FRAMING 5G: HOW 5G ISSUE IS FRAMED BY STAKEHOLDERS IN THE FINNISH MEDIA

Jyväskylä University
School of Business and Economics

Master's Thesis

2020

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Subject: Corporate Communication
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JYVÄSKYLÄN YLIOPISTO
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ABSTRACT

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Title	
Framing 5G: How 5G issue is framed by stakeholders in the Finnish media	

Subject	**Type of work**
Corporate Communication	Master's Thesis

Month and year	**Number of pages**
July 2020	54 + appendix

Abstract

5G networks are central for society where remote work and digital services require reliable network connections. Thus 5G will enable new solutions in the near future, and provides a case example through which to research how technological issues are presented in the media and who takes part in the process.

This study researched through quantitative framing analysis and qualitative content analysis how is the issue of 5G framed by stakeholders in the Finnish media. The research question was answered by analysing news pieces that were collected from seven Finnish media outlets.

The research found that the economic consequences frame was used most often followed by the responsibility frame, the conflict frame, and the human interest frame. The morality frame was used the least. Also three additional frames were found. However, only the use of the responsibility frame and the morality frame showed statistical difference per media outlet so more research is needed to determine whether these results can be applied to whole population. The main stakeholder groups were technology companies, teleoperators, and Finnish and foreign governmental entities.

This study only inspected the framing choices and issues management in 5G-related news. The effects of framing on media audiences were not examined. It must be noted that significant amount of the data covered Nokia which may have affected the results.

Place of storage
Jyväskylä University School of Business and Economics

TIIVISTELMÄ

Tekijä Seppälä, Aino Karoliina	
Työn nimi Kehyksessä 5G: Sidosryhmien 5G-aiheiset kehykset suomalaisessa mediassa	
Oppiaine Viestinnän johtaminen	**Työn laji** Maisterintutkielma
Aika Heinäkuu 2020	**Sivumäärä** 54 + liitteet

Tiivistelmä

5G-verkot ovat digitalisaation kannalta keskeisiä mahdollistaen uusia ratkaisuja ja liiketoimintamalleja. 5G on tapaus, jonka kautta voidaan, tutkia miten teknologia esitetään mediassa ja mitkä sidosryhmät osallistuvat prosessiin.

Tämä tutkimus selvittää kvantitatiivisen kehysanalyysin keinoin ja laadullista sisällönanalyysiä käyttäen, miten eri sidosryhmät kehystävät 5G:tä suomalaisessa uutismediassa. Tähän tutkimuskysymykseen vastataan aineistolla, joka on kerätty seitsemästä suomalaisesta uutismediasta.

Taloudellisten vaikutusten kehys esiintyi aineistoissa useiten. Sitä seurasivat vastuullisuuden kehys, kofliktikehys sekä ihmisläheisyyden kehys. Moraalikehystä esiintyi aineistossa vähiten. Tutkimuksessa löydettiin myös kolme uutta kehystä. Vain konflikti- ja moraalikehysten tapauksessa esiintyi tilastollisesti merkittäviä eroja eri medioiden välillä. Uutisissa esiintyivät usein sidosryhmäkategoriat: teknologiayritykset, teleoperaattorit sekä suomalaiset ja ulkomaalaiset valtiolliset toimijat.

Tässä tutkimuksessa keskityttiin kehystämiseen sekä kysymysten (*eng. issue*) hallintaan. Kehystämisen vaikutuksia ei tarkasteltu. On huomionarvoista, että merkittävä osa aineistosta käsitteli Nokiaa, mikä on voinut vaikuttaa tuloksiin.

Asiasanat
uutismediat, kehystäminen, kysymysten hallinta, 5G, teknologiaviestintä

Säilytyspaikka
Jyväskylän yliopiston kauppakorkeakoulu

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1 INTRODUCTION

5G networks are a networking solution that are in the centre of digitalization in the societies within the European Union and expected to become crucial for competition in the global market (NIS Cooperation Group 2020). In a sense, 5G is not just a technological solution that will replace 4G. Instead, with its extremely low latency and high capacity, 5G provides a connection for technological advances in the society that have not been possible earlier, such as remote surgery (see Kaleva 2018).

The adoption of national 5G networks is a public policy that raises discussion also in Finland. The fact that the issue has gained the interest of mainstream news media shows that it is perceived significant for citizens: the news media traditionally reports events that are frequent, entertaining and verified as well as policies that need to be discussed or issues that require solutions or mobilizing of the public (Galtung and Ruge 1965; Weaver, Willnat & Wilhoit 2019). The news media coverage also speaks for the interest of the public: topic has been visited by media outlets varying from national newspapers to commercial tabloids and local news (see HS 2018; YLE 2019; Iltalehti 2020).

However, often the interest citizens have towards public policies is merely instrumental and thus linked to the effects the policies have on individual life, communities or the society that the person lives in (Page, Shapiro & Dempsey 1987). Thus it could be argued, that when it comes to new technology, often when citizens see how technology affects their lives and take interest in the matter, decisions about the policies have already been made.

Therefore it can be suggested that in order to allow individuals enough time to get to know and influence public policies that relate to new technology, a study that examines how the topic is presented in media and which stakeholders take part in shaping the issue would benefit the whole society. Stakeholders are "groups and individuals who can affect or are affected by the achievement of an organization's mission" (Freeman 1984, 52). News media is a suitable platform for this research since it has been proven to have an effect on how people think (Cohen 1970; Entman 2007; Wanta, Golan &Lee 2004). The news media has also traditionally been seen as the "voice of the public" especially in political and democratic context (Cohen 1970, 32; Page et al. 1987; de Vreese 2005). However, a fresh perspective would be to research, is the news media giving the public a voice in the matter of 5G? Who are the stakeholders participating in the news

media? This research also examines, although briefly, who do citizens take part in managing the technological issues or are they merely the receivers of the information?

From the companies and corporate communications point of view, the topic is also worth researching. As mentioned, 5G networks are central for digitalization and will enable new solutions and business models in the near future. The technology therefore has strong connections to economy. 5G is not only technology that will shape businesses but it provides a case example through which can be researched how technological issues are presented in the media and which stakeholders participate in the process. Such research will help corporate communication professionals communicate about issues such as 5G themselves or find the right stakeholders to influence and build relationships with (see Zerfass & Viertmann 2017) in order to get their message through to the public. Technological advancement has also caused resistance in the past, which means that corporate communication may also be needed to retain company's reputation and equity (Laskin 2011; Black, Carnes & Richardson 2000). By doing so, corporate communication can carry out their main mission: supporting organizational goals (Wright 1998).

It is often impossible to discuss the process of news content production without mentioning framing which is why framing analysis provides one theoretical framework for this study, as it has done for a large number of studies on media content and the relationship of media, corporate communication professionals and the public (Hallahan 1999; deVreese 2005). Framing is used to contextualize information quickly into a comprehensible form in which people can benefit from it as well as to persuade the audience to take action (Hallahan 1999; Zoch & Molleda 2006). deVreese (2005, 53) defines frames as the "emphasis in salience of different aspects of a topic". In other words, a frame is used to highlight a part of an issue that is viewed as more important than its other aspects. According to Reese (2001, 25), by framing "we specifically study how our social understanding is structured and how these understandings are tied to interests".

This study approaches the research material deductively by using pre-determined frames (deVreese 2005): the conflict frame, the human interest frame, the economic consequences frame, the morality frame, and the responsibility frame by Semetko and Valkenburg (2000) who have suggested that these frames should be further studied abroad. This research answers the need by applying

the frames to Finnish news media. In addition, some inductive frames are presented in findings. These are frames that arose from the data but did not match the predetermined questions and requirements that relate to the five frames by Semetko and Valkenburg (2000).

To support the framing theory, this research examines how the issue of 5G is framed by stakeholders through the concept of issues management. Issues are "rhetorical problems, contestable matters of fact, evaluations or policies" that evoke different opinions which may "result from or lead to a legitimacy gap" (Heath 2006, 81). Whereas framing provides an angle to how the issue of 5G is presented, issues management sheds light on who are the stakeholders presenting and managing the issue. Issues management allows corporate communication professionals to monitor topics important to their organization (Heath 2006). In the case of 5G, this monitoring helps to determine who are the relevant stakeholders to build relationships with. In addition, issues management may be used to manage risks and build an organizational image (Tucker, Broom, Caywood 1993; Heath & Palenchar 2009) which in turn answers the corporate communication professionals need to maintain corporate reputation.

This study aims to research how the issue of 5G is presented in the media and who are voicing the issue in order to fill both the need of society and that of the field of corporate communication presented earlier. The topic is studied through answering the following research question and the supporting sub-questions:

> *RQ 1: How is the issue of 5G framed by stakeholders in the Finnish media?*
>
> *RQ 1.1: What are the frames most commonly used?*
>
> *RQ 1.2: Does the use of frames in 5G-related news reports vary depending on the news media outlet?*
>
> *RQ 1.3: Who are the stakeholders managing the issue, what frames do they use, and why do they use them?*
>
> *RQ 1.4: What is the tone of news media coverage on 5G in Finland?*

The study aims to answer the aforementioned research problem by the means of quantitative framing analysis and qualitative content analysis on Finnish news media reports about 5G. The research data is collected from seven media outlets that the researcher selected so that they would provide a comprehensive representation of the Finnish news media landscape. The study focuses on researching who are the stakeholders managing the issue and what are the frames used in 5G-related news. When it comes to framing, this research does not aim to explain the effects of framing but instead focuses on which frames are used by which stakeholders.

This master's thesis is structured as follows: first the theoretical framework will be visited. Second, the methodology used to gather and analyse the data will be explained after which the study will move on to results. This master's thesis will conclude with a discussion and conclusion section that includes implications for businesses that create and use new technology, and for the society in whole.

2 THEORETICAL FRAMEWORK

Before moving on to the theories of issues management and framing, the news media and media relations are briefly discussed. This is done in order to provide context into the news processes to which the theories are later in this study applied to, and to understand the role of corporate communication professionals in this process.

2.1 News media and media relations

News media goes through a journalistic process when producing news. In addition to writing, the process includes selecting the events that become news, collecting information from documents and people for example citizens and public relations (PR) professionals, and checking facts (Galtung & Ruge 1965; Weaver et al. 2019). Therefore, public relations professionals have a role in the journalistic process. Many of the tasks of news media have remained unchanged for decades but some changes have been brought by, for example social media that has increased the two-way interaction between journalists and their audience (Weaver et al. 2019).

Journalists can use information provided by public relations professionals. In turn, public relations professionals use news media to reach out to their audiences. In the early years of public relations in the 1950's the profession was mainly seen as a tool for influencing the media with larger campaigns as well as with daily activities such as bulletins. The area of public relations has since shifted to be viewed as a strategic management function that includes two-way communication between PR professionals and their audience in which news media are one channel among others. (Grunig, Grunig & Dozier 2006.)

Christensen and Cornelissen (2011) have suggested that corporate communications should loan more from organizational communication and thus widen the discipline from communication activities to relationships with stakeholders. In this study, public relations are therefore viewed as a part of corporate communication. Covering only the public relations activities would create a narrow perception of corporate communications as a profession. That is why this research will now on refer to also PR professionals as corporate

communication professionals and examine both the communication activities and the stakeholder perspective.

