14| REFERENCES

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15| APPENDIXES

15.1 Appendix A - Email used for the questionnaire distribution

Dear SSH community,

We kindly invite you to take part in our **User Research Survey**, which is part of the user research conducted for the European H2020 project **TRIPLE** (https://www.gotriple.eu/).

Click here to access the Survey: https://surveys.ekt.gr/index.php?r=survey/index&sid=819254&lang=en

QR Code:

The questionnaire is specifically targeted at researchers and academics from the Social Sciences and Humanities (SSH) at any stage of their careers - from Master student to full professor - who are currently working in a European country.

The TRIPLE project was launched on 7 October 2019. It will be one of the dedicated services of OPERAS (https://operas.hypotheses.org), the Research Infrastructure supporting open scholarly communication in the Social Sciences and Humanities in the European Research Area (https://ec.europa.eu/info/research-and-innovation/strategy/era_en). At the heart of the project is the development of the **TRIPLE platform**, an innovative multilingual and multicultural discovery solution.

The results of the User Research Survey, which will be published in the "Report on User Needs" in November 2020, will help us tailor the services and tools of the TRIPLE platform to the needs of the SSH community.

We are therefore curious to find out what exactly you need and prefer as a potential future user of the TRIPLE platform. In particular, we would like to know more your work practices relating to digital technologies. This includes information on your

- use of tools for discovery used to explore, find, access and reuse material such as literature, data, projects, researchers' profiles etc. that they would need for their own research work
- use of tools for the management and retrieval of material
- use of tools for conducting research (including data collection and annotation)
- use of tools for networking with colleagues or other stakeholders
- digital literacy and general discovery practices
- hardware devices used in the research cycle

The survey is open until **30 June 2020**. It is in English, and it should not take more than 10 to 15 minutes to answer the 21 questions. Click here to access the Survey: https://surveys.ekt.gr/index.php?r=survey/index&sid=819254&lang=en

Your data will be collected and stored in a fully anonymised form and will only be accessible to the project research team. You can find more information on how your data will be handled in the consent form on the second page of the Survey.

Should you encounter any technical difficulties, or should you require further information about the Survey, please contact Dr Stefano De Paoli (s.depaoli@abertay.ac.uk) or Dr Paula Forbes (p.forbes@abertay.ac.uk).

We are looking forward to your input!

Thank you for your cooperation and time!

Suzanne Dumouchel, TRIPLE project coordinator, on behalf of the TRIPLE consortium

15.2 Appendix B - Questionnaire

The following is the questionnaire prepared for the research on the TRIPLE user needs.

D3.1 Iteration on User Needs

TRIPLE USER RESEARCH QUESTIONNAIRE
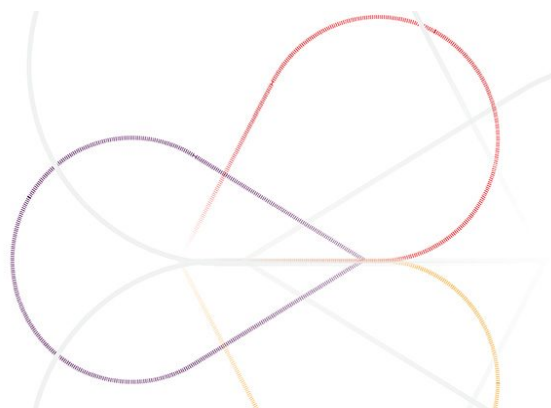
Welcome!!

 The following questionnaire is part of the user research conducted for the European H2020 project TRIPLE (https://www.gotriple.eu/). The questionnaire is aimed at researchers/academics in Social Sciences and Humanities at any stage of their careers.

 In the following you will be asked mainly a number of questions about your discoverability research work practices and about the future of TRIPLE.

 The questionnaire contains 21 questions and it should take between 10 to 15 minutes to complete.

 TRIPLE was launched on 7 October 2019. It will be one of the dedicated services of OPERAS (https://operas.hypotheses.org/), the Research Infrastructure supporting open scholarly communication in the Social Sciences and Humanities in the European Research Area (https://ec.europa.eu/info/research-and-innovation/strategy/era_en). At the heart of the project is the development of the TRIPLE platform, an innovative multilingual and multicultural discovery solution.

