



UMEÅ UNIVERSITET

KNOWLEDGE COPRODUCTION IN DISCOGS MUSIC DATABASE

**A study of the motivations behind a
crowdsourced online discography**

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Title:

Knowledge coproduction in Discogs music database: A study of the motivations behind a crowdsourced online discography

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Abstract:

Discogs is a crowdsourced online discography that has become one of the largest music databases and marketplace used by collectors and enthusiasts. To learn about what motivates Discogs community users to contribute, the answers provided by the respondents ($n=135$) to an online survey with Likert-scaled items measuring different types of motivations and some open-ended questions were analysed. The results suggested that Discogs contributors are primarily driven by altruistic reasons (intrinsic motivation) followed by pragmatism (extrinsic motivation). While sellers contributed to the database mostly to sell in the Marketplace, they were equally motivated by intrinsic factors, with similar rates to respondents who did not have economic interests in the website. Open-ended questions indicated that conflicts with other users could decrease the motivation to contribute. In addition, respondents revealed that during their trajectory as contributors, intrinsic motivation increased over time. Also, experience and expertise were the reasons why some contributors had roles recognised by other members in the Discogs community.

Keywords:

Discogs

Online knowledge coproduction

Motivation

Contribution

Crowdsourcing

Open source content

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1. Introduction

During the last decades there has been an increasing interest in new forms of knowledge production and more specifically, open online coproduction (Arazy et al., 2016; von Krogh and von Hippel, 2006). Open Source is a form of community-based model of peer-production that was first manifested in software development. Open source software initiatives inspired the use of the term to refer to other forms of open collaboration like those that involve the creation of a body of knowledge (Oreg and Nov, 2008:2056). The free online encyclopaedia Wikipedia is probably the most know and studied example of an Open Source content project.

In this bachelor thesis, the crowdsourced database Discogs is the study object that allows the exploration of the online knowledge coproduction phenomena and particularly, the motivations that drive the contributors to collaborate in an Open Source content project. Discogs is a large, publicly accessible and community-contributed music discography website (Harnett, 2015:26). With the mission to build the biggest and most comprehensive music database and marketplace, Discogs has become a leader and “the place to go” for categorizing, archiving and facilitating the sale of physically recorded media.

Discogs was founded in 2000 by Kevin Lewandowski as a way to categorize his own collection of Techno records. Using his software background and inspired by the failed project *Trainspotter* (that was supposed to be a cross-referenced music database), Lewandowski launched Discogs, initially restricted to electronic music. Over the years, Discogs figures have continuously grown: the number of genres, releases and artists in the database has increased significantly every year, as well as the number of users, visitors and contributors. In 2005 Discogs launched the Marketplace (a separately contained third-party feature) where the company focuses revenue-wise (Lewadowski, 2017) as the company charges the sellers a fee for the items that are sold.

Discogs offers many possibilities to users, who can use the metadata to create and share information about their own collections, as well as buy and sell vinyl, CDs and cassettes using the marketplace. Everyone can enter information about releases, artist, labels, etc. into the

database, add images and fix errors until the information is correct and complete. The quality of the data contained in Discogs' entries is considered high among music collectors because of the existence of strict guidelines and a voting system to allow changes and new releases (Bogdanov and Serra, 2017:89). But why do the community members invest their time and effort adding new information to maintain and improve the quality of the existing content in the site? The initial hypothesis is that the contents in Discogs are digital manifestations of physical releases, and contribution and cataloguing can be a matter of personal gain for the users, both for collectors and sellers. Moreover, because the physical manifestation of the digital entry is in the users' hands (a vinyl, for example) and the existence of strict contribution guidelines, there is less room for subjectivity when editing, than in other popular peer-produced websites such as Wikipedia.

1.1. Significance of the study

While online knowledge coproduction and crowdsourcing have been extensively studied from different theoretical perspectives, little has been written about Discogs. Discogs is one of the largest online music databases with more than 490,000 contributors who have built up a catalogue of more than 11,900,000 releases and 6,100,000 artists¹ where users are voluntarily contributing while cataloguing their own physical collection. While Discogs is primarily built with open source tools and the data are open and free to the public, the existence of a Marketplace differentiates this database from other online community contributed projects, like Wikipedia, that has been the object of multiple studies.

Considering these characteristics, Discogs is a unique case of voluntary archival contribution offering an opportunity to get new insights into the topic of knowledge co-production through its study. In addition identifying the motivations that drive contributors to participate in a crowdsourced project is beneficial for the project itself and it serves as an inspiration to find tools to attract additional participants in other crowdsourced ventures.

1.2 Purpose of the study and research questions

The purpose of this bachelor thesis is to explore online knowledge co-production by the study of motivational factors that drive Discogs community members to contribute to the

¹ These figures were correct in November 2019

online discography using the psychological theory of self-determination as theoretical framework. In addition, and in order to get a better understanding of Discogs as an instance of collective intelligence, the concepts of crowdsourcing, roles in online knowledge co-production communities and digital labour will be discussed in relation to the motivational factors. This bachelor thesis aims to answer the following research question:

- What are the motivations of Discogs community members to contribute in the cataloguing and addition of content in the database? What factors do Discogs contributors face which discourage them to contribute?

And also explore the following questions:

- What were the motivations for the users in the initial decision to contribute to Discogs? Has this motivation changed over time?
- Which are the participation roles identified by Discogs contributors?

2-Theoretical perspective and relevant literature

This chapter provides the literature and concepts that serve as a theoretical foundation for this dissertation. While online participation is the theme that connects these theories and concepts the central topic is *motivations to contribute online*. The chapter starts with a brief section where previous literature about Discogs is cited (2.1.), followed by the sections discussing relevant concepts of crowdsourcing (2.2.) and organization theory (2.3). In section 2.4, the voluntary dimension of digital production is discussed through motivational processes. This is followed by a review of the concept Digital labour (2.5).

2.1 Previous literature about Discogs

There are not many studies about Discogs from the Information Science perspective. The standard review done by Hartnett (2014) is a good starting point to understand the general features and functioning of Discogs. This review, done from a librarian perspective includes a heuristic evaluation of the site. Bogdanov and Serra (2017) have explored the possibilities of Discogs editorial metadata as a tool for musicological research, while Tattersall (2017) has informally reflected about how some characteristics and features that are present in Discogs and IMDb (Internet Movie Database) could be implemented to create a similar site dedicated to academic research, solving problems related to version control, unique identifiers and interaction with research data.

2.2. Open Source vs. Crowdsourcing

The term crowdsourcing was first coined by Howe (2006) in the June issue of Wired magazine and it is defined by Brabham (2013: XIX) as an *online, distributed problem-solving and production model that leverages the collective intelligence of online communities to serve specific organizational goals*. Brabham emphasises that online communities are given the opportunity to respond to crowdsourcing activities promoted by the organization and they are motivated to respond for a variety of reasons. This

definition of crowdsourcing is however, just one of the many that exist. In an effort to unify around 40 different definitions, Estellés-Arolas and González-Ladrón-de-Guevara (2012) conducted an extensive literature review concluding that the term refers to:

A type of participative online activity in which an individual, an institution, a non-profit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task. The undertaking of the task (...) in which the crowd should participate bringing their work, money, knowledge and/or experience, always entails mutual benefit. The user will receive the satisfaction of a given type of need, be it economic, social recognition, self-esteem, or the development of individual skills, while the crowdsourcer will obtain and utilize to their advantage what the user has brought to the venture, whose form will depend on the type of activity undertaken.

“Crowdsourcing” and “open source” are often used as synonyms but some authors differentiate them. For Phipps (2016) the difference between the terms resides in the ownership of the outcome. While in Open Source, the community is of equal peers, with no one participants necessarily benefiting more than any other, in crowdsourcing the result typically benefits the initiator hugely, without significantly compensating the participants.

In this study both terms are considered appropriate to describe Discogs as the database is built with open source tools with data open and free to the public while at the same time, a corporation is also obtaining profit from the project.

2.3 Organization theory in online co-production

Bowker and Star’s (1999) concept of “boundary infrastructure” describes an accessible artifact that serves as a common substrate of knowledge, arguing that this infrastructure facilitates shared work. This concept acknowledges situations where “[an] infrastructure serves multiple communities of practice simultaneously, be these within a single organization or distributed across multiple organizations (Bowker and Star, 1999:313).

