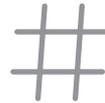


Social Media Logic in Interorganizational Boundary Spanning: the Case of European Green Capital Award 2021



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Colophon

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Abstract

Social media have penetrated deeply into everyday life, affecting people's informal interactions, as well as institutional structures and professional routines. Communication and organizational collaboration are influenced by the norms, strategies, and mechanisms of social media referred to as *social media logic*. *Boundary spanners*, who enable collaboration between different parties and discourses through translation, filtering, and sharing of information and knowledge, are susceptible for these changes in communication patterns and habits. This study aims to shed light on the effect of the digitized shift in boundary spanning in an interorganizational context of the European Green Capital Award 2021 -initiative through a mixed methodology approach. The results suggest that social media logic indeed has an effect on boundary spanning and that different roles of boundary spanning become visible through social media and datafication. Boundary spanning roles can be assigned to different organizations which, in-turn, can be useful in creating more effective *interorganizational collaboration* procedures. Additionally, the mediating effect of social media platforms in interorganizational collaboration seems evident. In their communication, organizations utilize algorithms that steer the flow of information and interaction in order to effectively perform boundary spanning actions and collaborate. More extensive dataset and analysis are required to further research the effects of social media logic on boundary spanning, collaboration, and more generally, communication.

Key terms: Social Media, Social Media Logic, Boundary Spanning, Interorganizational Collaboration

1. Introduction

1.1 Background

Information technology has taken the world by storm in the last few decades and massive amounts of data are shared and exchanged via the technology daily. Social media have penetrated deeply into everyday life, affecting people's informal interactions, as well as institutional structures and professional routines. Far from being neutral platforms for everyone, social media have changed the conditions and rules of social interaction (Van Dijck & Poell, 2013). Social interaction and collaboration between people and organizations (informal or formal), is highly influenced by "the norms, strategies, [and] mechanisms" (2013, p. 2) of social media what Van Dijck & Poell refer to as "social media logic".

In the midst of this changing environment of social interaction and collaboration are boundary spanners, who enable collaboration between different parties and discourses (Safford et al., 2017) through translation, filtering, and sharing of information and knowledge (Aldrich & Herker, 1977; Gouillart, 2012). To increase the understanding of boundary spanning and contemporary social interaction, it is important to study the influence of social media and its logic on information and knowledge sharing.

1.2 Societal and Scientific Relevance

Contemporary organizations are increasingly implementing social media platforms to work digitally (Dittes & Smolnik, 2019) and to provide the potential for every employee to span boundaries (Gouillart, 2012). One of the functions of social media platforms is to serve as a tool for boundary spanners to collaborate and move across and through boundaries in intra- and interorganizational environments (Langan-Fox & Cooper, 2014). Thus, a key issue is to understand the logic of social media in boundary spanning and collaboration.

Little is known about social media logic's effects on boundary spanning. Media logic (without the "social") and its effect on e.g. governance processes (Korthagen, 2015) or social order (Altheide, 2013) has been researched extensively, but social media logic has only recently gotten attention from scholars and the focus is often on social media logic's effect on communication generally (e.g. Enli & Simonsen, 2018; Verdegem & D'heer, 2018) rather than boundary spanning. Especially boundary spanning in interorganizational environments and the effects of social media logic there is largely undiscovered (Archer-Brown et al., 2018).

Even though social media is used to improve the collaborative and boundary spanning abilities of workers (Dittes & Smolnik, 2019), some negative effects of social media use have also been identified. Gibson & Cohen (2003, p. 29) argue: "Because of delays in transmission and the lack of social and nonverbal cues, communication technologies can interfere with open communication, knowledge sharing, and the ability of teams to identify and resolve misunderstandings." Therefore, a better understanding of the mechanisms of the mediating logic and platforms for communication, and thus also boundary spanning, is valuable to improve sustainable working and collaboration processes (Aldrich & Herker, 1977).

1.3 Research Objective

The aim of this research is to better understand the impact social media has on the nature of boundary spanning by studying the relationship between social media logic and boundary spanning in the context of the European Green Capital Award -initiative (EGCA). EGCA is "an award to recognize

cities that are leading the way with environmentally friendly urban living" (European Commission, 2021). The European city that receives the award is acting as the European Green Capital for one year as a role model in environmentally friendly city development for other cities in Europe.

The city of Lahti, Finland, was awarded the European Green Capital Award for the year 2021 and on the website Lahti highlights its goals towards environmental friendliness to be collaborative: "The year 2021 gathers the municipalities in the Lahti region and the companies, communities and citizens in the whole Finland together to build a more sustainable future," (Green Lahti, 2021). Through "gathering" municipalities, companies, communities and citizens to build a sustainable future, Lahti is acting as a boundary spanner, which can be defined as a "bridge between an organization and its exchange partners" (Scott, 1992, p. 196). As a boundary spanner, Lahti processes information from the environment and provides external representation to stakeholders and other organizations (Weerts & Sandmann, 2010). To exemplify Lahti's position as a boundary spanner we can think of the European Commission (and the EGCA-initiative) as the "environment" from which Lahti is "processing information". After processing that information, Lahti can "provide representation" of that information to others, acting as a bridge of information to that environment.

In addition to being a boundary spanning organization itself, Lahti is endorsing boundary spanning by offering funding and a platform (e.g. YouTube AMAs/conferences and Twitter discussions) for local companies and residents to get involved with the initiative. Providing a platform for communication and information sharing is important due to the ongoing coronavirus pandemic, during which physical proximity and contact is restricted. Thus, the use of social media is emphasized in the boundary spanning endeavours of Lahti and organizations connected to Lahti, making this initiative a fruitful study object for understanding the effects of social media logic on boundary spanning.

I will study the relationship between social media logic and boundary spanning in this framework with the main research question of

How does social media logic, via social media platforms, influence the nature of boundary spanning in interorganizational collaboration?

To understand the nature of the relationship between social media logic and boundary spanning, it is of importance to recognize the elements – the logic - of social media that can influence boundary spanning activity. With that, a sub-question is formulated which focuses on the general composition of social media logic:

1. What are the elements of social media logic?

Then, to connect the elements of social media logic with boundary spanning within the scope of the study, another sub-question is formulated:

2. How are the elements of social media logic used for boundary spanning within the EGCA-initiative?

Finally, to understand the overall perception of social media as a boundary spanning tool between organizations, a third sub-question is asked:

3. How do the organizations involved in the EGCA-initiative view social media and its logic as a tool for boundary spanning and collaboration?