2.1.1 Functions of corporate communication

According to literature review by Zerfass and Sherzada (2015, 301), communication affects the success of a corporation "by messaging, by supporting operational activities, by building up reputation, brands, and cultures (outbound activities), and by monitoring public opinion, identifying issues, and outside perspectives, which can help adjust strategies and secure room for manoeuvre (inbound activities)". The ultimate aim of corporate communication is to help the organization to achieve its goals. It has been stated that corporate communication provides the most value, also in a monetary sense, for organization when its efforts are in line with the organizational goals and corporate communication professionals are present in the decisive functions e.g. the management group of the company (Wright 1998; Grunig et al. 2002), although communication professionals seem to still lack the decision making position in many organizations (Brønn 2014; Zerfass & Sherzada 2015).

Researchers have pointed out that corporate communication does not operate in a vacuum, quite the opposite, its actions affect and are affected by several stakeholders (Christensen & Cornelissen 2011) that are "groups and individuals who can affect or are affected by the achievement of an organization's mission" (Freeman 1984, 52). Thus the stakeholders do not only consist of shareholders that the management board answers to but include also groups like employees, customers, politicians, and mass media (Zerfass & Viertmann 2017). The relationships with these stakeholders are established and maintained by communication and they are considered to affect, for example, the reputation of the company (Brønn 2014). It can be argued that these relationships are crucial in the work of corporate communication professionals and affect how well the function is able to support organizational goals.

For the purposes of this research, the terms stakeholder group and stakeholder should be separated. This research refers to stakeholder groups when referring to a type of organisation e.g. media or technology companies. For example the news media Helsingin Sanomat would be a stakeholder that belongs to a stakeholder group called media. This classification will be used throughout the study.

Building and maintaining relationships is one dimension that corporate communication professionals use to support main organizational goals. Although not always, the stakeholder relationship is often characterised by mutual benefit (Grunig, Grunig & Dozier 2006). For example when building relationships with investors, corporate communication professionals help investors, via news media or directly, to understand and evaluate the financial situation of the company and at the same time the company gets to narrate its future and by doing so may improve the stock price (Laskin 2011; Duhé 2009). In addition to mutual benefit, stakeholders are increasingly demanding transparency and have grown to expect open dialogue with the corporate communication professionals (Melgin, Luoma-aho, Hara & Melgin 2017).

In addition to building relationships, corporate communication maintains the reputation of an organization. Research has shown that shortcomings may not affect the company as harshly and it can maintain its legitimacy in times of crisis if the company has appeared to act responsibly in long-term. (Laskin 2011; Zerfass & Viertmann 2017.) According to the study by Zerfass and Sherzada (2015), almost all top executives believe that news coverage in mass media has an influence on company's reputation. Thus by cooperating with journalists corporate communication can monitor and affect the reputation of the company and by doing so support the main organizational goals.

Corporate reputation is also connected to company's equity and financial performance for it affects how investors view the company (Black, Carnes & Richardson 2000) which makes the concepts of stakeholder relationships and reputation intertwined. It has been suggested, that at least in the Nordic context, key targets of investor relations function in a company are building reputation, managing expectations and reducing the asymmetry of communication (Melgin et al. 2017). Through the processes of communicating via shareholder meetings, annual reports, and also financial statements distributed via news media, the investor relations function has been proven to shape corporate reputation and make the company more likely to e.g. increase earnings per share or experience increase in market value. (Duhé 2009.) Communication with the investors is tightly regulated but research has shown that they can be influenced. For example positive stories distributed via mass media are believed to prime positive relationships with investors (Melgin et al. 2017.)

In addition to investors, financial analysts are a stakeholder of especially listed companies that are often quoted in news media. Thus they are one of the key channels that organizations communicate their messages in order to e.g. support the market value of their stock. Best results are received when investor relations have timely dialogue with the analysts when needed and when the interaction is beneficial for both sides. (Laskin 2011.) Also internal stakeholders such as managers of other corporate functions expect corporate communication professionals to handle these external communications (Wright 1998).

Although communication plays a key role in forming and maintaining the relationships with stakeholders, also other functions within the company take part in the process (Grunig, Grunig & Dozier 2006). Nowadays, stakeholders are also less controlled by companies as they have access to platforms that organizations do not control. As a cause, corporate communication and the stakeholder relationship have shifted to be less about the company and more about mutually interesting issues. (Luoma-aho & Vos 2010.) Issues and their management will be covered later in this study.

2.1.2 The relationship of journalists and corporate communication professionals

In order to manage the reputation of the company, corporate communication professionals cooperate with news media because it has traditionally had a significant influence over how the public views companies and forms images of issues (Galtung & Ruge 1965) and it has been a good channel for reaching various stakeholders (Zerfass et al. 2016) such as previously mentioned investors or potential investors. In addition, corporate communication functions utilize mass media for monitoring issues and public opinion, as a source for internal communication, and produce content in cooperation with journalists (Zerfass, Verčič & Wiesenberg 2016). Since news are one of the most visible results of communication activities, this is also an aspect that the managers often highlight when asked about the responsibilities of corporate communication although within the relationship gaining journalists' trust is often seen as more important than influencing their decisions (Wright 1998; Zerfass and Sherzada 2015).

This chapter does not aim to thoroughly explain the journalistic process or the process of news production, since this research has been conducted from the corporate communication point of view. Instead the focus of this chapter is on

briefly describing some key parts of the journalistic process. News media, that is in the focus of this study, belongs to traditional mass media which has been dominant for the past century (Zerfass et al. 2016). The journalists in the USA have reported their roles to include e.g. investigating government claims, discussing policies, serving in adversarial function for both companies and governments, providing entertainment, presenting solutions and mobilizing the public, providing verified content, and setting political agendas (Weaver et al. 2019). Depending on the organization, several of these roles by Weaver and others (2019) overlap with the interests of communication professionals working in companies (e.g. adversarial function), governmental institutions (e.g. investigating claims and setting political agendas) as well as in NGOs (e.g. mobilizing the public).

As mentioned, corporate communication aims to build and maintain relationships with stakeholders and, although they are not always mutually beneficial (Grunig, Grunig & Dozier 2006), corporate communication professionals have formed ties with news media in order to cooperate in a manner that would benefit both parties. From the corporate communication point of view, in order create mutual benefit, interaction with news media should be timely and based on the principle of quality over quantity (Laskin 2011).

Research has shown that there are certain editorial policies that journalists often follow when selecting events for news. According to Galtung and Ruge (1965) these editorial policies include, for example, that the news media often selects to report events that are frequent and if the news piece includes private individuals they are more likely to be presented in a negative way than those who have a higher status. It can be argued that knowledge of the media's ways of working can benefit corporate communication professionals. For example they can provide information that news media is more likely to view worth reporting.

When seeking to manage the corporate reputation, the corporate communication professionals can be seen to manage issues that relate to their organization. Often these issues are present in news media. It has been stated communication practitioners report issues management to be among their most important practices within the company (Brønn 2014). Issues management is soon examined in more detail.

2.1.3 News media and media relations in this study

This study examines content published in news media which is why other traditional mass media as well as new media such as social media platforms are not covered. This study aims to research how is the issue of 5G framed by stakeholders in the Finnish news media. In this context the news media is the platform for data collection but news media may also appear as a stakeholder. In this study actors cited in the news pieces are generally referred to as stakeholders without determining whose stakeholders they are. In a sense, they are all gathered around the same issue, 5G, and thus have stakes in how the 5G networks will be built and used in Finland.

The notions previous research has made on the cooperation between journalists and corporate communication professionals are used to explain, provide context for and to support the findings presented later in this study. In this study, corporate communication is perceived from the point of view of communication activities and stakeholder relationships, although it must be noted that corporate communication extends beyond these, and is a larger strategic process that supports the legitimacy and survival of the company (Christensen and Cornelissen 2011).

This research examines the choices made by journalists and the stakeholders that participate in 5G discussion. However, the effects their choices have, for example, on public opinion or companies' financial performance, have been left outside of the scope of this study.

2.2 Issues management

Issues management is not credited to a certain public relations expert but is an approach developed together by several academics and public relations professionals. Issues management was created to respond to criticism aimed against organizations and to take part in dialogue with the society. (Heath 2006.) In its early years, the theory has also been backed up by its aim to avoid "discrepancies that may occur between what the organization does and what is expected in society" (Luoma-aho & Vos 2010, 316).

The definition of the concept of issues management has varied depending on the focus of the research (see Table 1). According to Heath (2006, 65;79) the definition of issues management reflects how the researches define the whole concept of public relations, and thus it should be seen as a strategic function and defined as "the management of organizational and community resources through the public policy process to advance organizational interests and rights by striking a mutual balance with those of stakeholders". Cutlip, Center & Broom (2006) on the other hand have approached issues management from the process point-of-view and highlight that it should be proactive in nature. Palese and Crane (2002, 284) in turn have studied issues management in relation to leadership and stated that issues management is "leadership process that defines the strategic common ground between a company and its key audience".

Table 1. Defining issues management

Definition	Focus	Reference
"Proactive process of anticipating, identifying, evaluating and responding to public policy issues that affect organizations and their publics."	Issues management is a process. Highlights proactivity.	Cutlip, Center & Broom (2006, 16)
"Leadership process that defines the strategic common ground between a company and its key audience."	Adds leadership and highlight that issues management should thus be strategic.	Palese and Crane (2002, 284)
"The management of organizational and community resources through the public policy process to advance organizational interests and rights by striking a mutual balance with those of stakeholders."	Shift from mere common ground to common resources and seeking mutual benefits.	Heath (2006, 79)

Issues management may be used to preserve markets, manage risks and opportunities and build an organizational image and thus benefit organization as well as its primary stakeholders as well as stakeseekers and stakeholders in general (Tucker, Broom, Caywood 1993; Heath & Palenchar 2009). With issues management, organizations may discover and monitor topics that may affect

their policies, ensure the effectiveness of their corporate social responsibility actions, and counter and respond to critics early on (Heath 2006).

The process of issues management includes "anticipating, identifying, evaluating and responding to public policy issues that affect organizations and their publics" (Cutlip et al. 2006). Strategic issues management combines tools from strategic business planning, the monitoring of issues and corporate social responsibility activities and uses these to build a mutually beneficial relationship between an organization and its stakeholders by the means of dialogue (Heath & Palenchar 2009). It is also a part of corporate communication to present media with information that the media may choose to use and thus aid the news gathering process (Zoch & Molleda 2006).

In practice, issues management makes organizations storytellers that, for example by the means of framing, that will be examined later, aim to justify their existence (Heath 2006). Thus one actor of issues management are naturally the businesses and especially their corporate communication professionals who aim to define the reality in which the organization exists and its legitimacy (Hallahan 1999). One form of defining this reality is the efforts organization has on maintaining the relationship with the media (Grunig et al 2002). Although corporate communication is not just about media relations, the relationship with the media is often seen as a crucial part of the work (Grunig, Grunig & Dozier 2006; Zoch & Molleda 2006).