However, in coproduction communities, Arazy et al. (2016:796) have suggested that the boundary infrastructure is more than a bridge connecting individuals. For Faraj and Azad (2012:255) the existence of the community is based on and shaped by the artefact² and its affordances, shifting the theoretical focus from the actor and/or the object to “actions in the world that involve technology”. These authors (Faraj and Azad, 2012: 244) refer to the notion of *affordances* as a “relational construct linking the capabilities afforded by technology artifacts to the actors’ purposes” rather than purely physical structural properties of actor-artifact relations. In the context of Discogs we could argue that the

² Artifact refers to concrete manifestations of technology (De Vries 2005).

online discography works as a boundary infrastructure were the community of users is shaped by and shapes the material characteristic of the online platform together with its possibilities and limitations.

According to Faraj et al. (2011:1235) open online coproduction communities are characterised by fluid participants, boundaries and norms, loose governance and absence of deep social relationships, allowing different roles to rapidly emerge and change. Arazy et al. (2016) follow this line of research using the term “emergent roles” to refer to activity patterns that organically emerge from participants’ activity choices in self-organizing knowledge co-production and observe how these emergent roles have a dualistic nature: on the one hand participants’ role-taking behaviour presents a substantial flow, while the emergent roles themselves are pretty stable. The authors attribute this stability to the artefact-centric nature of online co-production. This idea is expanded by Arazy et al. (2019) suggesting that participants’ structural and emergent roles are tightly coupled in online co-production in Wikipedia, which combines a limited organizational structure with opportunities for contributors to express their agency.

Like in other online coproduction settings, a guiding principle in Discogs is self-organizing, meaning that contributors select how and when to work and what to work on (von Krogh and von Hippel, 2006; Oreg and Nov, 2008). In the absence of role definitions and traditional control, the contributors’ perspective can be valuable in order to gain a better understanding of how knowledge is produced in Discogs.

2.4 Theories of motivation to contribute online

The motivational dimension of digital production has been the subject of much research in the past decades (Livingstone, 2012:55), demonstrating that motivational processes in online settings can be explained by existing social psychological theories (Hertel et al, 2003:1174). According to Osterloh and Rota (2004:283) Open Content (specifically Open Source Software) contribution can be explained with two kinds of motivation: *extrinsic* and *intrinsic*. This model is based on Self-Determination Theory (SDT) that has gone through several revisions over the years (Deci, 1975; Deci & Ryan, 1980, 1985, 1991). STD distinguishes between different types of motivations based on different reasons or goals that lead to

action and suggests that competence and self-determination are strongly connected to emotions and enjoyment. SDT authors defined intrinsically motivating activities as those that are performed for their innate satisfaction rather than a consequential recompense. Previous literature (Kauffman et al., 2011; Nov, 2007; Osterloh and Rota, 2004; Zhao and Zhu, 2014) on users' participation suggest that both extrinsic and intrinsic motivations can coexist and be complementary to each other, showing that while users may pursue external fulfilments, they also participate because the contribution itself is enjoyable.

Some of the preliminary assumptions to exemplify the different types of motivations in Discogs contribution explained in the following sections are inspired by the answers of several users in the Discogs forum thread *What is the motivation here?*³ started in 2017.

2.4.1 Extrinsic motivations

Extrinsic motivation refers to behaviour driven by the person's expectation of receiving external rewards or indirect satisfaction of needs as monetary compensation, reputation gain or the fulfilling of other external regulations. In the context of Discogs, some possible scenarios where extrinsic motivations could play a central role are: to contribute in order to sell materials that are not already listed in the database and to catalogue one's collection with accuracy, allowing the user, for example, to avoid duplicates while buying. To gain reputation could be another extrinsic motivation by showing off a big collection and the rarities a contributor "found first" and getting rank points and appearing high up in the list of contributors of the site. Discogs ranking system works as follows: the contributor receives three rank points for every full submission, and one rank point for every edit, master release update, or image. Users are ranked in the contributor list according to the number of points they have. Besides, a monthly leaderboard shows the top ten contributors of the month in real time. In addition, every year, Discogs runs the September Pledge Initiative, a contest to motivate users to contribute during that month, setting specific goals (like adding releases from World regions that do not have enough representation in the database) and offering rewards, like Discogs merchandising.

³ <https://www.discogs.com/forum/thread/742183#7367712>

2.4.2 *Intrinsic motivations*

Intrinsic motivations are related to immediate satisfaction of needs. In this case, the activity is valued for its own sake. According to Lindberg (2001) intrinsic motivation can be obligation-based (personal obligation to peers, ethical reasons, etc.) or enjoyment-based (finding pleasure and publicly displaying one's abilities). Some obligation-based intrinsic motivations in Discogs contribution could be: the idea of accomplishing the mission of the website, contributing to the common good by expanding knowledge about music releases and preserving it for future generations; making information available, etc. While enjoyment-based motivations are: simply finding it fun and entertaining (even addictive and relaxing); just to procrastinate; learning about music and its intricate linkages; and showing one's knowledge and performing abilities connected to the database when moderating and creating new releases.

For Leonard et al. (1999) this traditional division has limitations when explaining the diversity of behaviours of individuals, suggesting the introduction of self-concept-based motivations. According to Leonard et al. (1999), *internal self-concept* motivation refers to the force that drives individuals to pursue an activity that meets their inherent standards. For Yang and Lai (2010), internal self-concept motivation is the key motivation for knowledge sharing on Wikipedia. This type of motivation can be translated to a sense of personal achievement and this could also be a motivation driving Discogs contributors. In the present study, however, internal self-concept will be included in the intrinsic motivation category, as the outcome is not instrumental.

Gamification elements and intrinsic motivation in Discogs

While Discogs' ranking system and September Pledge Initiative previously mentioned can extrinsically motivate contributors to obtain reputation and material rewards, they are at the same time examples of gamification. Gamification is defined as the use of game design featured in non-game contexts with the aim of inducing similar experiences as in games, and also to affect behaviours (Huotari and Hamari, 2017). According to Hamari et al. (2014), crowdsourcing is one of the most popular areas of gamification. Adding game elements to crowdsourcing systems addresses humans' innate intrinsic needs in order to make participation in crowdsourcing more autotelic, which means making the activity a purpose in

itself (Morcheuser et al., 2017). An example of this is Wikipedia and the Wikimedia Foundation, that have created contests and game-like experiences to promote participation from all over the world (Oceja and Obregón, 2018:1). According to the classification proposed by Liu et al. (2013) the simple game elements used in Discogs are *individualistic* (as users obtain points and can have individual goals) and *competitive* (users can obstruct each other's goals in rankings and leaderboard).

2.4.3 Community motivations

According to Wang et al. (2019:470) there is a need to take contextual motivations into consideration to understand knowledge collaboration in specific contexts or domains like virtual communities of practice (VCoPs). Using Vellerand's (2000) hierarchical model of intrinsic and extrinsic motivations (HMIE) as a framework, Wang et al. introduce a third group: *community motivations*. While extrinsic and intrinsic motivations are located at the situational level (normally experienced in the present whilst performing the task), community motivations are situated in the contextual level (Wang et al., 2019:471).

In the context of online communities, *community motivations* are the contextual motivational orientations that are specific to the aggregation of online members that form the virtual community of practice. Some community motivational factors are: a sense of belonging (Blanchard and Markus, 2004); community identity (Obst et al. 2001); and community satisfaction (Blanchard and Markus, 2004).

2.5 Digital labour

The terms *digital work* and *digital labour* are grounded in Marxist political economy theory. Digital work is defined as "the organisation of human experiences with the help of the human brain, digital media and speech in such a way that new products are created" while digital labour is "the valorisation dimension of digital work" (Fuchs and Seignani, 2013:1). This critical perspective often emphasizes how such labour is subsequently repurposed by producers of information and entertainment products. Terranova (2004:83) identifies the collective quality of digital labour and how established corporations disproportionately appropriate the profit from the products created by this form of collective cultural labour. According to Fuchs and Seignani (2013:237):

The Dominant capital accumulation model of contemporary corporate Internet platforms is based on the exploitation of users' unpaid labour, who engage in the creation of content and the use of blogs, social networking sites, wikis, microblogs, content sharing sites for fun and in these activities create value that is at the heart of profit generation.