1.4 Reading Guide

This paper has five chapters. The first chapter introduced the study and discussed its scientific and societal relevance. Chapter two elaborates on the main concepts regarding the study. The connections between these concepts are summarized in the conceptual model. The third chapter opens up the mixed methodology used to conduct the study and details the data collection and analysis process. Chapter four represents the empirical results of the study. Answers for the first sub-question are derived from a literature review in chapter two and the manifestation of that review is the codebook presented as Appendix 2. This codebook, then, is used in chapter four to answer the second and third sub-questions. Chapter five focuses on interpreting the results in a wider context and gives suggestions for future research.

2. Theoretical Framework

2.1 Social Media

Social media is a group of internet-based applications that allow the creation and exchange of user-generated content. It is an umbrella term describing different types of applications such as collaborative projects (e.g. Wikipedia), blogs/micro-blogs (e.g. Twitter), content communities (e.g. YouTube), social networking sites (e.g. Facebook), virtual game worlds (e.g. World of Warcraft), and virtual social worlds (e.g. Second Life) (Kaplan & Haenlein, 2011).

In their study about interorganizational collaboration and social media usage, Wang and Medaglia (2017) separate internal and external social media. Internal social media refers to social media that different organizations are using to communicate between the staff of that specific organization internally (e.g. Slack). Contrasting to internal social media, external social media refers to platforms in which communication is completely public (e.g. Twitter). In this study I am focusing on external social media platforms, such as Twitter, in order to keep the focus on the *interorganizational* boundary spanning.

2.2 Organizations & Interorganizational Collaboration

According to Watkins & Barnard (1989), an organization is a holistic entity encasing a technological, human, and strategic subsystem creating a whole larger than the sum of these subsystems. Systems theory suggests that an organization is an open system interacting with its environment and in organizational theory the interaction between organizations and their environments is crucial in shaping organizations and defining their boundaries (Kapucu, 2006).

Interorganizational collaboration is defined as “a co-operative relationship among organizations that relies on neither market nor hierarchical mechanisms of control,” (Phillips et al., 2000, p. 24). By building interorganizational assets, knowledge-sharing routines, and effective relational governance mechanisms into relationships, organizations can leverage their relational resources for knowledge acquisition and exploitation (Yli-Renko et al., 2001). Successful interorganizational collaborations have some general elements, such as shared vision, identified goals, open and frequent communication, commitment, trust, interested stakeholders, shared risk, access to resources, collective identity, time, and defined processes (Huxham & Vangen, 2005; Koschmann, 2012; Mattessich et al., 2001).

2.3 Social Media Logic

Social media logic is defined as “the norms, strategies, [and] mechanisms” of social media (Van Dijck & Poell, 2013, p. 2). Social media logic acknowledges the biases in social media, contrasting the assumption of social media being a neutral platform for communication. As per Van Dijck & Poell, social media logic consists of four elements - datafication, programmability, popularity and connectivity - which will be elaborated next.

2.3.1 Datafication

Datafication refers to the process of rendering human attributes and interactions to quantifiable data. Social media platforms collect personal data to create an online version of oneself and shows, in quantitative figures, how many friends one has, how “liked” posts are, and how much “influence” one has online (e.g. Klout Score). Additionally, every word, picture, video, and sound is converted into data that can be stored, modified, and traded by social media platforms.

Online communication and narrative have unique features when compared to spoken or analogous communication (Couldry, 2008). According to Couldry, there's a pressure to mix text with other data (e.g. video, sound, etc.) and make a visual presentation on social media. The length of an online narrative is often shortened due to a limited file size and the massive amount of information shared on social media. Thus, users often spend only seconds on any given post. When people process information quickly, they tend to prefer information that is easy-to-process (Oppenheimer, 2006).

Datafication opens up possibilities for deeper understanding of social life through quantitative methods (Southerton, 2020), but must be critically evaluated. For example, concerns for privacy have been voiced, since it is entirely up to the controller of a social media platform if the data are used for nefarious purposes or not (Smith et al., 2012).

2.3.2 Programmability

Social media platforms are programmable which means that the platform developers and users are able to modify a platform. Through the design of a platform, developers have created an environment for people to interact in and can edit that experience via updates. The environment mediates the user experience through coded algorithms which, for example, can suggest topics to follow (Figure 1). However, users are also able to control their own experience by e.g. blocking certain content or people from entering their profile.

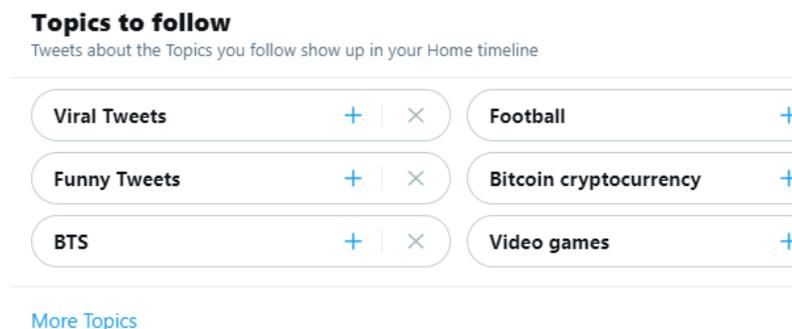


Figure 1: Twitter suggesting topics based on user activity on the platform, (A screenshot of the author's Twitter interface, 2021).

2.3.3 Popularity

Algorithms behind social media platforms are steering the user experience and the interactions on it by endorsing popular ideas and people over others. By calculating "likes", suggesting "who to follow" (Figure 2) based on popularity, or promoting paid content, social media platforms are connecting their users to certain networks (often) unbeknownst to the user. Voices of already popular people or organizations are distributed even wider through algorithms, the platform users and the owners/developers of a platform. A hierarchy is formed where less popular opinions and people are easily ignored and echo-chambers of like-minded people are generated (Goldie et al., 2014).

Additionally, while on social media, people alter their communication so that it "works" online (Verdegem & D'heer, 2018). People try to use certain keywords or actions to be favoured by a platform's algorithms to get more visibility on that platform.

2.3.4 Connectivity

Connectivity refers to the affordance of networked platforms to connect content to user activities and advertisers. Social media platforms partly define how connections between people and content are taking shape. Social media platforms expedite connections between organizations and individ-

uals, partly allowing the formation of strategic alliances or communities through users' initiative, partly forging target audiences through automated group formation ("Connect"-tab on Twitter, Figure 3) or personalized recommendations. An illustration of the organizational ecosystem and connectivity within the EGCA 2021 -initiative is represented in Appendix 1.