However, the critics of issues management have noted that the approach may also be used to promote relative truths or used for manipulative purposes (Heath 2006) which undermines the main purpose of strategic issues management: building mutually beneficial relationships between organizations and the public (Heath & Palenchar 2009). Luoma-aho and Vos (2010) have suggested that issues management does not fully reflect the dynamic environment in which corporations form and manage relationships with their stakeholders and have as a solution suggested that instead of recognizing the key stakeholders, companies should begin with recognizing key issues that are relevant for both the organization and the stakeholders and the arenas on which they are already discussed. Since the concept of stakeholders is central to issues management, the topic will next be visited more thoroughly.

2.2.1 Issues management and stakeholders

Issues management consists of dialogue between the company and its stakeholders. As mentioned in the section on news media, traditionally stakeholders have been referred to as ″groups and individuals who can affect or are affected by the achievement of an organization's mission″ (Freeman 1984, 52). In the context of issues management stakeholders are ″persons who have some interest in a matter, problem, risk or other concern -- any persons or groups that hold something of value that can be used as rewards or constraints in exchange for goods, services, or organizational policies or operating standards″ (Heath & Palenchar 2009, 16). For example, in the context of 5G issue, these stakeholders may include citizens that are concerned about the safety of the technology, investors that have invested in companies producing 5G technology, or governmental entities that use 5G to manage geopolitical relationships.

The stakeholders in issues management are often referred to as actors which can be seen as an emphasis on their active role in managing the issue. According to Heath (2006) the dialogue between actors and organizations ″consists of voiced expressions of what organizations do and what they should do, and what they prefer as ideology and policy principles″. This study examines this dialogue, but refers to both organizations and actors as stakeholders around the issue of 5G thus keeping the focus on the issue. From that perspective, also corporate communication professionals working in companies can be examined as stakeholders who work to manage the issue of 5G.

Corporate communication operates also on societal level and influences the other organizations and individuals within the society (Grunig, Grunig & Dozier 2006). In that sense issues are managed in cooperation with political stakeholders such as governments and individual politicians. These form political and governmental stakeholder groups like Finnish governmental entities or foreign governmental entities which in turn include stakeholders such as the Finnish government or the president of the Unites States.

Heath and Palenchar (2009, 227) have suggested that media's role in issues management is often perceived to be dominant due to the fact that their views often coincide with those of the public. Journalists can in some instances act as activists but they also have a role as a stakeholder in the process of issues management in the cases when their text is clearly opinionated. The media

stakeholder group can include stakeholders such as news media Helsingin Sanomat or individual journalists.

Issues management is not only a tool for organizations but also for activists (Heath 2006). Activists engage in creating issues and bringing them into the arena of public policy on the grassroots level (Heath & Palenchar 2009) and push organizations to work in a more beneficial way for the society (Grunig & Dozier 2006). Even though activists are typically NGOs also governmental organizations or journalists and other public figures have been known to act as activists when they assume a role of a spokesperson for or against a certain issues (Heath & Palenchar 2009). One form of activist are lobbyist that specialize in affecting legislation and policies and often gain influence from their personal relationships with legislators and regulators (Grunig & Dozier 2006). In this study, no activists were recognized but interestingly some research companies and universities took on similar roles.

2.2.2 Issues management in this study

Issues covered with issues management are typically public policies that are discussed and resolved in the public arena (Heath 2006). Thus it could be argued that issues management provides a well-functioning framework for the purposes of researching how the policy of introducing national 5G networks is presented by the media to the public.

All stakeholders have their role in issues management and thus their existence should not be neglected. In this study, companies are also seen as a one stakeholder among many, who battle on who gets to manage the issue. The battle does not always happen between an organization and activists for it may sometimes be a conflict between activists groups or two governmental entities who seek to find a mutually beneficial solution (Heath & Palenchar 2009). Especially the latter shows also in the results of this study.

The interest towards issues management, framing, and how individuals perceive and interpret societies has created the framing of issues approach (Hallahan 1999; D'Angelo 2002). The concept shares some characteristics with issues management. For the purposes of examining the cooperation between news media and corporate communication professionals, the frames presented in media, and the stakeholders that battle to have their say on the topic, this research

uses the theory of issues management in which framing can then be seen as a tool (see Heath 2006). The next chapter will examine framing in more detail.

2.3 Framing

Framing analysis has been credited to Erving Goffman who uses the term to refer to organization of experience, events that include person's subjective involvement (Goffman 1986; Reese 2001, 7). Unlike issues management which can be seen as a larger discipline than corporate communication in addition to being a function inside it (Heath 2006), framing has been stated to be a part of corporate communication (Hallahan 1999). In that sense it has been suggested that framing can also be seen as a tool of strategic issues management (Heath & Palenchar 2009). Issues management seeks to resolve conflicts between an organization and its stakeholders but with framing organizations may also aim to control the prominence of an issue in media in situations where finding a win-win situation between the parties is not possible. (Hallahan 1999; Grunig et al. 2002).

In previous research, frames and framing have been defined in several ways depending on the focus of the research (see Table 2). Reese (2001, 11) sees that frames provide a tool for organizing events and issues while emphasizing their social aspects and duration. According to Reese (2001, 7) framing is a process of sense-making used by media, journalists and the public. deVreese (2005, 53) shares Reese's notion that frames are used to organize and specifies that the process is done by selecting an aspect of a topic that is highlighted. Hallahan (1999, 207) has continued the idea by stating that "a frame limits or defines the message's meaning" and thus focusing on how frames affect perception. Entman (2007, 164) also points out that since framing includes selection, it does not produce a complete picture of the reality but instead is a subjective perception of the issue.

Table 2. Defining frames and framing

Frames/ Framing	Definition	Focus	Reference

Frames	"Organizing principles that are socially shared and persistent over time, that work symbolically to meaningfully structure the social world."	Emphasis on the social aspect and duration of frames.	Reese (2001, 11)
Frames	"Frames are parts of political arguments, journalistic norms, and social movements' discourse. They are alternative ways of defining issues, endogenous to the political and social world."	Frames create structure.	deVreese (2005, 53)
Frames	"A *frame* limits or defines the message's meaning by shaping the inferences that individuals make about the message."	Frames affect perception.	Hallahan 1999, 207
Framing	"Framing refers to the way events and issues are organized and made sense of, especially by media, media professionals, and their audiences."	Emphasis on the media's role.	Reese (2001, 7)
Framing	"The process of culling a few elements of perceived reality and assembling a narrative that highlights connections among them to promote a particular interpretation."	Framing does not produce a complete picture. Instead it affects subjective perceptions.	Entman (2007, 164)

As the framing concept has gained popularity, its use has grown more inconsistent (deVreese 2005). There are several paradigms of framing which has been viewed both problematic and beneficial for research. Entman (1993) argued that since there is a growing amount of research on framing, the theory should be unified into one clearly defined research paradigm. The notion has since caused resistance as it has been argued that diversity in paradigms leads to more positive outcomes such as comprehensive view of the concept and integrated findings (D'Angelo 2002). de Vreese (2005, 51) separates the studies of framing into three categories: those that focus on framing content, framing effects, or framing as a process. According to D'Angelo (2002) many researchers focus on framing content and thus do not need to choose a paradigm in which to empirically examine framing. However, in order to support the literature

presented earlier about the journalistic process and to explain how frames are selected, this study focuses on both framing content and framing as a process.

2.3.1 Framing as a process

Framing is often seen as a process (Entman 1993; Hallahan 1999; deVreese 2005). De Vreese (2005, 51-52) suggests that the process of framing consists of frame-building, frame-settings, and the effects framing has on individual and societal level (see Figure 1). Hallahan (1999) has argued that there are seven things that can be framed: situations, attributes, choices, actions, issues, responsibility, and news. Frames can be, for example, a way to examine the issue from the economic point of view and describe how it affects a financial situation of an individual or organization, or a way to examine the human interest aspects like how the issue affects the lives of citizens or what experiences individuals have in relation to the issue.

Figure 1. An integrated process model of framing (de Vreese 2005, 52)
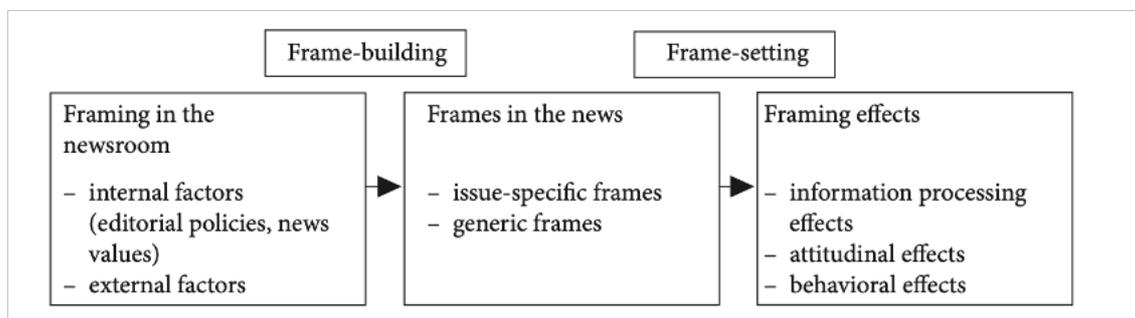
According to de Vreese (2005, 51) "frame-building refers to the factors that influence the structural qualities of news frames" and these factors may be internal or external. Although Entman (1993) does not use the term frame-building, he similarly describes the process of framing to begin from selecting aspects of reality and emphasizing them in text. The frames used in the news may be issue specific or generic (de Vreese 2005) which means that they can be generic and thus applied to all issues such as an human interest perspective, or that they are only used to frame certain types of issues such as 5G could be framed by focusing on the technological characteristics of 5G.

After the frames have been created, they are used for example, to define, identify and evaluate the issue (Entman 1993). In the integrated process model of framing,

the frame-setting phase follows the publication, and includes how the public interacts with the frames based on their personal experiences. The interaction between experiences and frames can be characterized as two-way process: the frames are interpreted based on the previous experiences but they may also lead to learning and thus changes in beliefs and in how future frames will in turn be interpreted. (de Vreese 2005.)

Frames can occur in several steps of communication: they affect the message sender and receiver, the message itself as well as the cultural framework in which it is presented (Entman 1993; Zoch & Molleda 2006). In order for the framing process to take place, there needs to be a medium that has chosen to present and define the problem (de Vreese 2005). In a sense, the message framer sets a window through which a certain view is emphasized by the choices the framer makes (Zoch & Molleda 2006).

The choices in framing may be based on the active processes of journalists, but frames may also be set forth by public relations professionals (Zoch & Molleda 2006), or as Hallahan (1999, 224) describes them "frame strategists who strive to determine how situations, attributes, choices, actions, issues, and responsibility should be posed to achieve favorable outcomes for clients". It should also be noted that even though journalists choose a frame, the process may be affected by their interaction with other actors in the society (DeVreese 2005, 52) such as citizens, colleagues, or politicians that they meet and communicate with.

There have been some concerns, that when selecting frames, one side of an issues may be emphasized on the cost of another. For example, Entman (2007) has pointed out that journalists can produce biased content either by favouring one side (content bias) or due to their own subjective mindsets (decision-making bias). Another problem is news slant which includes intentional framing choices that neglect other sides of an issue and is generally viewed as unethical journalism (Entman 2007; JSN 2011). For example, when it comes to 5G it could be argued that news pieces that question the safety of the technology may attract more readers and thus a journalist may be tempted to write such news pieces instead of interviewing people on both sides.