The fact that knowledge production is fun and is presented as creativity, transforms this labour into play labour (or "playbour"). Fuch and Sevignani (2013) argue that in social media like Facebook, "playbour" creates data commodities that are sold to advertising clients. For Jenkins (2006) however, who has documented a variety of instances of digital labour in different online communities, collective intelligence can help these communities to push back against the traditional culture industries.

To understand the mechanisms of how Discogs, and its parent corporation Zink Media Inc. profit from the community's digital labour is not the objective of this dissertation, as the goal is to concentrate on the database and not the marketplace. However, because nearly all work in Discogs is done by volunteers, an understanding of the concept of digital labour is key in the study of this online co-production community.

3-Method

Based on the research questions, which are formulated towards gathering the opinions of members of a population, the chosen research instrument was an online survey. According to Kozinets (2015:57), surveys can inform us about people's activities in online communities and about how online cultural activities influence other aspects of the members' daily life. In addition, Kozinets (2015:58) mentions the utility of surveys when the researcher wants to:

(...) gain retrospective accounts regarding what online community member recall about their actions and to learn about people's self-reported representation or what they do (...) in regards to their online community and cultural activity.

For this study, the motivational factors to be explored could only be measured through the contributors' subjective responses. Survey methods have been previously employed to research motivation in different settings like open source software development (Baytiyeh and Pfaffman, 2010a; Hertel et al., 2003; Osterloh and Rota, 2004), consumer communities (Utz, 2009) and Wikipedia (Baytiyeh and Pfaffman, 2010b; Nov, 2007).

3.1 Recruitment and data collection

The data were collected between 21 November and 5 December 2019 via a Web survey (powered by Google Forms). The data were collected from registered members on Discogs. The website's contributor list showed that by 21/11/2019, the system included 490,425 contributors. Among them, 5000 have more than 3350 ranking points. To recruit the respondents the messaging tool provided by Discogs was used. Initially, 154 messages were sent to the top contributors from the previously mentioned list, inviting them to participate in the online survey. However, it was clear that some of the top contributors were not active anymore and answers from less experienced contributors were also interesting to obtain for the study. During the last days of November, the monthly leaderboard of the site (<https://www.discogs.com/leaderboard>) was often consulted and 153 more messages were sent to November 2019's top contributors and contributors of the latest submissions in order to reach currently active users. The sample was therefore self-selected and heterogeneous, as it included top contributors and currently active contributors, making it difficult to define its representativeness. A total of 307 messages were sent out of which 135 were responded by users participating in the survey. The response rate was 44%.

3.2 The survey

The research instrument was an online 46-item survey, which was based on questionnaires employed in other studies related to motivation and contribution in open source projects (Baytiyeh and Pfaffman, 2010a; Baytiyeh and Pfaffman, 2010b; Hertel et al., 2003; Xiu and Li, 2015) and it was structured in 4 sections. The first section included demographic and context-related items. The second and third sections contained Likert-scaled questions about motivation (positive and negative respectively) based on Self-Determination Theory. Finally, the fourth section included open-ended questions to check the validity of the Likert-scaled items and to allow respondents to further express their motivation to contribute on Discogs.

3.2.1. Section I: Demographic and context-related items

The 10 questions in this category aimed to collect demographic data such as gender, age, occupation and country of residence. Moreover, the survey measured which type of Discogs contribution activities the respondents were involved in, how long they had been contributing on Discogs, how many contributions they had made, how much time they devoted to contributing on Discogs and whether they were active contributors in other crowdsourcing/Open Source projects.

3.2.2 Section II: Items measuring motivational factors (presented as encouraging/positive)

This section included 21 statements where respondents were asked to rate how much they agreed on a scale of 5 (1=strongly disagree, 2=disagree, 3=unsure, 4=agree, 5=strongly agree). These statements were related to potential motivational factors described in the *Theoretical perspective* chapter: extrinsic (cataloguing their collection with accuracy, selling products in the marketplace, showing off rarities, etc.) intrinsic (altruism, having fun, learning, etc.) and community motivations (commitment, sense of belonging, etc.). The users were also able to add some other motivations in an open-ended question.

3.2.3 Section III: Items measuring discouraging factors

This section included 6 statements where respondents were asked to rate how much they agreed on a scale of 5 (in the same way as in the previous section) to potential discouraging factors and negative perceptions when contributing to the project. One of the statements'

aims was to find out whether the respondents experienced some negative feelings about Discogs making a profit from their contribution. Users could add other discouraging factors when answering an open-ended question in case the point was not covered by the survey.

3.2.4 Section IV: Open-ended questions

In this section a set of seven open-ended questions were included in order to gain depth on the topic from the respondents' perspective and for exploratory purposes. These questions were focused on the contributors' trajectory in Discogs over time, their role in the online community and the most rewarding and concerning aspects of Discogs for the respondents.

The data obtained from the survey was analysed both quantitatively (descriptive statistical analysis for the close-ended and Likert-scale questions) and qualitatively (for open questions).

3.3 Ethical considerations

Participation in the survey was voluntary. The survey introduction served as a way to obtain informed consent through participation, letting the respondents know that they were taking part in research and the purposes of said research (see Appendix). Identifying information such as name, email address or IP address was not collected and individual answers were confidential in order to protect the anonymity of the respondents. In addition, the respondents had the right to withdraw from the research process at any stage. All the procedures carried during the research process as well as possible bias and issues have been fully disclosed in the text in order to offer full transparency.

4-Results

4.1 How Discogs contribution works

Users can contribute to the Database primarily by adding new releases, by updating existent releases, artists, or labels, and by adding or changing images. In order to contribute, a user account is needed. The most important rules to add and edit information in Discogs are to be in front of the physical copy of the exact release and to cite trustworthy sources. Using the *Add Release* form on the *Submissions* tab on the site's dashboard, the user can input metadata and upload images following the provided General and specific contribution guidelines. There is a minimum of seven required fields (Artist, Title, Label, Catalogue Number, Format, Tracking List and Genre/Style). Each of these fields have to be entered following certain standards and checking if they already exist in the database in order to keep the metadata linkage correctly functioning. The addition of images is not required but strongly recommended. These images have to be originally taken by the contributor. Submission notes are required every time a user submits a new release to the database or edits a release and will only be visible in the release history (not in the database entry).

These submission notes are key to making possible the communication between users. After clicking the preview button, a preview of how the release will look on Discogs appears, and, if there are obvious errors, a warning message explains what should be fixed. After that, the release can be submitted. However, the submission needs to be voted on in order to be considered a valid entry. This voting system is what provides the database with a peer-review quality control mechanism. Only experienced users have the right to vote. The exact requirements to obtain this right are not clearly stated in the guidelines. These selected users can rate the submissions from "correct and complete" to "entirely incorrect". If the submission is voted "Correct" or "Correct and Complete", it will be marked as such and be fully active in the database. In the case the submission is voted entirely incorrect it will be reverted to draft and removed from the search results. Those contributors with many negative votes are placed in the Contributor Improvement Program (CIP) that puts a limit on the number of submissions that said users can make. The goal is to give these users tools to improve and at the same time protect the database from incorrect submissions.

4.2 Who contributes to Discogs?

The respondents were mostly male (93%), 64% of whom were between 40-60 years old. The majority of them (67%) had full time jobs. Respondents resided in 36 different countries. The most common countries of residence were United States (19%), Germany (12%) and United Kingdom (10%). The majority of respondents (70%) have been contributing for more than five years and a remarkable amount (33%) more than ten. This number of long time contributors and the fact that half of the respondents had made more than 1680 contributions show that the sample contains many experienced users (Table 1).

28% of respondent were involved in other crowdsourcing and open source activities not targeted in this study such as Bookogs, Filmogs, Comicogs, Vinylhub, Posterogs, Gearogs (which are other online databases created by Discogs and using the same principles for cataloguing books, films, comics, record stores, posters and audio equipment), Wikipedia, IMDb, Musicbrainz⁴, Rate Your Music⁵, Internet Archive⁶, Genius⁷, The Metal Archives⁸, NoiseWiki⁹, and LibraryThing¹⁰.

In regard to the different activities carried out in Discogs (Fig.1), the vast majority of the respondents (96%) added new releases and edited existent ones. Surprisingly, this number was slightly higher than the number of respondents who used Discogs database to catalogue their collection (87%). 79% of respondents bought items in Discogs Marketplace while 60% used the Marketplace to sell. 63% of respondents have the right to vote on other users' submissions.