 Thank you for your cooperation and for your time.

Please visit our **contact page (https://www.gotriple.eu/?page_id=12)** if you would like to get in touch with us or if you have questions about the questionnaire.

There are 21 questions in this survey.

*

❶ Choose one of the following answers
Please choose **only one** of the following:

○ Yes, I consent

○ No, I do not consent (survey will terminate)

Please tell us your current country of work *

❶ Choose one of the following answers
Please choose **only one** of the following:

- ◯ Austria
- ◯ Belgium
- ◯ Bulgaria
- ◯ Croatia
- ◯ Cyprus
- ◯ Czech Republic
- ◯ Denmark
- ◯ Estonia
- ◯ Finland
- ◯ France
- ◯ Germany
- ◯ Greece
- ◯ Hungary
- ◯ Ireland
- ◯ Italy
- ◯ Latvia
- ◯ Lithuania
- ◯ Luxembourg
- ◯ Malta
- ◯ Netherlands
- ◯ Norway
- ◯ Poland
- ◯ Portugal
- ◯ Romania
- ◯ Slovakia
- ◯ Slovenia
- ◯ Spain
- ◯ Sweden
- ◯ Switzerland
- ◯ United Kingdom

○ Other [   ]

Please tell us your gender *

❶ Choose one of the following answers
Please choose **only one** of the following:

○ Female

○ Male

○ Other

○ Prefer not to say

Please tell us your current career level *

❶ Choose one of the following answers
Please choose **only one** of the following:

○ High level (for example Full Professor, Research Manager)

○ Medium level (for example Associate Professor, Senior Lecturer, Senior Researcher)

○ First-medium level (for example Researcher, Lecturer, Assistant Professor)

○ First level (for example Post-Doc, Research Assistant)

○ Research student (PhD student, Master student)

You would characterise your research work and the data/analysis techniques that you use as being mostly *

❶ Choose one of the following answers
Please choose **only one** of the following:

○ Qualitative (e.g. Interviews, ethnographies, observations, qualitative analysis of texts, interpretation)

○ Quantitative (e.g. surveys, quantitative analysis of texts, statistical analysis, mathematical analysis)

○ Quali-quantitative in roughly similar parts

○ Other [   ]

You would characterise your research work as being mostly

❶ Choose one of the following answers
Please choose **only one** of the following:

○ Based on a single discipline

○ Interdisciplinary

Please tell us to which single discipline your research work belongs the most *

❶ Choose one of the following answers
Please choose **only one** of the following:

○ Archaeology and Prehistory

○ Architecture, space management

○ Art and art history

○ Biological anthropology

○ Business administration

○ Classical studies

○ Cultural heritage and museology

○ Demography

○ Economics and Finance

○ Education

○ Environmental studies

○ Gender studies

○ Geography

○ History

○ History, Philosophy and Sociology of Sciences

○ Library and information sciences

○ Linguistics

○ Literature

○ Media studies

○ Methods and statistics

○ Musicology and performing arts

○ Philosophy

○ Political science

○ Psychology

○ Religions

○ Social Anthropology and ethnology

○ Sociology

○ Other [   ]

Please tell us if you agree or disagree with the the following statements and their importance for your work:

Please choose the appropriate response for each item:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Digital research tools are important for my research work	○	○	○	○	○
Digital repositories (digital collections of data, publications etc.) are important for my research work	○	○	○	○	○
Digital tools for discovery, such as finding data, literature or projects are important for my research work	○	○	○	○	○
Digital tools facilitating collaboration with others (e.g. collaborative writing, data sharing) are important for my research work	○	○	○	○	○
Open data is important for my research work	○	○	○	○	○
Open access publications are important for my research work	○	○	○	○	○
Social networks and similar platforms for networking are important for my research work	○	○	○	○	○

How often do you use the following categories of discovery tools for academic literature search?