2.3.2 Framing in this study

In academia, framing has often been discussed together with agenda setting theories. However, several scholars have separated framing from agenda setting. It has been stated that even though these two theories share a common focus, which are the issues important to the public and the press, framing differs from agenda setting in how it is also interested in the ways how the issues are presented (Pan & Kosicki 1993, 70; deVreese 2005, 51). In this research, agenda setting is not applied since the study is focused on framing choices and not effects that are usually examined when using agenda setting.

As framing is a tool for providing context, it is suitable for studying communication in different situations (Hallahan 1999). In this study, two of the targets that can be framed will be inspected: news and the issue of 5G within these news pieces. According to Hallahan (1999, 210) issues are "social problems and disputes [that] can be explained in alternative terms by different parties who vie for their preferred definition a problem or situation to prevail" whereas when framing news "media reports use familiar, culturally resonating themes to relay information about events". For example, it would seem beneficial for technology companies to frame 5G as a safe technology to use and perhaps use the economic frame to highlight that it is a good choice for investments. Governmental entities, on the other hand, might use more frames that are related to responsibility such as who should be responsible for ensuring the safety of 5G or frames of morality such as where are the components of 5G devices produced and are the work conditions in the factories ethical.

In the context of 5G, what is being framed depends on the point of view. 5G can be viewed as an issue and corporate communication professionals as a party who seek to frame it with their preferred terms by emphasizing this view in interviews. 5G can also be seen as news that media aim to distribute information about by framing it in a way that is interesting to the public, for example by using an angle of human interest.

The frames used in media may be studied inductively so that the framing choices are determined by analysing the material, or deductively (deVreese 2005) by classifying the research material by pre-determined frames (see e.g. Semetko & Valkenburg 2000) which is the approach of this research. These predetermined frames by Semetko and Valkenburg (2000) which are the conflict frame, the

human interest frame, the economic consequences frame, the morality frame, and the responsibility frame, have been supported by other studies (see e.g. de Graaf & van der Vossen 2013) which is why they provide more reliable framework for this study than creating new frames that have not been tested or applied to other issues. This study uses the deductive approach.

Responsibility frame is used to frame an issue in a way that attributes responsibility of the issue to a party, often a governmental actor but the responsibility may in some cases be placed on an individual. *Human interest frame* is used to spark emotions and simplify an event or an issue into a human case example. This framing choice is popular for it often makes difficult issues easier to understand and thus has been noted to gain the attention of the public. *Conflict frame* aims to gain interest by making a conflict between two or more parties visible. *Morality frame* features either religious or moral characteristics but, since journalists usually aim for objectivity, the morality frame is usually featured in news citations (meaning parts in news pieces where news media use quoted or otherwise marked statements by stakeholders) or rather than in general news text that describe the issue. *Economic consequences frame* highlights how the issue affects individuals, companies, or nations financially. The frame is often used when the economic consequences of an issue are considerable in a national or global sense. (Semetko & Valkenburg 2000; Neuman, Just & Crigler 1992).

Despite the notion by de Vreese (2005, 52) that frames can either be dependent variables that are affected by the journalistic process and public discussion, or they can be independent in which case they mirror the interpretations of citizens, for the purposes of this study we assume that frames used are all dependent variables and thus do not depend on the individual interpretation of citizens. With this approach we can use the framing theories to examine how is the issue of 5G framed by stakeholders in the Finnish media without needing to explain the effects of these framing choices.

3 METHODOLOGY

This study aims to research through quantitative and qualitative content analysis the research question below. This research question is accompanied by sub-questions that aim to guide the framing analysis:

> *RQ 1: How is the issue of 5G framed by stakeholders in the Finnish media?*
>
>> *RQ 1.1: What are the frames most commonly used?*
>>
>> *RQ 1.2: Does the use of frames in 5G-related news reports vary depending on the news media outlet?*
>>
>> *RQ 1.3: Who are the stakeholders managing the issue, what frames do they use, and why do they use them?*
>>
>> *RQ 1.4: What is the tone of news media coverage on 5G in Finland?*

3.1 Empirical background

5G networks are expected to become essential for companies competing in the global market (NIS Cooperation Group 2020). Finland has gained reputation as a technologically advanced country and a trusted provider of technological solutions. The country is among the first to build commercial national 5G networks (see HS 2018).

The 5G industry is interesting from several perspectives. One of the most prominent is the perspective of safety. Some have been concerned about the radiation that the mobile networks cause although it has been stated by STUK the Radiation and Nuclear Safety Authority in Finland (2020) that the 5G networks have been limited to frequencies that in empirical tests seem shield people against short and long-term health consequences. From this perspective, the main stakeholders interested in the issue seem to be individual citizens and government officials. Another safety perspective is that of national security. European Commission (2019) has stated that since 5G networks will be the backbone of many critical functions in the society, such as banks and health care, they support e.g. the forwarding of sensitive information and thus their security

and resistance for interferences needs to be assured. From the national safety perspective, the stakeholders include, for example, governments and government officials.

In addition, 5G is often examined from economical perspective. According to European Commission (2019), 5G networks are the foundation of digital economies and societies. However, from this perspective the stakeholders are not only governments and EU entities but also companies whose business is related to 5G technology and their shareholders.

As 5G networks will affect lives of many citizens, companies and other organizations, they present a good technological topic for research. By examining the news media as the "voice of the public" (Cohen 1970, 32) it can be researched, are citizens taking part in managing the technological issues or are they just along for the ride as the receivers of the information. In addition, the research provides information for corporate communication professionals who can use it to build relationships (see Zerfass & Viertmann 2017) with the correct stakeholders as well as counter resistance that is often is caused by new technology and by doing so retain company's reputation and equity (Laskin 2011; Black, Carnes & Richardson 2000).

3.2 Data collection

The data for this study was collected online which has been stated to be a challenge for many a researcher since the web content can be updated after publication (Lim 2006). It has been suggested, that a way to tackle this challenge is to "identify the units to be sampled" such as the sample frame, time frame, and unit of analysis (McMillan 2000; Han, Lee & McCombs 2017). For this reason, the units sample frame, time frame, and unit of analysis are also used and examined in this research. These provide a structure for this data collection chapter, and will be examined next in detail.

3.2.1 Units to be sampled

In this study the sample frame (e.g. data) included all the written articles published in the selected news media during the selected time frames except articles with only one or no mention of 5G that are seen not to cover the topic of 5G and were thus be discarded. Also articles marked to be commercial cooperation and paid by companies were not collected for analysis as the focus of research is on journalistic content.

The time frame of the sample consisted of two time periods. These relate to important developments in the establishment of national 5G networks in Finland. The first period of the data collection was 27.6.2018 – 15.11.2018. It begins on the date the first commercial 5G network is tested by Elisa in Tampere with temporary frequencies (see Aamulehti 2018) includes the opening date 26.9.2018 and the end date 1.10.2018 of the auction for 3,5 gHz frequencies. This frequency auction is where the three licences to sell networks on 5G frequencies were sold in Finland. The first period ends a week after 8.11.2018, a date when the Finnish government issued the network licence required to operate on 3,5 gHz frequency to three Finnish teleoperators Telia Finland, Elisa and DNA (see Ministry of Transport and Communications 2018), so that several news medias had had the time to write about the topic.

The second period from which the news were collected, 26.9.2019 – 7.3.2020, starts a year after the opening date of the first frequency auction and includes the beginning of consultation round, 6.2.2020, for the conditions of the next frequency auction. The period ends on 7.3.2020 which is a day after the end date of this consultation round. (See Ministry of Transport and Communications 2020.)

These time periods were long enough so that it can be argued that all main stakeholders of the 5G issue could be recognized. These stakeholders will be examined in the Results chapter.

The unit of analysis was a news piece that had a title and an URL address of its own. If the news piece was a collection of news, only the parts relating to 5G were be analysed, and only if the complete version of that news piece was not already part of the data.

The news pieces were collected online through the search functions of each media outlets except for Iltalehti which only has a search function that shows the most recent articles. The news pieces on Iltalehti were therefore gathered using Google search with word "Iltalehti 5G", the news tab, and by limiting the results to the chosen time periods.

Of each news piece the following information was collected: article ID (an unique ID that is used for research purposes), publishing date, news media, news title, link to the original news piece online, news section (if identified), subject or topic, stakeholders, stakeholder categories, additional frames if found (explained in the results chapter), tone, and the date on which the news piece was collected for research. In addition, 20 yes-no-questions by Semetko & Valkenburg (2000) were answered in the case of each news piece in order to determine which of the frames: conflict frame, economic consequences frame, human interest frame, responsibility frame, and morality frame was used in the news piece. These questions are presented in the Appendix A. These questions supported the deductive approach selected for this study in which framing choices were studied by predetermined frames. However, some additional frames were also recognized inductively (see de Vreese 2005) from the data. Data collection and coding was done by one researcher.

3.2.2 Selected news media

The media outlets used in data collection were selected to represent the Finnish news media landscape. The selected news media for this study included two tabloids Ilta-Sanomat and Iltalehti, three newspapers Helsingin Sanomat, Kaleva and Keskisuomalainen, a nationally owned news media YLE, and a business media Kauppalehti. The selected news pieces were all in Finnish. These news media do not produce content in other languages except for YLE (see YLE 2020).

Ilta-Sanomat and Iltalehti are Finnish afternoon tabloids that are published 6 times per week and feature more entertaining content than broadsheets. Ilta-Sanomat belongs to Sanoma group and has 303 000 readers per day. In addition to print tabloid, it publishes digital content online. (Sanoma 2020). Iltalehti is the competing tabloid that combines digital and print, and reaches 2.5 million people in Finland weekly. Iltalehti's website attracts 3 834 000 unique visitors per month. (Alma media 2020a.)

Helsingin Sanomat, Kaleva and Keskisuomalainen are broadsheet newspapers published in Finland whose readership seeks more news than entertainment. Helsingin Sanomat also belongs to the Sanoma group. Despite the name, Helsingin Sanomat is read throughout Finland and it has 672 000 readers per day. (Sanoma 2020). Kaleva is more local newspaper that is mainly read in the Oulu area, and it reaches 483 000 readers in a week. Kaleva is the fourth largest newspaper in Finland that is published seven times per week and it is owned by Kaleva media. Kaleva.fi reaches 365 000 visitors per week. (Kaleva media 2020.) Keskisuomalainen is a similar, more local, newspaper that is read in Central-Finland. It reaches 254 000 readers per week. (Meks 2020.)

YLE is a Finnish national broadcasting organization which is owned by the government of Finland. Its news teams operate in 24 areas 18 of which produce content in Finnish. Unlike other medias selected for this study, YLE's operations are regulated by law which requires it to provide content that is accessible to all Finns regardless of age, sex, gender, financial situation, or home town. (YLE 2020.)

Kauppalehti is a business media that focuses on the phenomena of economy as well as finances. Its print version is published 5 times per week and it reaches 137 000 readers whereas its online version attracts 1 908 000 monthly visitors. (Alma media 2020b.)