⁴ MusicBrainz is an open music encyclopedia that collects music metadata and makes it available to the public (MusicBrainz, n.d.).

⁵ Rate Your Music is a community-built music and film database where users can rate, review, catalogue and discover new music and films as well as participate in contributing to the database itself (Rate Your Music FAQ, 2019).

⁶The Internet Archive is a non-profit digital library of Internet sites and other cultural artefacts in digital form. Their mission is to provide Universal Access to All Knowledge (Internet Archive, n.d.).

⁷ Genius is a website that allows users to provide annotations and interpretations of song lyrics in an online "lyrics and knowledge database" (Genius, 2020).

⁸ Encyclopaedia Metallum: The Metal Archives (www.metal-archives.com) is an online database which lists bands of predominantly heavy metal music, including full discographies, logos, etc. (Encyclopaedia Metallum, 2019)

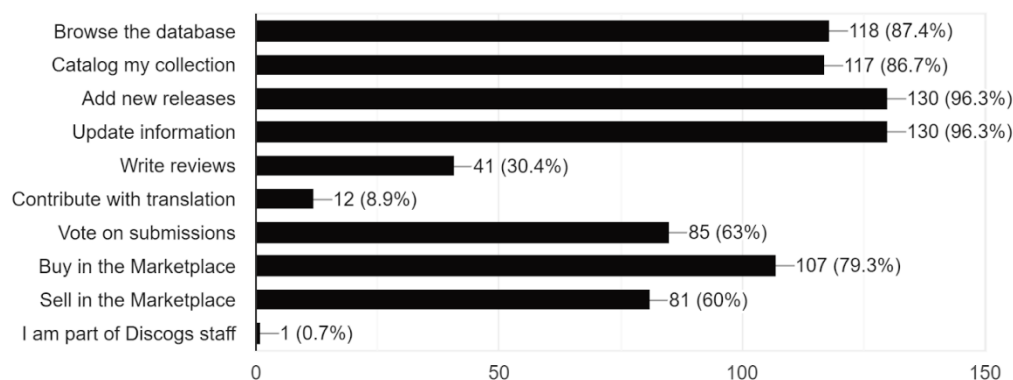
⁹ NoiseWiki is an online database that compiles noise music projects (NoiseWiki, 2019)

¹⁰ LibraryThing is a social cataloging web application for storing and sharing book catalogs and various types of book metadata. It is used by authors, individuals, libraries, and publishers (LibraryThing, n.d.).

Table 1: Survey respondents' demographics and their activity in Discogs

		Frequency (N=135)	Percentage
Gender	Female	8	5,93%
	Male	125	92,59%
	Other	1	0,74%
	N/A	1	0,74%
Age	18-29	15	11,19%
	30-39	19	14,18%
	40-49	45	33,58%
	50-59	41	30,60%
	60+	14	10,45%
Number of years of contribution to Discogs	Less than 1 year	8	5,93%
	Between 1-3 years	20	14,81%
	Between 3 and 5 years	13	9,63%
	Between 5 and 7 years	21	15,56%
	Between 7 and 10 years	29	21,48%
	More than 10 years	44	32,59%
Country of residence	United States	25	18,66%
	Germany	16	11,94%
	United Kingdom	13	9,70%
	Netherlands	11	8,21%
	France	7	5,22%
	Spain	5	3,73%
	Canada	5	3,73%
	Sweden	5	3,73%
	Italy	4	2,99%
	Norway	3	2,24%
	Belgium	3	2,24%
	Australia	3	2,24%
	Finland	3	2,24%
	Other	31	23,13%
Occupation	Full time job	91	67,41%
	Full time student	5	3,70%
	Part time student/job	8	5,93%
	Unemployed	6	4,44%
	Other	25	18,52%
Number of hours/week spent contributing	<10 hours	62	45,93%
	10-20	43	31,85%
	20-30	18	13,33%
	30-40	5	3,70%
	40-50	4	2,96%
	>50	3	2,22%
Number of contributions	1-348	33	25,19%
	349-1680	32	24,43%
	1681-5948	33	25,19%
	>5948	33	25,19%
Contributing to other OS projects	No	97	72,39%
	Yes	37	27,61%

Figure 1: Activities performed in Discogs by respondents



4.3 Motivational Factors

Descriptive statistics were calculated to obtain measures of central tendency and variability of each of the 27 Likert-scaled items (21 items measuring motivational factors and 7 measuring discouraging factors). In order to check the validity of the statements, the standard deviation of each of them was calculated, since high variability could be an indicator that respondents felt very differently about the items.

The potential motivational factors were grouped according to the motivational theories that informed them into the categories Extrinsic, Intrinsic and Community, but it was not expected that all items in each group would have equal importance to respondents. The mean and standard deviations of the average of each group of motivational factors were calculated including all the answers to all the questions related to each group.

4.3.1 Intrinsic motivation drives Discogs contribution

The data shown in Table 2 suggest that Discogs contributors are mostly intrinsically motivated. The altruistic items “helping to the common good by expanding knowledge about music” and “making information available to others” were the most powerful motivators, showing the highest mean and lowest Standard Deviation of the study. However, respondents were also strongly motivated to contribute to have their collection catalogued with accuracy, an extrinsic motivator. After altruism and cataloguing with accuracy, having fun and learning (also intrinsic motivators) proved to be motivational factors of great importance to respondents.

Table 2: Mean and standard deviation of the 21 items measuring motivational factor

Motivation category	Statements	Mean	S.D
Extrinsic	Average extrinsic motivation¹¹	2,91	0,82
Pragmatism	...to have my collection cataloged with accuracy	4,37	1,20
	...to avoid buying duplicates	3,08	1,53
Economical interest	...to sell in the Marketplace	2,86	1,57
Reputation	...to get rank points and be higher on the list of contributors/month leaderboard	2,16	1,27
	...for the joy of showing off the rarities I own	2,37	1,35
	...for the joy of showing off my big collection	2,16	1,27
Intrinsic	Average intrinsic motivation¹²	3,61	0,82
Altruism	...to help the common good by expanding the knowledge about music releases and preserving it for future generations	4,41	0,90
	...because I value the mission of Discogs "to build the biggest and most comprehensive music database and marketplace"	4,09	1,02
	...to make information available to others	4,44	0,86
Enjoyment	...because it is fun!	4,07	1,05
	...because it is relaxing	3,59	1,22
	...to procrastinate other activities	2,59	1,30
	...because it is addicting	3,27	1,25
	...because it feels wrong not to catalogue some new addition to my collection when the rest of my collection is already catalogued	3,38	1,43
Learning	...because I learn new things about music through contribution	4,00	1,18
Self-development	...because I want to improve my contribution skills	2,86	1,36
	...because I enjoy performing my contribution skills and helping other members in Discogs community to contribute	3,40	1,19
	...because getting my submissions correctly done and up-voted gives me a sense of self-achievement/accomplishment	2,81	1,32
Community	Average community motivation¹³	2,91	1,05
	...as a commitment to the Discogs community	2,90	1,22
	...because I feel a sense of membership or belonging in the Discogs community by doing so	2,95	1,24
	...because I like to interact with other Discogs community members	2,50	1,10

¹¹ Measures the average of all the answers given to questions targeted to measure extrinsic motivations.

¹² Measures the average of all the answers to questions targeted to measure intrinsic motivations.

¹³ Measures the average of all the answers to questions targeted to measure community motivations.

4.3.2 Economic interest and its role in contributors' motivation

The most representative extrinsic motivation in the literature, which is monetary compensation (that in the case of Discogs is translated to selling in the Marketplace), was not very significant among respondents. However, this item presented the highest Standard Deviation, which suggests that perceptions about this motivator were more polarized than in other items. When comparing the answers of those who sell (60% of respondents) in the marketplace and those who do not (40%), it is clear that sellers contributed mostly to sell vinyls, CDs and cassettes that were not recorded in the database (see Table 3).

Table 3: Percentage of respondents who rated in the 1-5 likert scale to the statement "I contribute to Discogs **to sell** in the Marketplace", being 1=strongly disagree and 5=strongly agree.