Please choose the appropriate response for each item:

	Never	Rarely	Sometimes	Often	Always
Regular web search engines (e.g. Google, DuckDuckGo, Bing)	○	○	○	○	○
Scientific web search engines (e.g. Google Scholar, Microsoft Academic Search, Isidore)	○	○	○	○	○
Databases (e.g. MLA, jstor, EBSCO)	○	○	○	○	○
Generalist Archives (e.g. National Archives and Libraries)	○	○	○	○	○
Disciplinary Archives (e.g. Humanities Commons, PhilPapers, SocArXiv, OpenAIRE, SSRN, Repec, MediarXiv)	○	○	○	○	○
Library catalogues	○	○	○	○	○
Visual search engines (e.g. Open Knowledge Maps, Iris.AI)	○	○	○	○	○
Platforms (e.g. ResearchGate, Academia.edu, Zotero)	○	○	○	○	○

To what extent do you use the following devices to access and use the previous discovery tools?

Please choose the appropriate response for each item:

	Never	Rarely	Sometimes	Often	Always
Desktop/Laptop	○	○	○	○	○
Tablet	○	○	○	○	○
Mobile	○	○	○	○	○

How often do you use the following categories of tools for networking and/or dissemination in your work?

Please choose the appropriate response for each item:

	Never	Rarely	Sometimes	Often	Always
Professional social networks (e.g. Linkedin)	○	○	○	○	○
Academic/Research social networks (e.g. Academia, Researchgate)	○	○	○	○	○
Generalist social networks (e.g. Facebook, Twitter)	○	○	○	○	○
Generalist online forums (e.g. Reddit)	○	○	○	○	○
Professional/research websites (e.g. European Sociological Association Website, European Association for Digital Humanities Website)	○	○	○	○	○
Real-time communication tools (e.g. Whatsapp, Discord)	○	○	○	○	○
Email	○	○	○	○	○
Mailing Lists	○	○	○	○	○

To what extent do you use the following devices to access and use the previous tools for networking and/or dissemination?

Please choose the appropriate response for each item:

	Never	Rarely	Sometimes	Often	Always
Desktop/Laptop	◯	◯	◯	◯	◯
Tablet	◯	◯	◯	◯	◯
Mobile	◯	◯	◯	◯	◯

How often do you use for your research the following categories of tools for search, management or retrieval of data or material such as publications?

Please choose the appropriate response for each item:

	Never	Rarely	Sometimes	Often	Always
Disciplinary academic database (e.g. Social Science Research Network, PsycINFO)	◯	◯	◯	◯	◯
Directories for open access resources (e.g. https://doaj.org, Zenodo)	◯	◯	◯	◯	◯
Generalist Archives (e.g. National libraries, such as the British Library)	◯	◯	◯	◯	◯
Disciplinary Archives (e.g. Humanities Commons, PhilPapers, SocArXiv, OpenAIRE, Repec, MediarXiv)	◯	◯	◯	◯	◯
Source code repositories (e.g. github)	◯	◯	◯	◯	◯
Shadow libraries (e.g. Library Genesis, Sci-Hub, Memory of the World)	◯	◯	◯	◯	◯
Large digitized collections (e.g. Europeana, Google Books, Internet Archive)	◯	◯	◯	◯	◯
Search engines and discovery tools (e.g. Google Scholar, CORE)	◯	◯	◯	◯	◯

To what extent do you use the following devices to access and use the previous categories of tools for search, management and retrieval?

Please choose the appropriate response for each item:

	Never	Rarely	Sometimes	Often	Always
Desktop/Laptop	○	○	○	○	○
Tablet	○	○	○	○	○
Mobile	○	○	○	○	○

Please rate the extent to which you agree or disagree with the following statements describing your expertise and literacy with the use of digital tools

Please choose the appropriate response for each item:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
I have the knowledge/skills necessary to use various digital research tools	○	○	○	○	○
I have the knowledge/skills necessary to use various digital repositories	○	○	○	○	○
I plan in the near future to learn new skills to use digital tools/repositories	○	○	○	○	○
I feel confident in my ability to integrate/use multiple digital tools and repositories in a research project	○	○	○	○	○
The effort needed to integrate different tools and repositories for my research is too much	○	○	○	○	○
I am generally aware of new digital tools that become available in my field of research	○	○	○	○	○
Experimenting with novel research digital tools is very important for me	○	○	○	○	○

Reflecting on your own practices of searching for existing data, publications or material, do you agree or disagree with the following statements?