Initially the research plan included also Tekniikka ja talous whose online version reaches 394 000 visitors in a month (Alma media 2020c). However during the data collection phase it was noted that Tekniikka ja Talous is part of the same company, Alma media, as Kauppalehti and thus does not offer an independent view on the topic of 5G. In addition, Kauppalehti also publishes news pieces that have been published in Tekniikka ja Talous. (Alma media 2020c.) Based on these notions, it was decided that Tekniikka ja Talous will not be used in data collection.

Some excerpts from news pieces published in the aforementioned news media are presented in the Results chapter to support the findings. These excerpts have been loosely translated by the researcher. The original news pieces are in Finnish and can be found through the references of this study.

3.3 Data analysis

The frames used in these news reports were examined through quantitative content analysis, framing analysis. According to Pan & Kosicki (1993, 55) framing analysis is "a constructivist approach to examine news discourse with the primary focus on conceptualizing news texts into empirically operationalizable dimensions". The approach was deductive in nature for the original frames by Semetko & Valkenburg (2000) have been derived from previous studies and were coded, in their study as well as in this research, by the means of standard content analysis (Matthes & Kohring 2008).

The analysis on which of the frames the economic consequences frame, the conflict frame, the responsibility frame, the human interest frame and the morality frame were used in the news pieces was determined through series of 20 yes or no questions (see Appendix A) developed by Semetko & Valkenburg (2000). Based on these 20 framing items (see Appendix A), the frames were analysed with SPSS using several statistical analyses that will be examined in detail together with their results.

The data analysis process was following. RQ1.1 was answered through examining in SPSS the percentage of the news pieces that contained traces of each of the 5 frames. Additional frames that had been marked in data collection phase were recognized, grouped and named manually by the researcher. RQ1.2 was answered through cross tabulation, and ANOVA analysis of variances in SPSS. The statistical significance of the results was determined by the chi-square or Levene's test (depending on the amount of units of analysis) also in SPSS. RQ1.3. was answered through examining the frequencies and percentages of how a stakeholder category appeared in the data in SPSS. Individual stakeholders were also examined and reported by extracting them from the spread sheet. Further analysis was conducted on four largest stakeholder groups: first it was examined how often the four largest stakeholder groups were mentioned in the news pieces, after which, by cross tabulating in SPSS, it was determined how these main stakeholder groups used the 5 predetermined frames, finally a manual qualitative content analysis was conducted by the researcher on how the additional frames appeared in the news pieces. This last analysis was only conducted on randomly selected news pieces, not the complete data. The RQ1.4 was answered by first examining in SPSS what percentages of the news pieces were positive, neutral or negative after which the tone was examined together

with the media outlet via cross tabulation to determine whether certain news media published more positive or negative news pieces.

Semetko & Valkenburg (2000) used in their analysis varimax to determine the correlations between the different factors. However, in this this study in order to acquire reliable data on the yes-no typed variables, the factor analysis was run based on the predetermined factors by Semetko & Valkenburg (2000). Whether the questions loaded into certain factors was not examined. This means that the part of factor analysis where the factors are formed based on the data was not conducted. Instead, it was examined how the yes and no answers divided between the predetermined factors. This methodological choice was possible because other studies had confirmed the existence of these Semetko & Valkenburg's (2000) five frames by using other methods and statistical tests (see e.g. de Graaf & van der Vossen 2013).

The stakeholders that were cited, meaning they were interviewed or otherwise provided content for the news pieces e.g. by press releases, were examined so that maximum of three of the most prominent stakeholders in each news piece were collected for analysis. If the news piece contained more than three cited stakeholders, the most dominant three were selected. The dominance was based on which had the most words in their citations (quoted statements or parts of text where it was otherwise stated that a stakeholder was the source), so which were given the most space to convey their message. This was done manually by the researcher when such news pieces appeared in the data by inserting the quotes to a Word document and inspecting their word count. Journalists were only treated as a stakeholder in news pieces where they expressed their own opinions, were cited, or the type of text clearly indicated it to contain the own perceptions of the journalist (e.g. column or editorial).

4 RESULTS

In this chapter the sample characteristics are presented. After examining the characteristics of the sample, this chapter presents the results of this research.

4.1 Characteristics of news pieces

From the chosen mass media outlets a total of 337 news pieces were collected and analysed (see Table 3). The news stories per publication were Ilta-Sanomat (n = 78), Iltalehti (n = 14), Helsingin Sanomat (n = 51), Kaleva (n = 16), Keskisuomalainen (n = 46), YLE (n = 50), and Kauppalehti (n = 82).

Table 3. Amount of 5G-related news analysed per publication

Publication	Number of 5G news stories
Kauppalehti	82
Ilta-Sanomat	78
Helsingin Sanomat	51
YLE	50
Keskisuomalainen	46
Kaleva	16
Iltalehti	14
Total	**337**

The news pieces selected for analysis (ones that mentioned 5G at least twice) appeared in various sections of the above listed news media. Most often they were located in sections related to economy, digitalization, investing, and homeland (see Table 4). It could be suggested that this is due to the strong connections the 5G issue has to economy and due to the fact that it relates Nokia, a company founded in Finland that still seems to interest the public. This interpretation is examined in detail in Discussion. In some publications 5G as a

technology had a section of its own. Some sections were also named after known companies working with 5G such as Nokia and Huawei.

Table 4. Amount of 5G-related news analysed per news section

News section	Frequency	%
Economy	117	34.7
Digital Economy	32	9.5
Digi Today	32	9.5
Investing	20	5.9
5G	13	3.9
Homeland	13	3.9
Local news	12	3.6
Nokia	11	3.3
Politics	10	3.0
Editorial	9	2.7
Huawei	7	2.1
Foreign Affairs	6	1.8
Cars	5	1.5
Digi & Tech	5	1.5
Networks	4	1.2
Worklife	2	0.6
Others	39	12.3
Total	**337**	**100.0**

The news sections covering 5G topics were somewhat fragmented as 10.5 % of the sections were only used once in this data set. This may be due to the various connections 5G has to different themes. Some fragmentation may also be caused by the fact that the number of sections online is not limited whereas printed newspapers have to use the standard sections that belong to the publication. All news sections, including those that appeared in the other category, are listed in Appendix B.

4.2 Main 5G frames used in Finnish media

The sub-question 1.1 below was examined by using the series of 20 yes or no questions (see Appendix A) developed by Semetko & Valkenburg (2000). In addition, some additional recurring frames were found and are reported in this section.

RQ 1.1: What are the frames most commonly used?

As mentioned in the previous chapter, the frame was reported to be found in a news piece if at least one of the questions concerning the frame was answered with a yes (see Appendix A). One news piece often contained characteristics of several frames which is why the total percentage of all the frames amounts to over 100 % (see Figure 2). These frames are next inspected briefly with some notions that will later in this chapter be backed up by excerpts from the news pieces.

Figure 2. Main frames in 5G-related news
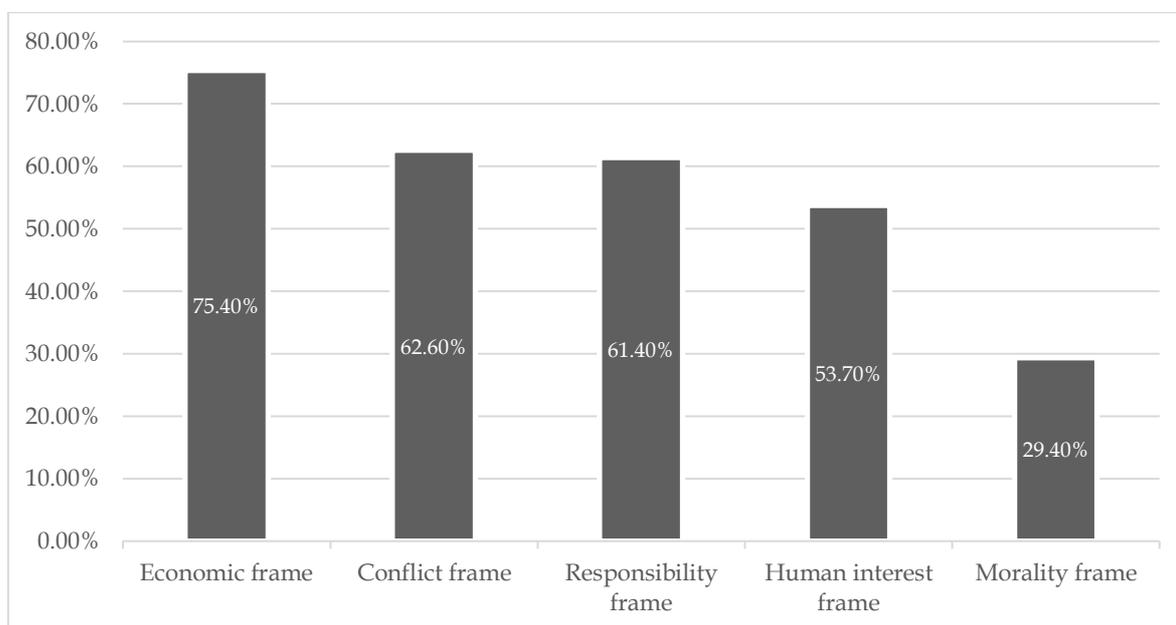
The economic consequences frame appeared most often (in 75.4. % of the news pieces) as can be seen from the Figure 2. This frame was used to highlight how the issue of 5G affects the financial situation (see Semetko & Valkenburg 2000) of companies like Nokia, Ericsson and Huawei but also on how building national

5G networks may impact the economy by bringing connections with no latency to home offices thus enabling remote working. The fact that the economic consequences frame was used most often in the news, shows that there were plenty of news that aimed to shape corporate reputation so that it would support company's equity and financial performance as Black et al. (2000) suggested. This also shows later when inspecting the stakeholder's and excerpts from the news.

The second most used frame was the conflict frame (used in 26.2 %) that, according to Semetko & Valkenburg (2000) attracts audiences' attention with a dispute. In this data set, the conflicts were mostly between USA and China or in some cases between the USA and Huawei. They concerned the trade war and how the USA is using 5G technology as a tool to manage its geopolitical relationship with China and other countries (see Ilta-Sanomat 2019; HS 2020a).

The responsibility frame was used in all the collected news pieces almost as often as the conflict frame, in 61.4 % of all the news pieces. As Semetko & Valkenburg (2000) explained, the responsibility frame aims to attribute the responsibility of an issue, in this case one related to 5G, to a party or an individual. In the data the responsibility frame often appeared in the same news pieces than the conflict frame that covered geopolitical relationships, which may explain why they appeared approximately as often in the data.

The human interest frame, that aims to spark emotions and uses individuals as an example (Semetko & Valkenburg 2000), was detected in 53.7 % of the news pieces. Usually when this frame appeared, the news piece included examples on how 5G technology affects or has affected the lives of individual citizens, for example, by making the lag in online games non-existent.

The morality frame was used in less than one third of the news pieces (in 29.4 % of all news pieces). One reason behind its rarity could be that the questions it consisted of relied heavily on religious characteristics which are not typically presented in Finnish news pieces unless religion is the topic of the interview. However, some moral characteristics were found that were often related to how countries should treat and protect their citizens (see excerpt by Pekka Haavisto in chapter 4.3.1. Finnish governmental entities).