	1	2	3	4	5	Total
Respondents who do not sell	72,2%	13,0%	13,0%	1,9%	0,0%	100,0%
Respondents who sell	4,9%	11,1%	22,2%	22,2%	39,5%	100,0%

In order to further explore how selling in Discogs marketplace and therefore having potential economic interests in contributing was related to other motivation factors, answers given by the respondents who sell and those who do not were compared. When rating motivational factors related to altruism like making information available to others, valuing the Discogs mission and preserving information for the future, contributors who do not sell rated those statements only slightly higher than those who do sell. The percentage of contributors who felt neutral about the statement was higher among sellers (Table 4).

Table 4: Percentage of respondents who rated in the likert scale to the statements referred to contributing for **altruistic reasons** (an average of the three statements), being 1=strongly disagree and 5=strongly agree.

	1	2	3	4	5	Total
Respondents who do not sell	0,0%	5,6%	3,7%	35,2%	55,6%	100,0%
Respondents who sell	1,2%	2,5%	12,3%	35,8%	48,1%	100,0%

In a similar fashion, enjoyment (Table 5) was an almost equally important motivational factor for both groups of contributors, only slightly more valued among non-sellers, with a higher rate of neutrality among contributors who sell.

Table 5: Percentage of respondents who rated in the likert scale to the statement “I contribute to Discogs because it is **fun**”, being 1=strongly disagree and 5=strongly agree

	1	2	3	4	5	Total
Respondents who do not sell	3,7%	7,4%	11,1%	31,5%	46,3%	100,0%
Respondents who sell	3,7%	2,5%	19,8%	33,3%	40,7%	100,0%

When observing the learning factor (Table 6), the difference between sellers and non-sellers is slightly more significant, as the percentage of contributors who strongly agreed with the statement was 13% higher among those who do not sell.

Table 6: Percentage of respondents who rated in the likert scale to the statement “I contribute to Discogs because I **learn** new things about music through contribution”, being 1=strongly disagree and 5=strongly agree.

	1	2	3	4	5	Total
Respondents who do not sell	7,4%	1,9%	11,1%	27,8%	51,9%	100,0%
Respondents who sell	6,2%	7,4%	14,8%	33,3%	38,3%	100,0%

4.3.3 Other motivational factors mentioned by the respondents

When respondents were asked to mention other motivations for contributing to Discogs not suggested in survey statements, most of them referred to intrinsic motivational factors like helping local bands and producers to promote their music and labels by adding their releases to the database, to preserve information and register releases from smaller countries and rare formats like shellac and acetates. In addition, for some users, contribution in Discogs had a positive effect on their mental health¹⁴.

4.4 Discouraging factors

Respondents did not agree with the six potential discouraging factors suggested in the study (Table 7). Only the statement “*Getting into arguments and edition wars with other users*

¹⁴ Respondent mentioned Discogs contribution as a beneficial activity for managing Depression, OCD and Bipolar Disorder.

demotivates me” got an average of 3 (meaning that respondents were just unsure about it and did not clearly agree).

Table 7: Mean and standard deviation of the six items measuring discouraging factors when contributing to Discogs (statements rated by respondents in a 1-5 likert scale, being 1=“strongly disagree” and 5=“strongly agree”).

Statement	Mean	S.D.
Discogs submission guidelines are too complicated	2,56	1,10
Submitting and editing in Discogs takes too much time	2,64	1,18
The idea of working for free by contributing on Discogs while someone else is getting profit from it demotivates me.	2,15	1,25
Getting too many notification/messages after adding or editing submissions demotivates me	2,09	1,14
Getting into arguments and edition wars with other users demotivates me	3,05	1,23
Not getting more rewards for my contribution demotivates me	2,23	1,23

However, the answers received in the open question in this section shed some light on which factors are demotivating for Discogs contributors. Additional factors that discouraged contribution were mentioned by 48 respondents. The most common factor was dissatisfaction with the behaviour and competencies of other users. These respondents mentioned other users being rude and over reactive to less experienced users, or being patronizing, too purist or inflexible. Other respondents found discouraging that some users ignore guidelines and standards, the endless discussions that lead to nothing and users telling others to change small errors instead of changing them themselves. Secondly, some inherent aspects of the site’s system and functioning were mentioned as discouraging. These respondents mentioned the obscure voting system, the guidelines being incoherent or too complicated, aspects of the software and interface, unfair ranking system and getting stuck in CIP (Contributor Improvement Program). Another discouraging factor was the feeling of not being supported by Discogs staff. These respondents mentioned the staff ignoring requests for new features and decisions taken in the forum, the staff not carrying out promises and not giving input. Few users were concerned and demotivated by the prospect of Discogs being sold to a big corporation. Other users mentioned external problems and commitments and overconsumption triggered by Discogs.

4.5 Original motivational factors and trajectory over time

In order to get some insights about the original motivation of contributors and their motivations trajectory, qualitative analysis of the answers given by the respondents was carried out. 127 respondents answered the question “what caused you to start contributing on Discogs?” and whether they kept participating for the same reason. The most common motivational factor (61 respondents) was to catalogue their collection and finding a lot of their releases missing on Discogs, and therefore adding them themselves. For most of these respondents this was still the main reason to contribute but other equally important motivations emerged subsequently. The satisfaction to get as much correct data as possible and finding the contribution more and more entertaining were common motivations that were developed over time. Many users seemed to have more altruistic motivations than when they started, recognising the importance of preserving data about music releases for the future and the possibilities of learning about music when contributing. Other respondents mentioned continuing out of habit or feeling “addicted” to entering everything they own in the database and even acquiring records just because they were not registered on Discogs so they could do it themselves.

The second most mentioned original motivational factor was intrinsic. These contributors (31) mentioned love and passion for music, the will to learn and a sense of reciprocity (after cataloguing their collection using the metadata added by other users, they felt that contributing was the right thing to do). Several users started to contribute because they found that releases from certain regions and genres did not have enough presence in the database¹⁵. The vast majority of respondents who started contributing moved by intrinsic motivations, kept doing it for the same reasons. In the third place, 16 respondents started to contribute in order to sell, and for most of them selling in Discogs Marketplace kept being the main motivational factor.

4.6 Contributors’ roles

Respondents were asked if they were in a role that was recognised by other members in the Discogs community. It is important to notice that we are analysing the perceptions of the

¹⁵ Japanese releases, Arabic music, Danish Jazz, Grindcore and Noise are some examples mentioned by the respondents.

respondents and the aim is not to identify roles in an analytic way¹⁶ in this specific online co-production community. Thirty-six respondents confirmed taking active roles recognized in the community, mostly based on:

a) Experience (long time contributors, high number of contributions)

b) Expertise in a specific genre or format (classical, Britpop, grindcore, jazz, rare and obscure punk, cassettes...) or language/country (Japanese, Arabic, Danish, Spanish...).

These *experienced* and *expert* users were often consulted by other community members to comment on forum discussions when there were doubts about the contribution process or to get releases voted and corrected while other respondents kept track of a specific subgenre or style.

¹⁶ Examples of these types of studies are Arazy et al. (2016), Hang et al. (2019), Welser et al. (2011).

5 Discussion

This chapter discusses the results presented in Chapter 5 and compares them with findings from previous studies.

5.1 The gender gap in Discogs

The profound gender in the Discogs community is another case of gender disparity among crowdsourcing contributors, as research has frequently found that women are less likely to contribute than men despite being online at similar rates (Zickur and Smith, 2012).

The results found by Antin et al. (2011) Glott et al. (2010) and Hill & Shaw, (2013) among others, show how this gender gap has persisted in Wikipedia. Gender disparities in who authors the material in crowdsourced resources is a matter of public concern as the content reflects the interests and perspectives in a disproportionate way (Hargittai and Shaw, 2015:1). In the case of Discogs, this gender gap is also a reflection of record collecting being a masculine-dominated practice (Maalsen and McLean, 2017).

3.4 What does motivate Discogs community members?

5.2.1 Altruism

The highest-rated motivational factors in the present study were altruistic. Respondents contributed to Discogs because they wanted to make information about music releases available to others and expand knowledge and preserve it for future generations. This result is consistent with previous motivational studies about open source software (Baytiyeh and Pfaffman, 2010a) and Wikipedia (Batiyeh and Pfaffman, 2010b; Prasarnphanich and Wagner, 2009). When comparing the motivation for contribution in the contexts of Open Source Software and Open Source Content, Oreg and Nov (2008) found that contributors in the latter context were mostly moved by altruistic motivation.