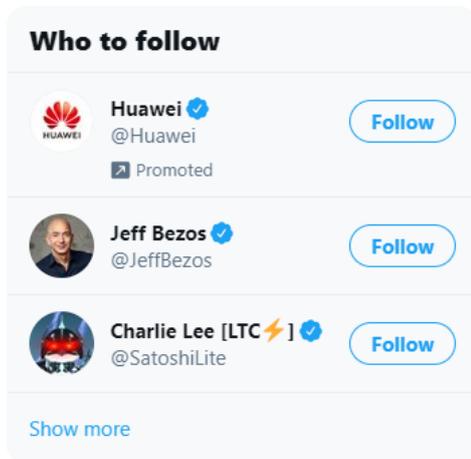


Figure 2: Twitter suggesting who to follow by popularity (Bezos and Lee) and through promotion (Huawei). A sign of popularity is the blue check mark, which is given only to verified, "notable" and "active" (Help Center, Twitter, 2021) users of Twitter. (A screenshot of the author's Twitter interface, 2021)



Figure 3: Twitter suggesting connections based on the user's behaviour. (A screenshot of the author's Twitter interface, 2021)

As a conclusion of the four elements that characterize social media logic, it is realized that social media and the interactions within are an interplay between the users and the platform itself. Through algorithms and coded data, social media is mediating the actions of the users, and at the same time, the users have an influence on the algorithms. Thus, interacting on social media is not solely interaction between two (or more) human beings, but interaction between human users via a mediating platform/technology having an effect on that interaction.

2.4 Boundary Spanning

A boundary spanner, in an organizational context, is someone who understands the specific needs and interests of an organization and can move across and through the formal and informal features of organizations (Langan-Fox & Cooper, 2014). Williams (2013) has developed an in-depth understanding of the concept "boundary spanner" by conducting a comprehensive literature review and recognizes different attributes and roles of "individual actors engaged in boundary spanning activities" (p. 18). These roles are:

- **A reticulist**, who understands complexity and the linkages between organizations
- **An entrepreneur**, who develops solutions to complex problems showing creativity and innovation
- **An interpreter/communicator**, who excels in communication, listening, negotiation and consensus building
- **A coordinator**, who has the ability to understand interdependence and relationships

However, Williams is focusing on the individual, not on a collective of individuals, such as an organization. Therefore, Marrone's (2010) classification of team boundary spanning is a useful addition to this study in which the focus is on the boundaries between organizations, not individuals.

Marrone (2010) defines team boundary spanning as a “team’s actions to establish linkages and manage interactions with parties in the external environment” (p. 914). Marrone introduces a concrete taxonomy of the actions organizations take for boundary spanning (Table 1).

Table 1. Taxonomy of team boundary spanning actions simplifying Marrone’s (2010) taxonomy, (Marrone, 2010, p. 917; simplified by the author, 2021)

Behavioral category	Description	Primary objectives	Representative outcomes
1. Representation	Actions that persuade others of team decisions, request resources, and protect the group	Set and clarify expectations, form impressions, advocate for team needs	Improved strategic decision making, enhanced reputation
2. Coordination of task performance	Actions that coordinate work activities with interdependent entities to accomplish task goals	Synchronize work efforts, inputs, and outputs of interdependent entities; monitor strategy; and progress towards joint goal achievement	Synchronization of efforts, organization learning, adaptation, efficiency in operations, and achievement of organization/cross-organization goals
3. General information search	Actions that access outside parties for general or technical information or expertise	Gain expertise (problem or project specific) and understand general environment	Receipt of informational resources and expertise, shared awareness of environmental opportunities/threats, innovation

Furthermore, boundary spanning activities and functions are undertaken by actors at all levels of an organization and no role is as simply and explicitly separated in reality as is in Williams’s or Marrone’s classification. Van Osch and Steinfield (2018) complement this by noting that through the proliferation of enterprise social media in recent years, an increase in the opportunities “for breaking down knowledge silos in organizations” (p. 648) enables every member of an organization to accomplish boundary spanning actions.

Another important notion about boundary spanning is that it happens via tools of communication and interaction. Be it the language we speak, social media, or a serious digital game (e.g. Vemuri et al., 2014), these tools are an important part of boundary spanning and can be viewed as boundary spanners themselves. Social media can act as a tool with which information is shared through generalized functions (e.g. hashtagging) and formats, and these functions and formats form a bridge between social media users, connecting them, and spans their boundaries. Therefore, the concept of boundary spanner shouldn’t be reduced only to the human actor, but the tools these actors use, as well (Pershina et al., 2019).

2.5 Conceptual Model

At the top (next page), COVID-19 represents the context in which this whole research is done and highlights the effect it has had on the European Green Capital Award -initiative (see ch. 4). Interaction, interorganizational collaboration, and boundary spanning within the initiative have had a shift towards digital environments this year due to COVID-19.

Within the EGCA-initiative context, the interest is in the impact social media has, as a tool for interaction and collaboration mediated by social media logic, on boundary spanning in the interorganizational environment. The bold arrow represents the effect of interest in this study.

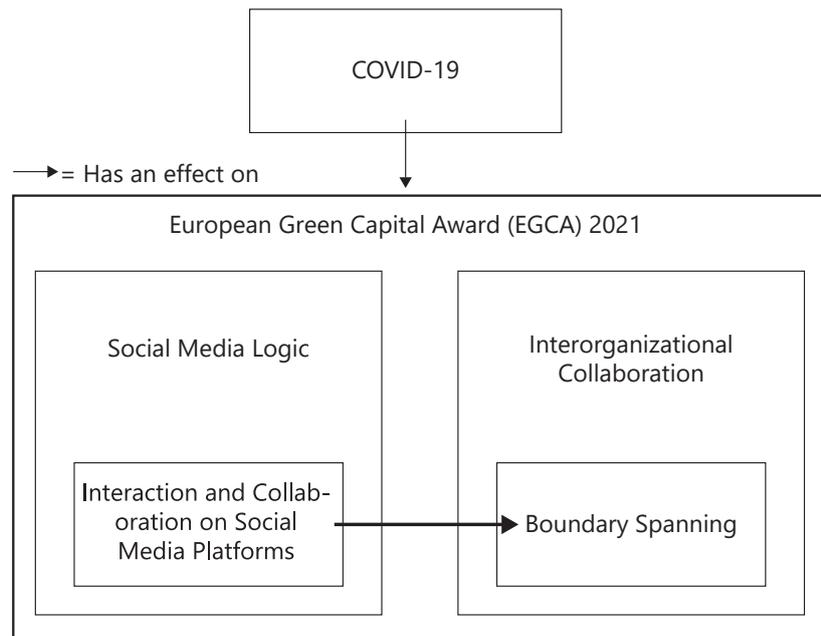


Figure 4: Conceptual model depicting the setting of the main concepts of the study, (Author, 2021)

3. Mixed Methodology

In mixed methodology, combinations of qualitative and quantitative research are used to develop analysis in order to provide rich data (Denscombe, 2008; Johnson et al., 2007). These combinations are used to initiate new modes of thinking (Rossman & Wilson, 1985). As the intent of this study is to examine the *use* of social media logic and the *perception* of that logic in boundary spanning (ch. 1.3), a mixed methodology was chosen to achieve a holistic understanding of the study topic.