In addition to these frames above by Semetko & Valkenburg (2000), some extra frames were recognized from the data that did not seem to appear using the 20 questions. Nevertheless these additional frames seemed to be reoccurring and

separate from the preselected frames (see Figure 3). These were labelled by the researcher as the politics frame, the threats frame, and the possibilities of technology frame. According to de Vreese (2005) the frames that the news media uses may be issue specific or generic. As the predetermined frames used in this study were generic, also the additional frames have been built to be generic. This means they may be applied to other issues than just 5G. However, whether they are used in framing of other issues requires further research.

Figure 3. Relationships between all frames in 5G-related news
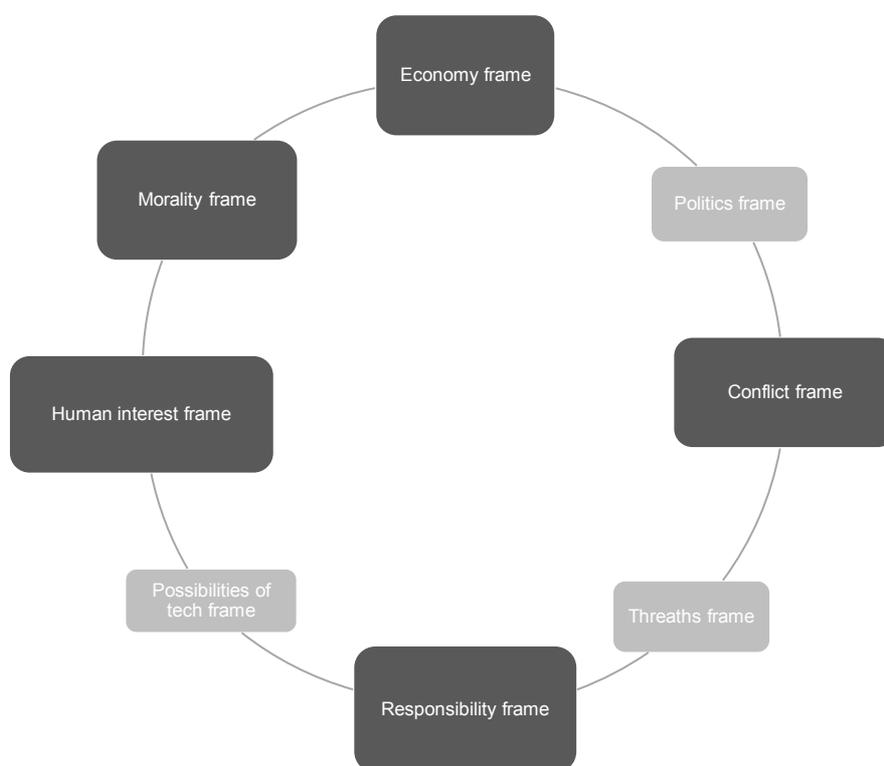
The Politics frame appeared in the data set 33 times. It appeared often when also economy frame and conflict frame were used which is why it is placed in between of these frames in Figure 3. It must also be noted, that the politics frame seems to overlap with the conflict frame. For example, the political conflict between USA and China was present in the conflict frame, however not all politically framed news pieces included a conflict. That is why it seemed plausible to report the politics frame as an additional finding. The news labelled with this frame covered for example the trade war between the USA and China, the meetings

between governmental officials such as presidents, and other geopolitical moves. The following excerpt was reported in Helsingin Sanomat on 15.2.2020:

> *"Organizations have a central role in the new global economy. Large enterprises influence significantly what the rules will be like. - - The tension between China and the USA is seen everywhere, especially in discussions about 5G technology."*
> *-Helsingin Sanomat 2020a, 15.2.2020*

The Threats frame appeared in the data set 11 times. It included news pieces that mentioned individual threats related to 5G such as radiation and information security and espionage, especially in relation to Huawei devices, as well as global threats that were often intertwined with politics frames such as war. The threats frame often appeared with the attribution of responsibility frame and at times with conflict frame, which was the case with the excerpt below that was reported in Keskisuomalainen on 7.12.2019:

> *"The Finnish Security Intelligence Service (SUPO) stated on Thursday that the interest of foreign intelligence services towards Finland's critical infrastructure has increased during in the past years which should be taken into account for example in 5G-related investments. Finland interests especially Russia's and China's intellingence services, says SUPO. - - This [smart 5G devices and cyber security] is not only an issue for operators. The devices connected to 5G network and their careless cyber security can also create cyber threats."*
> *- Keskisuomalainen 2019a, 7.12.2019*

The Possibilities of technology frame appeared in the data set 21 times. The frame viewed technology as an enabler of new innovations such as remote surgery (see excerpt below) and a better society. In addition, it covered challenges related to technology that were non-political (these were labelled with politics frame) or not security-related (these were labelled with threats frame) that often also included a solution for the challenge. The possibilities of technology frame often appeared together with the human interest frame and the attribution of responsibility frame. The following excerpt is an example of the use of possibilities of technology frame that was reported in Kaleva on 30.7.2018:

> *"There are also several new generation surgery robots in use in Finland that could also be used remotely. The problem has been that the latency in the network connection has been too long. In a surgery, it is not enough if the surgeon moves the robot and receives the haptic sensation or video feedback after hundreds of*

milliseconds. - - The upcoming 5G network would solve several things. It would reduce almost all of the latency, and it can also be used to create a network connection with no disruptions which other users cannot access."
-Kaleva 2018, 30.7.2018

The sub-question 1.2 below aimed to determine whether the 5G issue is covered in a different way depending on the media outlet. This sub-question was answered with statistical analysis in SPSS and it aimed to provide insight for example for corporate communication professionals on how different news media outlets frame 5G.

RQ 1.2: Does the use of frames in 5G-related news reports vary depending on the news media outlet?

Chi-square test was used to determine if the result could be applied to a larger population or if it could be random. Based on the chi-square test of independence only two of the frames, morality frame and economy frame seemed to depend on the media outlet. First, there was a significant relationship between the news media and the morality frame, X^2 (6, N = 337) = 14.4, p = .0026. Second, there was also a significant relationship between the media outlets and economy frame, X^2 (6, N = 337) = 24.0, p = .001. Based on this test there seemed to be no dependency between the media outlet and other frames: attribution of responsibility frame, X^2 (6, N = 337) = 7.1, p = .313, human interest frame, X^2 (6, N = 337) = 11.7, p = .070, and conflict frame, X^2 (6, N = 337) = 11.6, p = .071. This means that it can be assumed that morality frame and economy frame depend on the medium but the differences in the appearances of the other frames may be random.

When inspecting the frames that seemed to depend on the media outlet, the economy frame was most often present in Kauppalehti (present in 91.5 % of the news) and Helsingin Sanomat (present in 80.4 % of the news) followed by Ilta-Sanomat (present in 74.4 % of the news), Kaleva (present in 68.8 % of the news) and Keskisuomalainen (present in 69.9 % of the news). YLE (present in 58.0 % of the news) and Iltalehti (present in 57.1% of the news) used the economy frame less when compared to others, although still in more than half of their news pieces.

The morality frame was most often present in Helsingin Sanomat (in 45.1 % of the news) and YLE (present in 38.0% of the news) and appeared the least often in Keskisuomalainen (present in 15.2 % of the news) and Iltalehti (present in

14.3 % of the news). In the news media Kaleva (present in 31.3 % of the news), Kauppalehti (present in 26.8 % of the news), and Ilta-Sanomat (present in 26.9 % of the news) the use of morality frame was moderate.

The previous test did not examine whether some frames appeared stronger in certain medias. A frame can be seen as strong in individual news pieces where a frame prompted the researcher to mark several of the Semetko and Valkenburg's (2000) 20 questions with a yes. If only one yes was found, the frame was marked to appear but it did not appear strongly. News pieces that prompted several yes-answers per frame included a stronger frame than those that only prompted one yes.

How strong the frame appeared was determined with one-way ANOVA analysis, that examined the variance among news outlets and frames and how they appeared together. It was studied whether the means (presented in brackets) of the frames differed depending on the media outlet. Responsibility frame appeared to be strongest in Helsingin Sanomat (1.88), Iltalehti (1.64) and YLE (1.44) whereas it appeared only faintly in Kaleva's news pieces (0.94). Morality frame was the strongest in Helsingin Sanomat (0.49) and YLE (0.42) and in turn weakest in Keskisuomalainen (0.17) and Iltalehti (0.14). The conflict frame had a stronger presence in the news pieces by YLE (1.66) and Helsingin Sanomat (1.22) but it appeared only moderately in Keskisuomalainen (0.98) and Kaleva (0.75). The economy frame appeared to be the strongest in Kauppalehti (1.66) which was expected since the publication focuses on economy news but surprisingly Helsingin Sanomat (1.63) was not far behind it despite it being a general newspaper. The economy frame appeared in its weakest form in YLE (1.12) although it must be noted that the means of all publications were relatively high and showed little variance in the case of economy frame. The humanity frame appeared strongest in Iltalehti (1.07) and was weakest in Kauppalehti (0.63) and Keskisuomalainen (0.61).

All means and their variances are found in the Appendix C. However, it must be noted that these means cannot be compared between different frames since the maximum number of yes-answers differs depending on the frame (see Appendix A).

Levene's test, that examines the equality of variances and determines whether the variances are random or show a pattern that can be applied to a larger population, showed that the variances for the means of attribution of responsibility frame based on media outlet were not equal, $F_{(6,330)} = 3.31$, $p =$

0.004. The test also showed the variances for the morality frame based on media outlet to be unequal, $F_{(6,330)} = 5.03$, $p = 0.000$. Based on Levene's test, the variances of means between other frames and media outlets were equal: conflict frame, $F_{(6,330)} = 1.07$, $p = 0.383$, economy frame, $F_{(6,330)} = 1.90$, $p = 0.081$, and human interest frame, $F_{(6,330)} = 1.11$, $p = 0.355$. In other words, there was a statistical difference in how strong the attribution of responsibility frame and morality frame appeared in different media outlets. Based on this study, the differences in means of other three frames were not statistically significant.

4.3 Stakeholders managing the issue of 5G

In the data set, there were almost as many stakeholders as there were news pieces due to which it would not be sensible to list them all. However, in order to answer the RQ 1.3. below, they were sorted into a total of 20 stakeholder categories which form a relevant unit for analysis. The stakeholder categories represent the organisations that the media chose to speak about 5G, in other words the stakeholders that take part in managing the issue of 5G. Although there is no comprehensive list, some examples of stakeholders that are included in the stakeholder groups will be mentioned when examining these categories.

> *RQ 1.3: Who are the stakeholders managing the issue, what frames do they use, and why do they use them?*

In the Table 5 are summarized the times each stakeholder group was cited and the percentage of the reported citations the stakeholder group amounted to. The stakeholder groups that were cited in less than 1 % of the news pieces were not reported. In total, stakeholders were interviewed or used as a source 576 times in the 337 news pieces which means that most news pieces included more than one source.