5.2.2 Pragmatism

The initial hypothesis was that pragmatism would be the most important motivational factor for Discogs contributors and it transpired to be the second highest-rated: respondents contribute to Discogs to catalogue their collection with accuracy. When they want to catalogue a release that does not exist in the database, they need to add it. Even though this motivation is not driven by material compensation per se, we can consider it an external

motivational factor as it is driven by the fulfilment of an external demand or to obtain an externally imposed reward contingency. This result is consistent with the findings by Hertel et al. (2003), who suggested that Linux kernel contributors were determined by pragmatic moves to improve their own software.

5.2.3 Having fun and learning

The Likert-scaled items showed that Discogs contributors are also driven by the motivation of learning, closely followed by having fun while contributing. Respondents particularly mentioned that to learn and discover new bands and albums, as well as patterns and facts about Music was motivating. This is consistent with previous research (Baytiyeh and Pfaffman; 2010a, b) identifying the learning factor as a significant motivator both for Open Software contributors and Wikipedians. While Nov (2007) found that “fun” was Wikipedians highest ranked motivation, Discogs users ranked it in the fourth place.

5.2.4 The coexistence extrinsic and intrinsic motivations

The data presented in section 4.3.2 suggests that contributors who sell are extrinsically motivated to contribute to Discogs as they need to add releases to the database to sell them in the Marketplace when they do not already exist. However, contributors who sell are also intrinsically motivated in a similar way to contributors who do not sell. While non-sellers value enjoyment, altruism and learning slightly more than sellers, the difference is not significant.

Orterloh and Rota (2004) suggest that both extrinsic and intrinsic motivations should be expected in collaborative environments, but without intrinsically motivated contributors cooperation in open source is not sustainable. We could add that in the case of Discogs, these two types of motivation are not mutually exclusive for many of the contributors at the individual level, as having an interest in selling can coexist with being motivated by intrinsic motivations.

5.3 Tensions in Discogs community as a discouraging factor

When asked about what discourages them to contribute, the most common factor mentioned by the respondents was issues and conflicts with other users. Moreover, as far as

the community-related motivation is concerned, the data suggest that respondents did not seem to be especially encouraged by factors related to this group. We could argue that in the case of Discogs, contributing was not motivated by a sense of belonging, an aspect mentioned by Cho et al. (2010) as an important factor for Wikipedia contributors. These results are consistent with Farič and Potts' (2014) findings which suggested that the motivation of contributors of health-related articles in Wikipedia was negatively affected by hostility from other users. Asadi et al. (2013) mention lack of tolerance and negative feedback as discouraging signals for Persian Wikipedia contributors. Arazy et al. (2013) have discussed how conflicts among members have a negative effect in Wikipedia performance. Performance in Discogs has not been addressed in the present study but it is not inconceivable the task conflict that escalated into affective conflict identified by Arazy et al. (2013) as a negative factor to Wikipedia performance, could be a negative factor for contributors' motivation in the context of Discogs.

3.5 The trajectory of motivation over time

When respondents were asked about the trajectory of their motivation over time, most of them admitted to maintaining the same motivation that made them start their contribution journey. However, while respondents mostly started to contribute by cataloguing their collections, new motivations were developed through participation. In general, users seemed to be driven more by intrinsic motivations (and more specifically, altruistic) than when they started to contribute in the first place. Users who started to contribute motivated by sales were a minority but they kept doing it for the same reason.

5.5 Community roles based on expertise and experience

Discogs contributors who admitted to having some kind of active role recognized in the online community mentioned their expertise and experience as the reason behind their position. More than referring to the emergent roles as prototypical activities (*quick editor, content shapers, all around contributors, etc.*) suggested by Arazy et al. (2016:799), the respondents situated their roles in a more general context. In their study, Bryant et al. (2005) reported that over time, Wikipedians moved into community leadership or community-centric roles with tasks such as organizing content or discussing policies. The

initial qualitative exploration of the answers given by Discogs respondents suggests that they followed a similar trajectory to the one described by Bryant et al. (2005).

5.6 Other considerations

Reputation-related motivational factors were the least important for Discogs contributors. This is consistent with the study on the role of reputation in online consumer communities carried out by Utz (2009), in which reputation, while having a signalling function, was considered the least important motivation by the community members.

Conclusion

The online discography Discogs has been analysed in this bachelor thesis as an instance of open online knowledge coproduction, with the aim to understand the motivations that drive the users to contribute in this database. The initial hypothesis was that pragmatism would be the most important motivational factor, meaning that users contribute mostly to catalogue their collections with accuracy. However, the results provided by Likert-scaled data suggested that Discogs contributors are driven largely by a sense of altruism translated into making information available to others and expanding knowledge about music for future generations. Pragmatism was however, the second most important motivational factor. Respondents were also intrinsically driven by enjoyment and the desire to learn.

To better understand how economic interest could affect contribution, the answers of respondents who sell were compared to those who do not. Contributors who sell are extrinsically motivated as they cannot list items to sell if they do not exist in the database. However, these sellers showed very similar rates of intrinsic motivation as non-sellers, proving the coexistence of both intrinsic and extrinsic motivational factor on an individual level.

Community factors did not motivate the respondents. This idea was validated by the open-ended questions that suggested that respondents were discouraged to contribute by discussions and tensions with other community members.

Open-ended questions and comments suggested that most users started to contribute in the first place motivated by pragmatic reasons but developed altruistic motivations over time. In addition, respondents who perceived being in roles recognised by other community members, explained them by their experience or expertise.

6.1 Limitations of the study

The recruitment of respondents was not systematic. Half of the potential respondents were selected from the top contributor list but due to the necessity of recruiting more respondents, the second half were selected from the monthly leader board, where active

contributors were easily spotted and more likely to answer. For this reason, the sample was self-selecting, making the population difficult to define, as it includes both users who are top contributors of “all times”, top contributors of November 2019, active users in the specific days where the recruitment was done, etc. In addition, a larger sample could have been more representative of the general population of Discogs contributors.

It is always a possibility that survey respondents misunderstand the survey questions. During the course of the study, two of the questions in the survey proved to be confusing or not well formulated. One of them asked about the number of contributions as a way of measuring how much the respondent had contributed to the database. This measurement refers to the number of new releases that a user has introduced in the database. However, there are other ways to contribute like editing errors, adding new information in an existing release and adding images. Therefore, the number of contributions is not a good measure for productivity. A better alternative would have been number of rank points. In addition, when the respondents were asked about their occupation the option “Retired” was not present and probably many of the respondents who answered “other” were actually retired.

Motivation trajectory and participation roles were explored just superficially in this thesis. Further studies could include objective participation criteria and network analyses for an exhaustive identification of roles.

References

Antin, J., Yee, R., Cheshire, C. and Nov, O. (2011) Gender differences in Wikipedia editing *In: Proceedings of the 7th International Symposium on wikis and open collaboration. ACM*, 11–14.

Arazy, O., Yeo, L. and Nov, O. (2013) Stay on the Wikipedia task: When task-related disagreements slip into personal and procedural conflicts. *Journal of the American Society for Information Science and Technology*. 64(8), 1634–1648.

Arazy, O., Daxenberger, J., Lifshitz-Assaf, H., Nov, O., & Gurevych, I. (2016) Turbulent Stability of Emergent Roles: The Dualistic Nature of Self-Organizing Knowledge Coproduction. *Information Systems Research*. 27(4),792–812

Arazy, O., Balila, A. and Lifshitz-Assaf, H. (2019) Neither a Bazaar nor a cathedral: The interplay between structure and agency in Wikipedia's role system. *Journal of the Association for Information Science and Technology*. 70(1), 3–15.

Asadi, S., Ghafghazi, S. and Jamali, H.R. (2013) Motivating and discouraging factors for Wikipedians: the case study of Persian Wikipedia. *Library Review*. 62(4/5), 237–252.

Baytiyeh, H., & Pfaffman, J. (2010a) Open source software: A community of altruists. *Computers in Human Behavior*. 26(6), 1345–1354.

Baytiyeh, H., & Pfaffman, J. (2010b) Volunteers in Wikipedia: Why the community matters. *Journal of Educational Technology & Society*, 13(2), 128-140

Blanchard, A. and Markus, M. (2004) The experienced "sense" of a virtual community: characteristics and processes. *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*. 35(1), 64–79.