3.1 Case Study

To study the influence of social media logic on boundary spanning in an interorganizational context, the 2021 European Green Capital Award -initiative was selected. The case is described in the research objective in the introduction chapter. The reason for this selection is that COVID-19 has increased the use of social media in collaboration and boundary spanning endeavours (see ch. 4), granting an opportune moment for studying the main research question of the study.

3.2 Data Collection

3.2.1 Twitter Posts

To acquire a sense for social media activity (and then logic), Twitter-posts (tweets) posted with hashtags (#) **#ympäristöpääkaupunki** (green capital in Finnish), **#EGCA2021**, and **#greencapital** were collected from the 12th of March until and including the 12th of April 2021. In total, 483 tweets were collected using the tool "TAGS" which is a "free Google Sheet template which lets you setup and run automated collection of search results from Twitter" (Hawksey, 2021). To keep the data amount manageable, a limited sample of hashtags was chosen in an attempt to focus on the 2021 EGCA-initiative including Finnish and international actors.

Twitter was chosen as the platform because it is preferred by individuals who seek cognitive stimulation, and is less focused on who you are but rather on what you think (Huberman et al., 2008; Hughes et al., 2012). Additionally, Twitter (not a particular capability of Twitter, however) can spread information across different boundaries (Hsu & Woo, 2011). Therefore, Twitter seems to be better suitable for a research about interorganizational boundary spanning than some platforms that are leaning more towards entertainment.

3.2.2 Semi-Structured Interviews (SSIs)

In addition to collecting tweets, three semi-structured interviews were conducted via video calls in Finnish following the interview guide presented as Appendix 3. Semi-structured interviews are used extensively in research and they are used with qualitative, quantitative, and mixed-method research (McIntosh & Morse, 2015). SSIs are used to derive subjective responses from people regarding a particular situation or phenomenon, and may be used when subjective knowledge about a topic is lacking (Morse & Field, 1995). The flexibility and up-to-date nature of SSIs gives an exploratory study, such as this one, the ability to gather new and largely undiscovered information about a topic (de Jonckheere & Vaughn, 2019).

After the collection and analysis of tweets, the interviewees were selected from those 2021 EGCA-initiative organizations among the five most active tweeters with the chosen hashtags. The interviewees represent organizations from the public and private sectors (table 2), highlighting the nature of the initiative well.

Table 2. Meta data about the interviewees and the interviews, (Author, 2021)

Name in the Thesis	Organization / Twitter handle	Occupation	Interview Date	Interview Medium	Interview Duration
Respondent 1 (R-1)	City of Lahti / @GreenLahti2021	Project Manager	7.5.2021	Google Meet	30 min
Respondent 2 (R-2)	Local youth branch of a political party / @lahdenvino	Upper Management	5.5.2021	Google Meet	31 min
Respondent 3 (R-3)	Private consultation company / @Vastu- ullisuus	Upper Management	27.4.2021	Microsoft Teams	36 min

3.3 Data Analysis

3.3.1 Quantitative Content Analysis of Twitter Posts

Quantitative content analysis is “any technique for making inferences by objectively and systematically identifying specified characteristics of messages” (Holsti, 1969, p. 14). Quantitative content analysis is effective when applicable models, which serve as a basis for quantitative research projects, are unavailable (Lai & To, 2015).

From the total of 483 tweets, 66 tweets were included in the content analysis. These 66 tweets were tweeted by the Twitter handles belonging to the three organizations of which representatives were interviewed (Table 2). The focus of the analysis is not on the content of the chosen tweets, but on the frequencies of functional operators, such as hyperlinks, retweets, replies, likes, and embedded tweets included in the tweets (see Appendix 2 for the codebook). A focus on the frequencies of the functional operators emphasizes the quantitative logic of social media and allows for an unbiased analysis, whereas a focus on the tweets’ content would introduce a qualitative aspect to the analysis and possibly skew it.

The codebook concentrates on the sub-categories of popularity and connectivity due to their applicability for operationalization. However, datafication and programmability are on the background of this operationalization and are, thus, not left out of the analysis. As described in chapter two, datafication is the process of rendering human interaction into data; and these interaction renderings are (partially) manifested as the functional operators included in the analysis. Additionally, as programmability is the ability to alter the interface of a social media platform, the use of functional operators does alter the interface and the interface user’s experience on the platform. Consequently, even though the concepts of datafication and programmability are not explicitly analyzed, they are on the background of the analysis and are not as separated and demarcated as the classification suggests.

The functional operators are considered as metrics that count social interaction on social media. For example, the like-button “seek[s] to set a chain of interaction in motion” (Gerlitz & Helmond, 2013, p. 1359) and engagement with a “like” represents not just a single action, but future potential engagement with a variety of content (Grosser, 2014). As per Bruns & Moe (2014), the use of hashtags (#) helps with coordination of the exchange of information with other users of a specific hashtag. Including a hashtag signals a wish to take part in a wider communicative process. In addition, the use of mentions (@) highlights posts to a specific user(s) and can be viewed as an attempt to strike up a conversation or as a mention of an involved third-party. Hyperlinks connect individuals and organizations on social media. Hyperlinks were created to enhance the navigation ability of websites

and receiving hyperlinks from other social media users is a sign of popularity (Hsu & Woo, 2011).

Therefore - connecting the use of the functional operators to boundary spanning (see ch. 2.4) - these operators can be considered as coordinative action administrating the flow and search of information on social media (e.g. hyperlinks, hashtags). They can also act as symbols representing linkages between actors (e.g. mentions, retweets) or as a starting point for a general information search (e.g. embedded tweets, hashtags) (Meraz & Papacharissi, 2013; Pancer & Poole, 2016).