Table 5. Main stakeholder groups cited in 5G-related news

Stakeholder group	Frequency	%
Technology company	160	27.8 %
Teleoperator	90	15.6 %

Stakeholder group	Frequency	%
Finnish governmental entity	77	13.4 %
Foreign governmental entity	74	12.8 %
Media	62	10.8 %
Bank / Financial analytics company	42	7.3 %
Research entity / University	31	5.4 %
EU entity	15	2.6 %

Most referred stakeholder group was technology companies, for example Nokia or Huawei, which amounted to 27.8 % of all citations. The second largest group was teleoperators (15.6 %), for example Telia, Elisa and DNA, followed by Finnish governmental entities (13.4 %) for example president of Finland or different ministries, and foreign governmental entities (12.8 %), for example presidents of other nations or other foreign politicians. Also media (10.8%), for example Helsingin Sanomat, and banks or financial analytics companies such as Inderes were somewhat referred to (7.3 %) as well as research entities and universities (5.4 %), for example Aalto University, and EU entities (2.6 %) such as EU Commission. Other stakeholder groups rarely appeared in the data.

The most cited stakeholder was Nokia (see Figure 4). Other category consists of individual stakeholders that were each named only once, and are therefore not reported. These stakeholders will be inspected in detail later in the context of the stakeholder group the belong to.

Figure 4. Stakeholders cited in 5G-related news
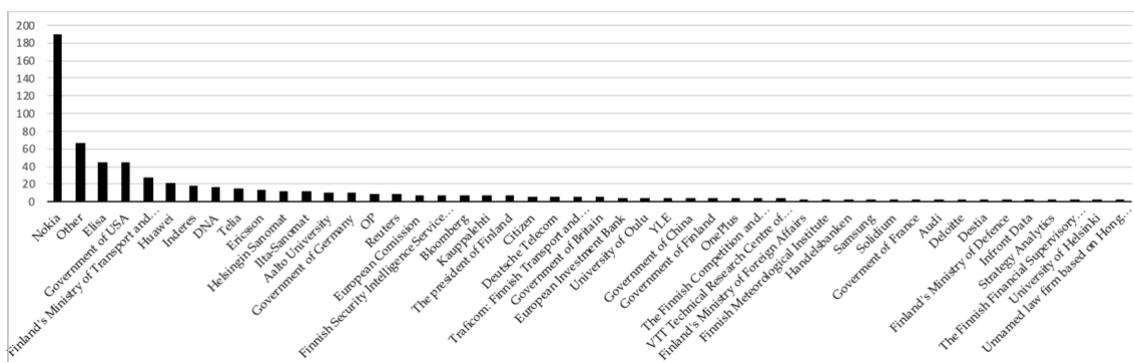
In over half of the times when a stakeholder was interviewed or used as a source, it belonged to one of the largest four stakeholder categories: of 576 mentions 286 were Finnish governmental entities, foreign governmental entities, technology companies, or teleoperators (See figure 5). When focused only on these four, most often were present the technology companies (55.9 %), the second teleoperators (31.5%), and both Finnish (26.9 %) and foreign governmental entities (25.9 %) were used less in a similar frequency (see Table 6).

Table 6. Comparison of four largest stakeholder group cited

Stakholder Category	Amount	%
Technology company	160	55.9
Teleoperator	90	31.5
Finnish governmental entity	77	26.9
Foreign governmental entity	74	25.9
Total	**286**	**100.0**

Figure 5. Division of citations of four largest stakeholder groups

■ Finnish governmental instance (77) ■ Foreign governmental instance (74)

■ Technology company (160) ■ Teleoperator (90)
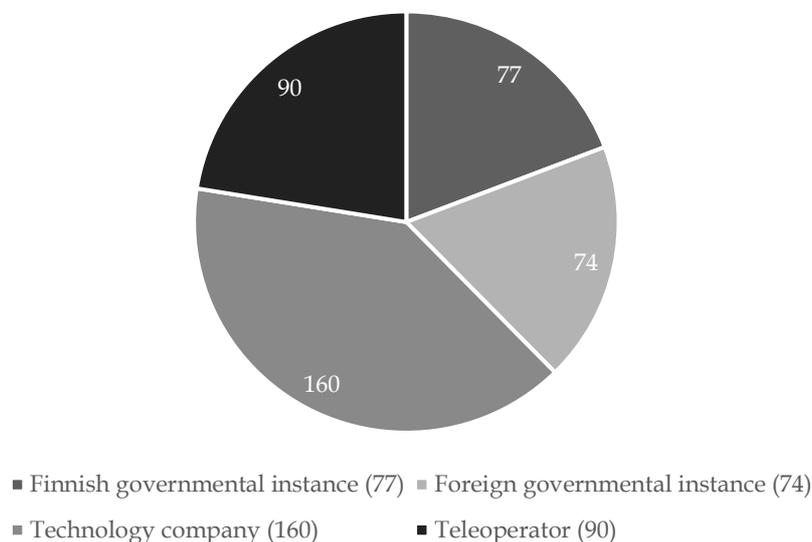
Based on the data, the four main stakeholder groups who were managing the issue of 5G in news media were Finnish governmental entities, foreign governmental entities, technology companies, and teleoperators. Previously in this chapter it was examined, which of the frames by Semetko & Valkenburg

(2000) were used the most in 5G-related news, and in which media outlets they appeared. In order to examine, how these four main stakeholder groups seek to manage the issue of 5G, it was examined, which frames and stakeholder groups appeared often together.

83.1 % of the news pieces that cited Finnish governmental entities included traces of the attribution of responsibility frame. In Table 7 the comparison has been presented so that the percentages tell in how many per cent of all articles that cite the stakeholder group as a source include a certain frame. Since one news piece could include several frames, the percentages do not add to 100 %. The original tables that the Table 7 consists of are found in Appendix D.

Table 7. % articles citing main stakeholder groups per frames

	Responsibility frame %	Conflict frame %	Morality frame %	Economic consequences frame%	Human interest frame %
Finnish governmental entity	83.1%	81.8%	46.8%	53.2%	54.5%
Foreign governmental entity	87.8%	91.9%	54.1%	59.5%	31.1%
Technology company	64.4%	63.1%	17.5%	91.3%	41.9%
Teleoperator	41.1%	66.7%	26.7%	71.1%	75.6%

Table 7 shows that the news pieces that cited teleoperators were less likely to feature the responsibility frame (appeared in 41.1. %) than other three main stakeholder groups but they often featured the human interest frame (in 75.6 %). Most often the conflict frame appeared in the news pieces that cited foreign governmental entities (91.9 %). Technology companies stand out when it comes to the morality frame, it was only used 17.5 % of the news pieces citing technology companies whereas most of those news (91.3 %) included the economic consequences frame. The use of these frames will next be examined in more detail per main stakeholder group.

4.3.1 Technology companies

Of the four largest stakeholder groups, technology companies were most often cited or used as a source. When looked at the ten most often cited stakeholders (see Figure 4), the list includes three technology companies: Nokia (in 109 news pieces), Huawei (in 22 news pieces), and Ericsson (in 14 news pieces). This means that of the 160 citations by technology companies, Nokia amounted to 109.

It should also be noted that of 337 articles in total, the amount of 109 news pieces that Nokia was cited in means that Nokia was present in more than a third of all the news pieces chosen for analysis. This highlights the strong link that 5G has to the financial performance of the company and the public discussion around it but also how the new reporting on 5G topics in Finland has had a strong focus on Nokia.

In the news pieces where technology companies were cited, most often appeared the economic consequences frame: it was present in 91.3 % of the news that cited technology companies (see Table 8). Most often these were news about financial results, and especially Nokia's financial situation like in the excerpts below published in Helsingin Sanomat 4.3.2020 and in Iltalehti 24.10.2019:

> *"This important announcement [Nokia begins 5G cooperation with the American company Marvell] highlights our continuing commitment to expand the selection and use cases of Reefshark chipsets. This contract ensures that our 5G solutions will provide the best performance for our customers."*
> *-Tommi Uitto, Nokia in Helsingin Sanomat 2020b, 4.3.2020*

> *"Many of our business lines are performing well, and we are experiencing strong fourth quarter in which the operating profit margin is strong and net reserves will grow by approximately 1.2 billion euros. At the same time some of the 5G risks that we enclosed earlier are now realizing. - - We expect that we can solve more and more of these challenges in the course of next year. This requires additional investments on 5G in order to speed up the R&D planning of products, lower product expences, and digitalize internal processes to increase general profitability."*
> *- Rajeev Suri, Nokia in Iltalehti 2019, 24.10.2019*

Over half of the news pieces that cited or used technology companies as a source used frames of responsibility (64.4.%) and conflict (63.1.%). Human interest

frame appeared in 41.9% of these news pieces whereas morality frame was the rarest (17.5%). To compare these results, see Table 7.

As mentioned earlier, issues management seeks to resolve conflicts between an organization and its stakeholders (Hallahan 1999). It can be argued that the disappointing financial performance is one such conflict, especially between the company and its shareholders. Thus by commenting these disappointing results in news like in the excerpts above, these companies may aim to resolve or relieve the conflict. These news pieces give companies a medium for explaining reasons behind the negative news as well as space for explaining how they aim to fix the situation.

4.3.2 Teleoperators

Teleoperators were the second most cited of the four main stakeholder categories, however it must be noted that they were cited in 5G-related news less than half as often as technology companies. Among the ten most cited stakeholders (see Figure 4), all three Finnish teleoperators are present: Elisa in 45 news pieces, DNA in 17 news pieces and Telia in 16 news pieces.

It could be argued that Elisa's position as the only operator in Finnish ownership may have affected the fact that it is more often featured in news than other operators. However, although it may seem sensible when it comes to the interests of Finnish investors, Elisa was also cited in news pieces that contained for example a human interest frame instead of the economic consequences one:

> *"I have used a 5G phone since last summer and I have not felt that it is useless. There are of course many opinions about this. - - A lot depends on where you are. We have a lot of users that move mainly in the Helsinki-area and in large cities that have 5G. The point where the connection will cover roads might still take some years. One must remember that 4G will remain as a back-up and it continues to develop. If there is no 5G connection, you won't drop into a hole."*
> *-Petteri Svensson, Elisa in Iltalehti 2020, 7.3.2020*

Most often the articles that cited teleoperators included the human interest frame, the economy frame, or the conflict frame (see table 7). The human interest frame (75.6 %) was an interesting finding for it was generally the second least used frame of the five when looked at the complete data set but it seem to appear often

when the stakeholder managing the issue was a teleoperator. Economic consequences frame was also used often (in 71.1 %) as in the excerpt below. The responsibility and conflict frames were used relatively often whereas the rarest of frames, morality frame, was used the least used one in the news pieces that cited teleoperators (appeared in 26.7. %).