Bogdanov, D. and Serra, X. (2017) Quantifying music trends and facts using editorial metadata from the discogs database. Proceedings of the 18th International Society for Music Information Retrieval Conference, ISMIR 2017 *In: International Society for Music Information Retrieval*, 89–95

Bryant, S. L., Forte, A., & Bruckman, A. (2005). Becoming wikipedia: transformation of participation in a collaborative online encyclopedia. In *Proceedings of the 2005 International ACM SIGGROUP Conference on Supporting Group Work* pp. 1–10

Bowker, G.C. and Star, S.L. (1999) *sorting things out : classification and its consequences*. Cambridge, Mass. MIT Press

Brabham, D.C. (2013) *Crowdsourcing*, MIT Press, Massachusetts

Cho, H., Chen, M. and Chung, S. (2010) Testing an integrative theoretical model of knowledge-sharing behavior in the context of Wikipedia. *Journal of the American Society for Information Science and Technology*. 61(6), 1198–1212.

Deci, E. L. (1975) *Intrinsic motivation*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (1980) the empirical exploration of intrinsic motivational processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 13: 39-80). New York: Academic.

Deci, E. L., & Ryan, R. M. (1985) *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.

Deci, E. L., & Ryan, R. M. (1991) A motivational approach to self-Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on motivation: Perspectives on motivation* (Vol. 38, 237-288). Lincoln: University of Nebraska Press.

Encyclopaedia Metallum (2019) *Encyclopaedia Metallum Help-How it works*. Accessed 27 January 2020 < <https://www.metal-archives.com/content/help>>

Estellés-Arolas, E., González-Ladrón-de-Guevara, F., (2012) Towards an integrated crowdsourcing definition. *J. Inf. Sci.* 38, 189–200.

Faraj, S. and Azad, B. (2012) The materiality of technology: An Affordance perspective.

Faraj, S., Jarvenpaa, S.L., Majchrzak, A. (2011) Knowledge Collaboration in Online Communities. *Organization Science* 22(5):1224-1239

Farič, N. and Potts, H.W.W. (2014) Motivations for contributing to health-related articles on Wikipedia: an interview study. *Journal of medical Internet research*. 16(12), p.e260

Fuchs, C. and Sevignani, S. (2013) What Is Digital Labour? What Is Digital Work? What's their Difference? And Why Do These Questions Matter for Understanding Social Media? *tripleC: Communication, Capitalism & Critique*. 11(2), 237–293.

Genius (2020) *Genius brings music intelligence to the masses*. Accessed 27 January 2020,

< <https://genius.com/Genius-about-genius-annotated>>

Glott, R., Ghosh, R., & Schmidt, P. (2010) *Wikipedia survey*. Maastricht: UNU-MERIT.

Hamari, J., Koivisto, J., Sarsa, H. (2014) Does gamification work? – A literature review of empirical studies on gamification. In: *Proceedings of the 47th Hawaii International Conference on System Sciences*. Waikoloa, HI. IEEE, 3025–3034

Hang, Yi and Chen, Xiaojun 2019. User Roles in Virtual Community of Crowdsourcing for Innovation: A Case Study of Xiaomi MIUI in China. *Tehnicki vjesnik*. 26(5), 1392–1399.

Hargittai, E. and Shaw, A. (2015) Mind the skills gap: the role of Internet know-how and gender in differentiated contributions to Wikipedia. *Information, Communication & Society*. 18(4), 424–442.

Hartnett, J. (2015) Discogs.com. *The Charleston Advisor*. 16(4), 26–33

Hertel, G., Niedner, S. and Herrmann, S. (2003) Motivation of software developers in Open Source projects: an Internet-based survey of contributors to the Linux kernel. *Research Policy*. 32(7), 1159–1177.

Hill, B. M., & Shaw, A. (2013) The Wikipedia gender gap revisited: Characterizing survey response bias in peer production communities. *PLOS ONE*, 8(6), e65782

Howe, J. (2006) “The rise of crowdsourcing”, *Wired Magazine*, Vol. 14 No. 6, 1-4.

Huotari, K., Hamari, J. (2017) A definition for gamification: anchoring gamification in the service marketing literature. *Electron. Mark.* 27, 21–31

Internet Archive (n.d.) *About the Internet Archive*, accessed 27 January 2020 <<https://archive.org/about/>>.

Kaufmann, N., Schulze, T. and Veit, D. (2011) “More than fun and money. Worker motivation in crowdsourcing-a study on mechanical Turk”, *AMCIS*, Vol. 11, 1-11.

Kozinets, R.V. (2015) *Netnography: redefined* 2nd edition. Thousand Oaks, CA : Sage Publications Ltd..

Leonard, N. H., Beauvais, L. L., & Scholl, R. W. (1999) Work motivation: The incorporation of self-concept-based processes. *Human Relations*, 52(8), 969–998.

Lewandowski, K. (2017) 'How Discogs Dragged Record Collecting Into the 21st Century A rare interview with the core team at the beloved music cataloguing database and marketplace' Interviewed by David Garber for *Vice*, 21 March. Available at: https://www.vice.com/en_us/article/a3375b/discogs-interview-vinyl-records-marketplace

LibraryThing (n.d.) In *Wikipedia*. Accessed 27 January 2020
<<https://en.wikipedia.org/wiki/LibraryThing>>

Lindenberg, S. (2001) Intrinsic Motivation in a New Light, in: *Kyklos* 54, 317–343

Livingstone, R. M. (2012) *Network of knowledge: Wikipedia as a sociotechnical system of intelligence*. PhD thesis. University of Oregon Graduate School.

Liu, D., Li, X., Santhanam, R. (2013) Digital games and beyond: what happens when players compete? *MIS Q* 37, 111–124.

Maalsen, S. and Mclean, J. (2018) Record collections as musical archives: Gender, record collecting, and whose music is heard. *Journal of Material Culture*. 23(1), 39–57.

Morschheuser, B., Hamari, J., Koivisto, J., Maedche, A., (2017) Gamified crowdsourcing: conceptualization, literature review, and future agenda. *Int. J. Hum. Comput. Stud.* 106, 26–43.

MusicBrainz (n.d.) *Welcome to MusicBrainz!* Accessed 27 January 2020,
<<https://musicbrainz.org/>>.

NoiseWiki (2019) NoiseWiki main page. Accessed 27 January 2020
<https://www.noisewiki.com/wiki/index.php?title=Main_Page>

Nov, O. (2007) What motivates wikipedians? *Commun. ACM* 50, 60–64

Obst, P.L., Smith, S.G. and Zinkiewicz, L. (2001) "An exploration of sense of community, part 3: dimensions and predictors of psychological sense of community in geographical communities", *Journal of Community Psychology*, Vol. 30 No. 1, 119-133.

Oceja, J and Sierra-Obregón, Á. (2018) "Gamifying Wikipedia?" *Proceedings of the European Conference on Games-based Learning Volume 2018-October*, 2018, Pages 504-508 12th European Conference on Game Based Learning, ECGBL 2018; SKEMA Business SchoolSophia Antipolis; France; 4 October 2018 through 5 October 2018.

Oreg, S. and Nov, O. (2008) Exploring motivations for contributing to open source initiatives: The roles of contribution context and personal values. *Computers in Human Behavior*. 24(5), 2055–2073.

Osterloh, M. & Rota, S. (2004) Trust and community in open source software production. *Analyse & Kritik*, 26, 279-30

Phipps, S. (2016) Open Source and Crowdsourcing Are Not Synonyms. Open Source Initiative, viewed 4 January 2020. <<https://opensource.org/node/831>>

Prasarnphanich, P. and Wagner, C. (2009) The Role of Wiki Technology and Altruism in Collaborative Knowledge Creation. *Journal of Computer Information Systems*. 49(4), 33–41.

Rate Your Music (2019) FAQ, accessed 27 January 2020, <<https://rateyourmusic.com/wiki/RYM:FAQ>>

Tattersall, A., (2017) Disentangling the academic web: what might have been learnt from Discogs and IMDB [Blog] LSE Impact Blog. Available at: <https://blogs.lse.ac.uk/impactofsocialsciences/2017/02/01/disentangling-the-academic-web-what-might-have-been-learnt-from-discogs-and-imdb/>

Utz, S. (2009) “Egoboo” vs. altruism: the role of reputation in online consumer communities. *New Media & Society*, 11(3), 357 -374

Yang, H.-L. and Lai, C.-Y. (2011) Understanding knowledge-sharing behaviour in Wikipedia. *Behaviour & Information Technology*. 30(1), 131–142.