3.3.2 Semi-Structured Interviews

The interviews were conducted and recorded using the video call platforms' (Meet & Teams) record function and transcribed using the qualitative data analysis software "Atlas.ti". After the transcription, the interviews were coded with a combination of deductive and inductive coding. The semi-structured interviews are used to answer the second and the third sub-question of the study, as well as shedding light on the main research question.

3.4 Ethical Considerations

The data collected for this study from Twitter is completely public and accessible for everyone with access to Twitter. Thus, no one's privacy is deliberately attacked by collecting tweets with the mentioned hashtags. Adding to that, I am refraining from using the names of the individuals interviewed or any individual's name connected to Twitter handles appearing in this study. However, acting ethically and respecting people's privacy in the social media space can be difficult. People might post something on Twitter they would like to take back later, but the tweet has already been stored for purposes such as this study. Therefore, I must make it clear that no one's tweets are deliberately misinterpreted or used against their publisher's will and no tweet has been analyzed content-wise. Only the functional operators attached to these tweets were analyzed.

All the interviews in this study have been conducted in an agreement with the interviewees. Before recording, the interviewees agreed to be recorded and understood that the answers from the interviews would be used for this study. The recordings or the transcriptions of the interviews are not distributed and are solely in the possession of the author.

4. Results

The main objective of this study was to examine the influence of social media logic on boundary spanning in an interorganizational context.

4.1 Use of Social Media Logic Elements within EGCA 2021

Answering the second sub-question of the study, the use of social media logic elements within the interorganizational context of EGCA 2021 was examined. Table 3 shows the organizations that tweeted at least twice during the data collection period with the chosen hashtags. In the table, the frequencies of tweets, retweets (posted by the corresponding handle), and mentions of an organization's Twitter handle by other Twitter handles (@) are calculated. The percentage of retweets is calculated from the total number of tweets (which include the retweets) and are rounded up to the closest whole percent.

The top four tweeters in Table 3 are, in effect, two organizations. The handles *@GreenLahti2021* and *@LahdenKaupunki* belong to the city of Lahti. *@GreenLahti2021* is the official handle for the EGCA 2021 -initiative, whereas *@LahdenKaupunki* is the handle representing the city of Lahti, outside the EGCA 2021 -initiative. Furthermore, the handles *@Vastuullisuus* and *@CrnetOy* belong to a single private consultation organization. As seen in the table, *@CrnetOy* has tweeted 18 times and every tweet is a retweet. All these retweets are originally tweeted by the handle *@Vastuullisuus*. These four handles are responsible for 90 (62%) tweets from a total of 145 tweets (all the tweets by different organizations with the chosen hashtags).

Table 3. Frequencies of social media logic elements by organizations within EGCA 2021 (Author, 2021).

Top Tweeters	No. of Tweets	No. of Mentions (@)	No. of Retweets	% of Retweets
@GreenLahti2021	33	142	2	6 %
@Vastuullisuus	28	38	6	21 %
@CrnetOy	18	0	18	100 %
@LahdenKaupunki	11	77	4	36 %
@K2HAM_	5	5	5	100 %
@lahdenvino	5	3	1	20 %
@PelicansFi	4	23	2	50 %
@LahtiEnergia	4	1	2	50 %
@HELYkeskus	3	13	3	100 %
@LahtiKymp	3	16	1	33 %
@EuropeCECI	2	11	1	50 %
@UCLahti	2	7	2	100 %
@VisitLahti	2	10	2	100 %
@Hameenmaa	2	1	1	50 %

The results shown in tables 3, 4, and 5, indicate that the Twitter handle *@GreenLahti2021* is the most active tweeter with the chosen hashtags. It has tweeted the most (33 tweets, Table 3), is the most mentioned handle with 142 mentions (other users have linked the handle in their tweet, Table 3), its tweets are retweeted the most (85 retweets, Table 4), and its tweets have received the largest number of likes (501, Table 4) and replies (5, Table 4). It is also the handle with the lowest frequency of

retweets from all the organizations that have tweeted more than once, suggesting an informative, rather than an intermediary role on Twitter in the EGCA-context. Thus, *@GreenLahti2021* seems to be taking the boundary spanning role of *a communicator*, and according to Marrone's team boundary spanning typology, *represents* about and *coordinates task performance* within (see ch. 2.3 & Table 1) the EGCA-initiative.

On Table 5, all three Twitter handles use hyperlinks in their tweets with *@Vastuullisuus* using hyperlinks most frequently with 27 tweets with a hyperlink. Because all but one *@Vastuullisuus*'s tweets contained at least one hyperlink, the boundary spanning roles of *a coordinator* and *reticulist* (see ch. 2.3) can be assigned to the company behind that Twitter-handle. Following Marrone's typology, the Twitter-handle can be considered as providing *general information search* (Table 1) by connecting different actors and sources of information via hyperlinking actors' websites and handles under hashtags that are widely used in the EGCA-context.

The use of hashtags is also highlighted in Table 5. The handles *@GreenLahti2021* and *@Vastuullisuus* are using additional hashtags to connect their agenda to a wider context, whereas *@lahdenvino* is using solely environmental hashtags. This strengthens the roles of *@GreenLahti2021* and *@Vastuullisuus* as *coordinators* and *representatives of information* in the EGCA-initiative, and suggests that *@lahdenvino* is an actor that only takes part in the initiative and doesn't strongly coordinate or spread information to external organizations on Twitter.

4.2 Organizations' View of Social Media Logic in Boundary Spanning

In addition to the analysis of tweets, semi-structured interviews were conducted with representatives from the city of Lahti, the local youth branch of a political party, and a private consultation company.

According to the interviewees, social media is a valuable tool for informing and engaging with the public and other organizations. An example of this is a comment by R-1:

"Social media is an immensely important tool for the city. As an organization, you have to be active on social media."

By having a social media presence, the organizations show a positive valuation for it. The interviewees emphasized the importance of social media for collaboration and work during the COVID-19 pandemic. R-3 commented on the organization's shift from doing consultation work in-person, to using social media platforms:

"During the pandemic we have used [Microsoft] Teams as a platform for education work. Before, I was doing that work at the clients' workplace."

This is complemented by R-1 in the context of the EGCA-initiative:

"Organizing this year's EGCA-initiative is completely different from what we originally thought it would be. Usually these initiatives have been full of live-events."

and

"Since the beginning of the year [2021], the events we have been able to organize have all been virtual."