Please choose the appropriate response for each item:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The discoverability of data, projects and people is a priority for my research	○	○	○	○	○
The discovery tools for my subject of research are generally available	○	○	○	○	○
The discovery tools for literature in my language are generally available	○	○	○	○	○
When I find literature or data on my subject, I have problems accessing it	○	○	○	○	○
It is easy to identify relevant academic literature using search tools	○	○	○	○	○
It is easy to formulate a query when searching an unknown research topic/field	○	○	○	○	○
It is hard to get an overview of academic literature on a research topic using academic literature search tools	○	○	○	○	○
Searching academic literature takes too much time	○	○	○	○	○

Reflecting on your own practices of finding collaborators and/or dissemination of results, do you agree or disagree with the following statements?

Please choose the appropriate response for each item:

	Strongly Disagree	Disagree	Unconvinced	Agree	Strongly Agree
I can interact with colleagues using real-time communication tools	○	○	○	○	○
I can interact with research stakeholders (e.g. companies, policy makers, citizens) using real time communication tools	○	○	○	○	○
I can share materials with colleagues easily with tools at my disposal/available tools	○	○	○	○	○
It is easy to find potential research collaborators using available social networks	○	○	○	○	○
It is easy to find potential stakeholders for my research using available social networks	○	○	○	○	○
I can easily disseminate my research results using the available digital options	○	○	○	○	○
Other researchers can easily find out about my research	○	○	○	○	○

	Strongly Disagree	Disagree	Unconvinced	Agree	Strongly Agree
Research stakeholders (e.g. companies, policy makers, citizens) can easily find out about my research	○	○	○	○	○

Looking forward to the future of your research work, please rate your agreement or disagreement with the following statements

Please choose the appropriate response for each item:

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Better discovery tools and platforms for research are highly needed	○	○	○	○	○
The integration of several research tools in one place will facilitate my research	○	○	○	○	○
I would like to have more influence on the design of the digital tools and repositories I use for research	○	○	○	○	○
It will be increasingly important for me to manage my online professional profiles	○	○	○	○	○
It will be increasingly important for digital tools to be entirely open source	○	○	○	○	○
Interdisciplinarity will be increasingly important in my field of research	○	○	○	○	○
I believe there will be more crowdfunding of research	○	○	○	○	○
I would like to be able to get personalized recommendations from people I trust in my network.	○	○	○	○	○

In your work practices, what do you need to discover mostly?

Please rank/prioritise according to your preferences the following options (just drag and drop or double click on each option)

❶ All your answers must be different and you must rank in order.

Please number each box in order of preference from 1 to 4

Publications

Data (other than publications)

People

Projects

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❶ Choose one of the following answers
Please choose **only one** of the following:

◯ Yes (we will ask for your email)

◯ No (questionnaire ends)

---

Please enter your email address in the form below

Only answer this question if the following conditions are met:
Answer was 'Yes (we will ask for your email)' at question '20 [Forumandtesting]' ()

Please write your answer here:

Thank you for participating to the TRIPLE user research questionnaire. Please visit our **contact page (https://www.gotriple.eu/?page_id=12)** if you would like to get in touch with us or if you have questions about the TRIPLE.

For specific queries about the user research methodology please contact Dr Stefano De Paoli (https://www.abertay.ac.uk/staff-search/dr-stefano-de-paoli/)
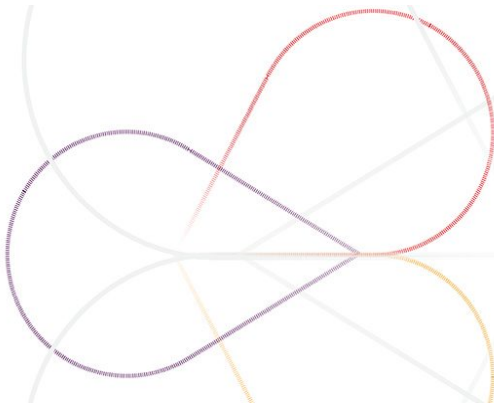
Transforming Research through Innovative
Practices for Linked Interdisciplinary Exploration

18.08.2020 – 14:21

Submit your survey.
Thank you for completing this survey.