Wang, J., Zhang, R., Hao, J.-X., & Chen, X. (2019) Motivation factors of knowledge collaboration in virtual communities of practice: a perspective from system dynamics. *Journal of Knowledge Management*, 23(3), 466–488.

Xu, B. and Li, D. (2015) An empirical study of the motivations for content contribution and community participation in Wikipedia. *Information & Management*. 52(3), 275–286.

von Krogh, G and von Hippel, E. (2006) The Promise of Research on Open Source Software. *Management Science*. 52(7), 975–983.

Vries, M.J. de (2005) *Teaching about technology : an introduction to the philosophy of technology for non-philosophers*. Dordrecht: Dordrecht : Springer.

Welser, H., Cosley, D., Kossinets, G., Lin, A., Dokshin, F., Gay, G., and Smith, M. (2011) *Finding Social Roles in Wikipedia*. Proceedings of the 2011 iConference.

Zhao, Y., Zhu, Q. (2014) Effects of extrinsic and intrinsic motivation on participation in crowdsourcing contest. *Online Inf. Rev.* 38, 896–917

Zickuhr, K., & Smith, A. (2012) Digital differences, Pew Internet & American Life Project, Washington, DC.

Annex: Survey form

Motivations behind Discogs contribution

You are invited to participate in a study about the motivations that explain the time and effort that you, contributors, put on Discogs. This study is conducted by me, Maria Sicilia, an undergraduate student at Umeå University in Library and Information Science.

The information obtained in this survey will be used for my bachelor thesis. The preliminary title is "Knowledge co-production in Discogs music database: A study of the mechanisms and motivations behind a community-contributed online discography". The purpose of the study is to explore different aspects of Discogs as an instance of collective intelligence focusing on the following topics: sociotechnical systems, knowledge co-production, online production communities and altruistic archival work. The procedure involves filling an online survey that will take approximately 15 minutes.

PARTICIPATION

Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty. You may skip any question you do not wish to answer for any reason.

CONFIDENTIALITY

Your responses will be confidential and we do not collect identifying information such as your name, email address or IP address.

CONTACT

If you have further questions please contact me: mnodesomi.sicilia@gmail.com

Tell me something about you...

In this section I want to know a bit about you and some general aspects of your participation in Discogs

1. Gender

Mark only one oval.

Female

Male

Other

Prefer not to answer

2. Age

Mark only one oval.

18-29

30-39

40-49

50-59

60+

3. Occupation

Mark only one oval.

Full time student

Full time job

Part time student/job

Unemployed

Other

4. What is your country of residence?

5. What do you do/have done on Discogs? (please select all that apply)

Tick all that apply.

Browse the database

Catalog my collection

Add new releases

Update information

Write reviews

Contribute with translation

Vote on submissions

Buy in the Marketplace

Sell in the Marketplace

I am part of Discogs staff

6. How long have you contributed to Discogs by adding and editing releases?

Mark only one oval.

Less than 1 year

Between 1-3 years

Between 3 and 5 years

Between 5 and 7 years

Between 7 and 10 years

More than 10 years

7. How many contributions have you done?

8. How many hours do you spend on Discogs contribution per week on a regular basis? (This includes adding and editing releases, voting and doing translations for the website)

Mark only one oval.

Between 0 and 10 hours

Between 10 and 20 hours

Between 20 and 30 hours

Between 30 and 40 hours

Between 40 and 50 hours

More than 50 hours

9. Do you actively contribute in other crowdsourced/open source/collaborative online projects (Wikipedia, Internet Archive, IMDb, other "-ogs" databases as Bookogs or Filmogs, open source software development, etc. ?

Mark only one oval.

Yes

No

10. In case you answered "yes" to the previous question, please write the name of the project(s).

What are your motivations to contribute?

In this section, I want to know why do you spend your precious time and effort in adding new releases and editing them. Below are presented a list of statements about contribution to the Discogs database. Please indicate in which extent you agree or disagree with the statements using the numerical scale (1=strongly disagree, 2=disagree, 3=unsure, 4=agree, 5=strongly agree):

I contribute to Discogs by editing and adding new submissions...

11. ...to have my collection cataloged with accuracy

Mark only one oval.

1 2 3 4 5

12. ...to avoid buying duplicates

Mark only one oval.

1 2 3 4 5

13. ...to sell in the Marketplace

Mark only one oval.

1 2 3 4 5

14. ...to get rank points and be higher on the list of contributors/month leader board

Mark only one oval.

1 2 3 4 5

15. ...for the joy of showing off the rarities I own

Mark only one oval.

1 2 3 4 5

16. ...for the joy of showing off my big collection

Mark only one oval.

1 2 3 4 5

17. ...to help to the common good by expanding the knowledge about music releases and preserving it for future generations

Mark only one oval.

1 2 3 4 5

18. ...because I value the mission of Discogs "to build the biggest and most comprehensive music database and marketplace"

Mark only one oval.

1 2 3 4 5

19. ...to make information available to others

Mark only one oval.

1 2 3 4 5

20. ...because it is fun!

Mark only one oval.

1 2 3 4 5

21. ...because it is relaxing

Mark only one oval.

1 2 3 4 5

22. ...to procrastinate other activities

Mark only one oval.

1 2 3 4 5

23. ...because it is addicting

Mark only one oval.

1 2 3 4 5

24. ...because it feels wrong to not to catalogue some new addition to my collection when the rest of my collection is already catalogued

Mark only one oval.

1 2 3 4 5

25. ...because I learn new things about music through contribution

Mark only one oval.

1 2 3 4 5

26. ...because I want to improve my contribution skills

Mark only one oval.

1 2 3 4 5

27. ...because I enjoy performing my contribution skills and helping other members in Discogs community to contribute

Mark only one oval.

1 2 3 4 5

28. ...because getting my submissions correctly done and up-voted gives me a sense of self achievement/ accomplishment

Mark only one oval.

1 2 3 4 5

29. ...as a commitment to the Discogs community

Mark only one oval.

1 2 3 4 5

30. ...because I feel a sense of membership or belonging in the Discogs community by doing so

Mark only one oval.

1 2 3 4 5

31. ...because I like to interact with other Discogs community members

Mark only one oval.

1 2 3 4 5

32. Please mention something that motivates you to contribute to Discogs in case it was not mentioned before Disincentives to contribute on Discogs

In this section I would like to explore the other side of the coin...The following statements are about possible reasons that discourage you to contribute on Discogs. It does not need to mean they make you stop contributing but that somehow makes you less motivated to spend time adding and editing releases, voting, reviewing, etc. Please indicate in which extent you agree or disagree with the statements using the numerical scale (1=strongly disagree, 2=disagree, 3=unsure, 4=agree, 5=strongly agree):

33. Discogs submission guidelines are too complicated

Mark only one oval.

1 2 3 4 5

Strongly disagree Strongly agree

34. Submitting and editing in Discogs takes too much time

Mark only one oval.

1 2 3 4 5

35. The idea of working for free by contributing on Discogs while someone else is getting profit from it demotivates me.

Mark only one oval.

1 2 3 4 5

36. Getting too many notification/messages after adding or editing submissions demotivates me

Mark only one oval.

1 2 3 4 5

37. Getting into arguments and edition wars with other users demotivates me

Mark only one oval.

1 2 3 4 5

38. Not getting more rewards for my contribution demotivates me

Mark only one oval.

1 2 3 4 5

39. Please mention something that disencourage you to contribute to Discogs in case it was not mentioned before

Some open questions about your contribution to Discogs

The vast majority of the previous questions are multiple-choice to evaluate statements chosen by me. It is possible that some aspects about your motivations are missing in those statements. That is why I want you to answer to a few open questions about your contributions to Discogs:

40. What caused you to start contributing to this project?

41. Do you keep participating for the same reason? If not, please explain

42. In what ways is contributing on Discogs rewarding?

43. Of the things that motivate you to contribute to Discogs which one is the most important for you?

44. Are you in a specific role that is widely recognized by other contributors to Discogs? How did that happen?