Table 4. Operationalization and calculations of the concept of popularity for the handles @GreenLahti2021, @Vastuullisuus, and @lahdenvino, (Author, 2021)

TWITTER HANDLES (NO. OF TWEETS)	Does the tweet have retweets?	Does the tweet have replies?	Does the tweet have likes?	Is the tweet in Finnish or in another language?
@GreenLahti2021 (33)	25 tweets have retweets with a total of 85 retweets	5 tweets have replies	32 tweets have likes with a total of 501 likes	All tweets are in Finnish
@Vastuullisuus (28)	25 tweets have retweets with a total of 51 retweets	No tweet has a reply	10 tweets have likes with a total of 121 likes	All tweets are in Finnish
@lahdenvino (5)	2 tweets have retweets with a total of 2 retweets	3 tweets have replies	3 tweets have likes with a total of 5 likes	All tweets are in Finnish

Table 5. Operationalization and calculations of the concept of connectivity for the handles @GreenLahti2021, @Vastuullisuus, and @lahdenvino, (Author, 2021)

TWITTER HANDLES (NO. OF TWEETS)	HASHTAGS (#)	HYPERLINKS	MENTIONS (@)
	Does the tweet have an additional (to the three hashtags with which the data has been collected) cross-reference symbol(s) (#) referencing a theme?	Does the tweet have a reference to external data (hyperlink)?	Does the tweet include another Twitter handle(s) (@)?
@GreenLahti2021 (33)	25 tweets have additional hashtags	24 tweets have a hyperlink to external data	26 tweets include another Twitter handle, and 1 includes the tweeter's own handle
@Vastuullisuus (28)	27 tweets have additional hashtags	27 tweets have a hyperlink to external data	28 tweets include another Twitter handle, and 23 include the tweeter's own handle
@lahdenvino (5)	No tweet has an additional hashtag	3 tweets have a hyperlink to external data	2 tweets include another Twitter handle
	What kind of a theme? Environmental focus, societal focus, economic focus, or something else?	Is another tweet embedded into the tweet?	
@GreenLahti2021 (33)	15 of the additional hashtags have an environmental focus, 2 have a societal focus, and 8 something else	4 tweets have an embedded tweet from the same handle, and 2 tweets have an embedded tweet from another handle	
@Vastuullisuus (28)	8 of the additional hashtags have an environmental focus, 0 have a societal focus, and 19 something else	1 tweet has an embedded tweet from another handle	
@lahdenvino (5)	Only environmental hashtags	No embedded tweets	

After comments like these, it becomes clear that social media has not only made it easier, but has been a crucial tool for organizations to work and collaborate during COVID-19 and within the EGCA 2021 -initiative. Through social media, organizations have reached partners and audiences they otherwise wouldn't have been able to reach. Social media has enabled these actors to take the boundary spanner role of *an entrepreneur* (see ch. 2.3) by allowing them to develop solutions to complex situations, such as not being able to host live-events.

When asked about social media as a tool for creating linkages with other organizations and gathering new information, R-3 responded that

“Every now and then, we have developed partnerships with other organizations through social media. For the most recent partnership [that developed through social media], basically no marketing towards the other organization was done by us. Organizations are starting to recognize us through social media more and more.”

After asking how this one partnership specifically took shape, R-3 elaborated that there was an existing personal connection between the two organizations, but the other organization became convinced that the partnership could amount to something only after studying the interviewee's organization on social media. This shows that even if partnerships are seemingly forming through social media, personal and real-life connections play a part in the development of partnerships. It also shows, however, that social media is a platform for organizations to show their expertise and can act as an environment where potential partnerships are sought after. Partnerships that would not otherwise have formed can take shape through social media.

Additionally, a question about the interviewees' utilization of social media platforms' algorithms was asked. All the interviewees said that, firstly, they recognize the existence of the algorithms, and secondly, that they are trying to utilize them to maximize the reach and visibility of their posts on social media. R-2 commented:

“I am very conscious about the algorithms on social media. I have even posted instructions to my followers about the way Instagram's algorithm works and how they can act in order to bring more visibility to my posts.”

5. Conclusions & Discussion

This chapter goes through the sub-questions first and concludes on the main research question while simultaneously connecting the results to the theoretical framework in chapter two. Finally, the chapter discusses the results in a wider context and proposes a new direction for future research on this topic.

5.1 Conclusions

In answering the first sub-question, the elements of social media logic were analyzed and categorized in chapter two and section 3.3.1. The categorization follows a literature review and dissects the concept of social media logic into four parts of datafication, programmability, popularity, and connectivity. By dissecting an abstract concept to its constituent parts, the intention was to create a foundation with which the *use* of social media logic can be analyzed with a structured approach. While such a categorization was made and used in this study, social media logic can be dissected into even smaller and better organized units: My categorization should not be viewed as restrictive, but can be restructured and elaborated. With the constant and rapid evolution of social media (Dhingra & Mudgal, 2019), the concept of social media logic ought to evolve from the one I'm presenting in this paper.

By using the dissected and operationalized social media logic elements, a quantitative content analysis of the use of the elements within the EGCA 2021 -initiative was conducted to answer the second sub-question. In calculating the frequencies of different functional operators (i.a. hashtags) and then assigning these frequencies to the Twitter-handles of *@GreenLahti2021*, *@Vastuullisuus*, and *@lahdenvino*, the aim was to examine the use of the functional operators in the chosen context. Through this analysis, all the different individual and team boundary spanning roles and actions (ch. 2.4) were recognized among the mentioned Twitter-handles. Different actors take different boundary spanning roles on social media according to the use of social media logic elements. For example, *@GreenLahti2021* has the role of *a communicator*, and according to Marrone's (2010) team boundary spanning typology, *represents* and *coordinates task performance* (see ch. 2.3 & Table 1) about the EGCA-initiative for external actors, whereas *@Vastuullisuus* takes the roles of *a coordinator* and *reticulist*. Following Marrone's typology, *@Vastuullisuus* provides *general information search* in the EGCA-initiative. *@lahdenvino*, even though being among the most active tweeters with the chosen hashtags, is clearly less active than the other two handles. However, with its presence in the analysis, *@lahdenvino* highlights the multi-sectoral nature of the EGCA-initiative and the possibilities of boundary spanning on social media.

To answer the third sub-question, three semi-structured interviews were conducted. The interviews highlighted that social media can act as an environment where new partnerships are founded and where events are held when physical proximity is restricted. The interviews also evidenced that organizations use the logic of social media to their advantage by utilizing the elements of the logic. Organizations link certain actors and content together by using hashtags, mentions, and hyperlinks and take certain roles in the social media environment. This is in line with the conclusions by Verdegem & D'heer (2017). Social media users use language, formats, and functions that "work" online. Consequently, a new dimension is added in the roles of boundary spanners. It is not enough to be a communicator who excels in social situations, but one has to be a competent user of the technology that mediates the communication, coordination, and other work boundary spanners do. Organizations can utilize social media, as described by R-3, as a platform for interorganizational collaboration and boundary spanning, but this requires certain skills and knowledge about social media logic.

Finally, to get back to the main research question, I suggest that social media logic influences the nature of boundary spanning in interorganizational collaboration. Firstly, different roles of boundary spanning become visible through social media and datafication (ch 2.3.1). Without a platform that can be publicly and quantitatively analyzed, the different roles of boundary spanning are more difficult to recognize. Therefore, different boundary spanning roles can be consciously assigned to different organizations which can, then, be useful in creating more effective interorganizational collaboration procedures where the roles of specific organizations are clear in *defined processes* (ch. 2.2). Secondly, the mediating effect of social media platforms in interorganizational collaboration seems evident. Actors are using certain patterns in their communication to utilize algorithms that steer the flow of information and interaction in order to give other actors *access to resources* (ch. 2.2 & 4.1).

5.2 Discussion

Social media is an environment that should be critically studied as its penetration into our daily lives increases (Brough et al., 2020; Dittes & Smolnik, 2019). This study is just a scratch on the ways social media logic can influence boundary spanning and, more broadly, human interaction and relationships. This study has deficiencies in the ways data have been collected and the extent of the data: Different cases, not just the EGCA-initiative, and a wider variety of hashtags would be included in a more comprehensive work. Multiple social media platforms, not just Twitter, should be included to get a better understanding on the effects that are highlighted in this study. The boundary spanning activity on social media should be connected to activity outside social media to get a more holistic view on the effect of social media logic on boundary spanning.

The results also point to a research topic about the use of language on social media and boundary spanning. All handles, excluding *@EuropeCECI* (an EU organization's handle), are Finnish organizations. Additionally, all the 66 tweets included in the content analysis were in Finnish. Put simply, only the Finnish organizations and audience could take part in the social media discussion. However, foreign participants could have had access to that discussion by using automatic language translations provided via algorithms. The use of such automated algorithms can be considered as a part of some interpretive and translating roles of boundary spanning, but their potential use also raises a question: Who is responsible if an algorithm translates a message wrong and the intention is misinterpreted?

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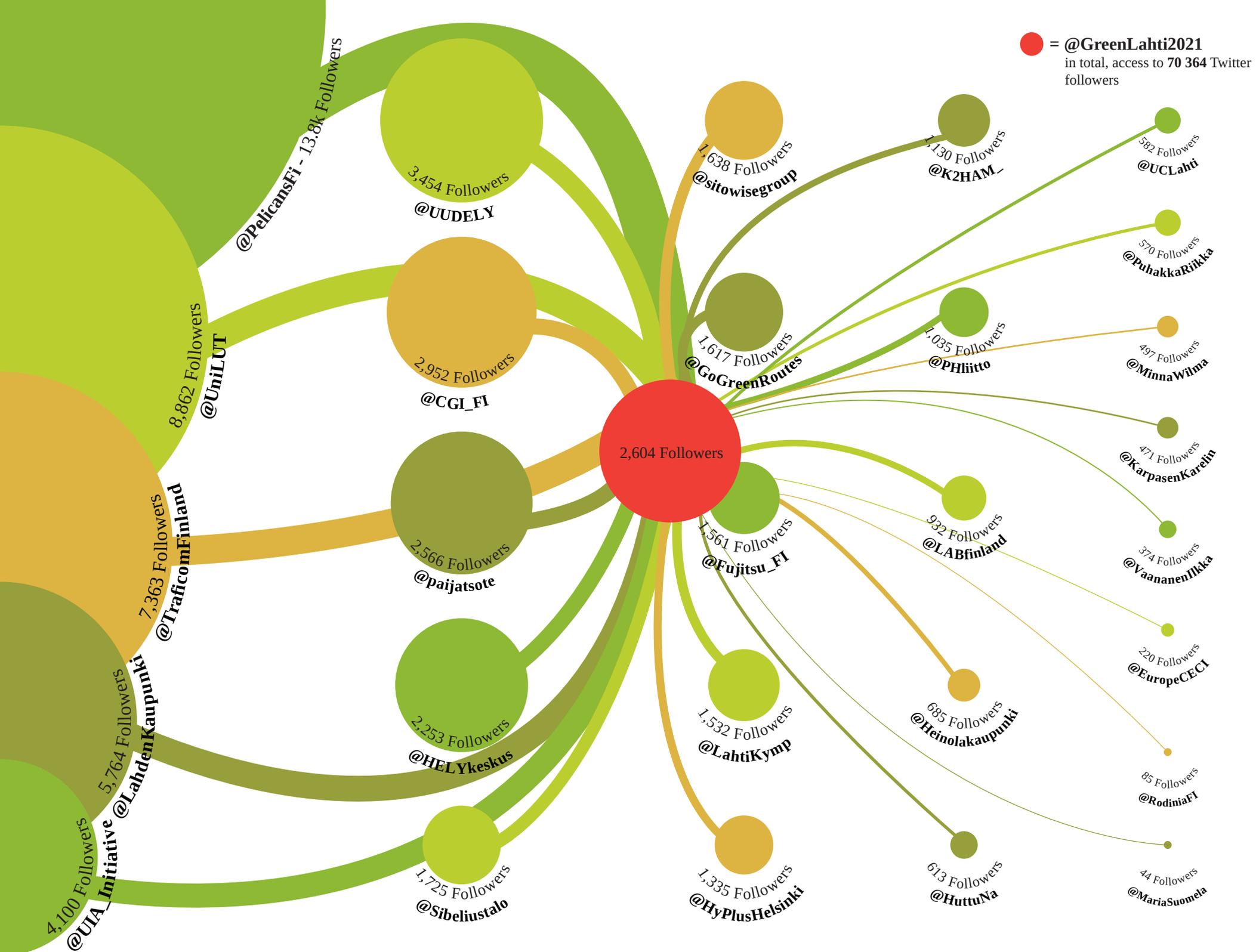
Appendices

Appendix 1 (on the next page) Ecosystem of Organizations

To illustrate the ecosystem of organizations and map out the existing boundaries between organizations within the EGCA 2021 -initiative, a simple Twitter network illustration was created using the Twitter handle @GreenLahti2021 (the official EGCA 2021 Twitter handle) as the center piece of the initiative's Twitter network. Through this illustration, insight is given into the possibilities for boundary spanning on social media within the EGCA 2021 -initiative. Illustration such as this can be of use for organizations when thinking of potential collaboration partners.

The Twitter handles shown in the illustration are all the handles the account @GreenLahti2021 mentioned in their tweets collected for this study. This is, of course, just a small sample from the network of @GreenLahti2021, but works for the purpose of illustrating a part of the ecosystem within which the EGCA 2021 is operated.

In the illustration, the size of a "blob" (circle) and the size of the link between that blob and the central red blob represent the number of followers that that greenish blob (Twitter handle) has on Twitter. The larger the blob and the link, the more followers that blob has. Additionally, the larger the blob and the link, the more potential there is for spreading information and knowledge. Following this rationale, @GreenLahti2021 has the most potential to reach people and span boundaries through Twitter by collaborating with @PelicansFI (a Finnish ice-hockey team) on the top left. The handle @ValtteriBottas (a Finnish F1-driver) with about 831 600 followers was left out of the illustration because it would skew the proportions of the blobs in a way where visualization becomes difficult.



Appendix 2 Content Analysis Codebook

483 tweets with hashtags #EGCA2021; #ympäristöpääkaupunki OR #greencapital between 12.3. and 12.4.2021 have been collected and 66 of them are coded for the content analysis from Twitter accounts @GreenLahti2021, @Vastuullisuus, and @lahdenvino.

Only the sub-categories of *popularity* and *connectivity* of the concept *social media logic* are included in the coding because they are the most applicable for operationalization. Operationalization is in part following the works of Enli & Simonsen (2018) and Verdegem & D'heer (2017), but includes inductive coding to connect this study's concepts more coherently.

Variable	Definition	Coding Rules
		Which organization is the (re)tweeter? 0 @GreenLahti2021 1 @Vastuullisuus 2 @lahdenvino
<i>Popularity</i>	Steering a user's experience of a platform and the interactions on it by endorsing popular ideas and people over others via algorithms and marketing. <i>*the frequencies of the retweets, replies, and likes are also calculated and shown in ch. 4</i>	Is the tweet a retweet? 0 No 1 Yes Does the tweet have retweets?* 0 No 1 Yes Does the tweet have replies?* 0 No 1 Yes Does the tweet have likes?* 0 No 1 Yes
<i>Connectivity</i>	The affordance of social media platforms to connect content to user activities and advertisers.	Does the tweet have an additional (to the three hashtags with which the data has been collected) cross-reference symbol(s) (#) referencing to a theme? 0 No 1 Yes ↳ What kind of a theme? 0 Environmental focus 1 Societal focus 2 Economic focus 3 Something else Does the tweet include another Twitter handle(s) (@)? 0 No 1 Yes Does the tweet have a reference to external data (hyperlink)? 0 No 1 Yes Is another tweet embedded into the tweet? 0 No 1 Yes, a tweet from the same handle 1.1 Yes, a tweet from another handle Is the tweet in Finnish or in another language? 0 Finnish 1 Another language

Appendix 3 Semi-structured Interview Guide ~30min

Introduction (2min)

1. Thanking the interviewee for their time
 - i. Ask about recording and using the recording as data for my research
 - ii. Explaining structure and the timetable of the interview
 - iii. Introducing my research and myself
2. Who are you? Tell me about your organization and about your role in it.

EGCA 2021 Lahti & Interorganizational collaboration (2min)

3. Is your organization collaborating with other organizations due to/within the initiative?
4. What is the main way of collaboration between your organization and other organizations during this initiative? (physical meetings or social media or something else)

(Use of) Social Media (5min)

5. Is social media viewed as a valuable tool to communicate, share information, find new partnerships, or/and influence in your organization?
6. Have social media platforms enabled collaboration between your organization and other organizations during the EGCA 2021 year?
 - i. Could you have managed to collaborate the way you wanted without social media during this year?

Social Media Logic & Boundary Spanning (10min)

(I'll explain the concept of social media logic and boundary spanning in my research)

7. What kind of tweets get the most views or have the most impact in your opinion?
 - i [Short/long, pictures/no pictures, full of hashtags/no hashtags, emojis/no emojis, etc.]
8. Can you describe your organization's follower base on Twitter?
 - i [Idea is to get an idea who are the people seeing the tweets: New, unfamiliar people, or the people who already know everything about the posted topics? → If only your own circle sees the posts, no real boundary spanning is happening.]
9. Does your organization use social media to search for the contact information of a potential collaboration partner?
 - i An example: I used Twitter with certain hashtags to find the most relevant actors in the EGCA 2021 -initiative. I found @GreenLahti2021. Then I found a project manager from Lahti for an interview.
10. Have you/your organization made new, external connections during this year based (only) on social media algorithms, such as recommendations and suggestions?
 - i. If yes, how has that connection come about ("people to follow", "topics to follow", "suggested friends")? [Probably hard to know/remember, but in general]
11. Have you/your organization gotten new, external knowledge/ideas during this year based (only) on social media algorithms, such as "topics to follow" on Twitter?
12. Can you name some functionalities of social media that are useful for you/your organization to connect with external actors/organizations?
 - i. [Retweets, linked accounts, suggested contacts... I'll help by bringing up some data from my quantitative content analysis: this and this many retweets, linked accounts. Answers about other platforms than Twitter are to be expected also]
13. In your organization's communication in social media, are you trying to benefit from the algorithms of the platform, so that your organization can get more visibility, influence, etc?

i.[An example: YouTubers are openly asking for people to like, comment, and subscribe on their videos so that YouTube's algorithm "picks up" the content more and starts recommending it for other people.]

14. Has your organization paid for a social media platform to promote your content/agenda?
 - i. Why?
 - ii. Has that resulted in new collaboration partners? iii. [Not sure if I can get an answer to that, but worth a try]
15. Does your organization use any automated program to publish tweets on Twitter?
16. What negative sides do you see in social media platforms regarding collaboration, information sharing, and communication?
 - i. [Ephemeral communication, restricted format, completely public] ii. [They obviously see the positives of social media if they are on social media, that's why the asymmetry in the question]

Conclusion (5 min)

17. So, if I understood you correctly, ... (summarize the most important points).
18. Do you have any contacts you would recommend interviewing?
19. Is there something else that you would still like to mention?
20. Thanking the interviewee
 - i. Asking if he/she would like to receive the final version of the thesis
 - ii. Contact me for further questions

OBS! Some deviations were made from the guide structure to make the interviews flow naturally and giving the interviewees space to elaborate on their views.