> *"Teleoperator Elisa's past quarter was its best April-June period in history. Revenue was 485 million euros. When compared to 2017 level, there was growth of 13 million. - - Now the tele company tells that preparations for 5G data connections are advancing well. Tampere and Turku are already ready for 5G networks. The company expects a lot from 5G connections and is ready for the frequency auction that starts on 26. September."*
> *-Elisa's press release, in YLE 2018, 13.7.2018*

4.3.3 Finnish governmental entities

Of the four main stakeholder groups, Finnish governmental entities were the third largest and almost even with foreign governmental entities. When looked at the ten most cited stakeholders (see Figure 4), the list includes one Finnish governmental entity Finland's Ministry of Transport and Communications that was cited in 27 news pieces. It is no surprise that Finland's Ministry of Transport and Communications has been cited often for it is the ministry responsible for national networks which also shows in their citations (see excerpt below). Other examples of stakeholders in this category are the Finnish Security Intelligence Service (SUPO) that was cited in 8 news pieces, the president of Finland who was cited in 7 news pieces, and the Finnish Transport and Communications Agency Traficom (cited in 6 news pieces) as in the news piece below published in Helsingin Sanomat on 27.6.2018:

> *"We aim to have Finland among the top countries also when it comes to developing 5G mobile services."*
> *-Anne Berner, Minister of Transport and Communications of Finland in HS 2018, 27.6.2018*

The news pieces containing this stakeholder group often covered topics such as geopolitical relationships which is also seen in which frames they used: attribution of responsibility (in 83.1. %) and conflict (in 81.8. %) frames (see table 7). An example is presented in the excerpt below published by YLE on 23.12.2019:

"Security concerns are related to all companies, no matter their origins. In the politic sense, Finland has always handled difficult topics well even if they have been politically sensitive. - - Security risk and locating them is another thing, and of course we seek for European perspective to the matter, but each nation makes their own decisions, that much is clear."
-Mika Lintilä, Minister of Economic Affairs and Employment in YLE 2019, 23.12.2019

Topics also included national projects and their effect on the lives of citizens which shows as the use of economy frame (in 53.2. %) and the human interest frame (in 54.5 %) and in the next excerpt. The morality frame was used the least (in 46.8 %), although it was used quite often in news that featured Finnish governmental entities when compared to how often it was used the complete data: in 29.4 % of all news pieces (see Figure 2). The morality frame was often used in the recommendations on how elected officials and nations should operate in order to protect their citizens like in the excerpt below published by Kauppalehti on 16.2.2020:

"Despite the situation [cold war between the United States and China that has formed around Huawei and 5G networks], rather than banning some companies we need common rules and legistlation that concerns all teleoperators."
-Pekka Haavisto, Minister for Foreign Affairs of Finland in Kauppalehti 2020, 16.2.2020

4.3.4 Foreign governmental entities

Foreign governmental entities were the last of the main four stakeholder groups found in the analysis. The list of top 10 mentioned stakeholders included only one stakeholder belonging to this group, the Government of USA. However, it was mentioned in 45 news pieces, as many as the teleoperator Elisa.

In total, foreign governmental entities were cited in 75 news pieces which means that the Government of USA makes up a majority of these citations. The news in which this stakeholder group is cited covered often the trade war between China and the USA as in the excerpt below published by Helsingin Sanomat on 15.2.2020:

> *"Huawei is a Trojan horse for Chinese intelligence. - - If we do not understand the threat and do nothing about, can the most successful military alliance NATO be in danger."*
> *-Mike Pompeo, United States Secretary of State & Mark Esper, United States Secretary of Defence in HS 2020c, 15.2.2020*

The trade war and the discussion around the political relationship of China and the USA shows in how the conflict frame is mentioned often in news that cite foreign governmental entities, in 91.9 % of the news pieces (see Table 7). Also the use of the responsibility frame is high (in 87.8 % news pieces). The human interest frame is used the least, in 31.1 % of the news pieces citing foreign governmental entities. This may be due to the fact that the topic of these pieces are often global and thus do not feature the point of view of single citizens.

4.3.5   Other stakeholder groups

Other stakeholder groups that were cited more than twice in the data, were media, banks or financial analytics companies, research entities or universities, and EU entities, however these participated in the managing of the issue of 5G significantly less than the main four stakeholder groups (see Table 5). Due to limited resources, the frames used by these stakeholder groups were not analysed separately. Still, some characteristics and excerpts concerning these stakeholder groups will be presented.

The media stakeholder group included news media such as Helsingin Sanomat and The Economist. These media outlets were only reported as stakeholders in instances where the own opinions of the journalist were present in the news piece (e.g. editorials) or when a news media had cited another without stating the original source used in that news piece. According to Melgin and others (2017) the media has grown to expect open dialogue corporate communication professionals which showed also in the data. Even though media rarely used itself as a source, when it did, the news piece often criticized the actions of organizations and even the lack of transparency like in the excerpts below published by Ilta-Sanomat on 20.12.2019:

> *"The discussion about 5G networks is extremely sensitive business. It is loaded with, mostly geopolitical, issues. - - Elsewhere in Europe Huawei's position in*

networks has been discussed quite lively. In Finland, Huawei is a curse word or a taboo that is avoided. Its name has not been mentioned aloud often by politics or elected officials. - - In other words, we should have a dialogue about a firm whose name cannot be spoken and with facts that are not generally known. Try and have a conversation then in these conditions."
-Henrik Kärkkäinen, Ilta-Sanomat in Ilta-Sanomat 2019, 20.12.2019

If the media did not criticize it summed up news and economical results. When individual journalists provided their opinions in the news pieces they were marked to include the media stakeholder group like in the excerpt below published by Helsingin Sanomat on 7.2.2020:

"If one looks for a hint of the direction of whole economy from the interim reports published by listed companies this and last week, the task is difficult: there is no common story line. There was good, mediocre and bad – and all of these for different reasons. - - Especially interesting company was Nokia. As the distributor of 5G networks it operates in a sector that will be crucial in the economy in the future. 5G networks have become the fuel of trade wars as Chinese Huawei is tried to deny the building of 5G networks in the USA. Nokia was also interesting because the results of its third quarter were bad which led to a drop in its share price."
-HS editorial team, in Helsingin Sanomat 2020d, 7.2.2020

Banks or financial analytics companies were usually used in new pieces that contained financial results or analysis on companies performance such as in the excerpt below published in Ilta-Sanomat on 4.2.2020. As mentioned earlier, investor relations have the best results by having timely dialogue with the analysts when needed and when the interaction is beneficial for both sides (Laskin 2011). In this case, the media often acted in between and interviewed both analysts and the company. Since this study focused on 5G-related news, these news pieces were often about teleoperators who build 5G networks or companies such as Nokia and Huawei that manufacture 5G devices. The excerpt below published by Ilta-Sanomat on 4.3.2020 provides a good example of this:

"Half of Nokia is healthy business and the profits are good when in turn the mobile side is wasting resources. The problems with profitability are also related to the high component costs of Nokia's 5G network devices. Always when a base station leaves the factory, it leaves with a bunch of investors' money. That is why the cost side should be resolved."
-Mikael Rautanen, Inderes in Ilta-Sanomat 2020, 4.3.2020

Research entities and universities were cited on projects that experimented with 5G technology or were interviewed about the new 5G technology in general. Although this stakeholder group is not generally seen as activist group, they in some news pieces seemed to brings issues into the arena of public policy and push organizations to work in a more beneficial way for the society, like in the excerpt below, which are typical actions of activists (Heath & Palenchar 2009; Grunig & Dozier 2006). Due to the connections to new projects and fresh issues, the possibilities of technology frame seemed to be often present in the articles that cited the members of this stakeholder group like in the excerpt below published by YLE on 10.2.2020:

> *"In normal mobile use, I do not know an application that would require 5G instead of 4G. 5G looks good on paper but normal users will not notice the difference in speed between 5G and 4G. - - 5G might be useful in cases when there is a lot of traffic in 4G network."*
> *-Jukka Manner, Aalto University in YLE 2020, 10.2.2020*

EU entities were cited in relation to union-wide decisions such as will Huawei be allowed to build 5G networks in Europe. In general, they were often cited when the additional threats frame was used like in the excerpt below published by Keskisuomalainen on 9.10.2019 in which the information security of the union is discussed:

> *"EU Commission published today a summary of the risks of national 5G networks. The security of these networks has become a hot topic especially due to Chinese company Huawei that the Americans suspect to leak information for China. - - According to the report by European Commission, governmental actors are perceived as a serious risk also in other EU countries. This is due to the fact that they may have the desire and especially the skills needed for conducting cyber-attacks that require high-level expertise."*
> *-European Commission in Keskisuomalainen 2019b, 9.10.2019*

4.4 Tone of 5G-related news

To answer the *RQ 1.4: What is the tone of news media coverage on 5G in Finland?*, the news pieces were categorized by tone (positive, negative or neutral) following the approach of previous researchers (see Horowitz-Rozen & Gilboa (2018, 273; Son & Weaver 2006). In total, 27.9 % of the news coverage on 5G was negative and the same amount, 27.9 % positive. Most of the news coverage, 44.2 %, had a neutral tone.

When compared per publication, Table 12 gives some guidance into how the tone was used in different media outlets. For example, Kaleva's news included only few negative articles, however, when comparing the media outlets to each other, Kaleva has been left out of the test due to the fact that its data included too few cases. For the same reason, also Iltalehti was left out of the comparison.

Table 8. Tones of 5G news per publication

		News media							Total
		HS	IS	IL	K	KL	KS	YLE	Total
Tone	Negative %	41.2%	32.1%	35.7%	6.3%	22.0%	19.6%	30.0%	27.9%
	Neutral %	43.1%	38.5%	50.0%	37.5%	43.9%	50.0%	50.0%	44.2%
	Positive %	15.7%	29.5%	14.3%	56.3%	34.1%	30.4%	20.0%	27.9%
Total	Count	51	78	14	16	82	46	50	337
	% within news media	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0 %	100.0%

The chi-square test of independence showed no statistical difference in how the tone varied depending on the medium, $X2$ (8, N = 337) = 12.3, p = .138. However, z-test found some mediums that differed significantly from each other at the .05 level: Helsingin Sanomat had published less positive news pieces than Kauppalehti and more negative news pieces than Kauppalehti and Keskisuomalainen (see Appendix E).This means that these results do not support

the idea that some news outlets published constantly more negative or positive news except for Helsingin Sanomat. The aforementioned differences between Helsingin Sanomat and certain media outlets did not seem to be random based on the chi-square test.

When the tone was compared among the four largest stakeholder groups, technology companies, teleoperators, Finnish governmental entities, and foreign governmental entities, some differences were found (see Table 13). The total amounts were in line with the tone of all the data: neutral tone was used most often (in 64.3. % of articles that mentioned one of the four main stakeholder groups) and the percentages of negative and positive news were similar, although when examining only these four categories there were slightly more negative news pieces. It seems that these were mainly in articles that cited Finnish governmental entities (in 36.4 %) whereas articles that cited teleoperators were in turn more positive than the data in general, 51.1. % of news that cited teleoperators were positive whereas the percentage of positive news pieces in all news pieces in the analysis was 27.9 %.

Table 9. Tone of 5G news per four largest stakeholders groups

		Negative		Neutral		Positive		Total	
		Amt	%	Amt	%	Amt	%	Amt	%
Stakeholder group	Finnish governmental entity	28	36.4%	37	48.1%	12	15.6%	77	100.0%
	Foreign governmental entity	22	29.7%	48	64.9%	4	5.4%	74	100.0%
	Technology company	51	31.9%	72	45.0%	37	23.1%	160	100.0%
	Teleoperator	17	18.9%	27	30.0%	46	51.1%	90	100.0%
Total		79	41.3%	130	64.3%	77	34.6%	286	140,2%

5 DISCUSSION AND CONCLUSION

This research examined how is the issue of 5G framed by stakeholders in the Finnish media. In this section, the results will briefly be discussed in the light of previous literature presented earlier in this study and some implications for business and the society will be presented. In addition, this final chapter will present the limitations of the study and suggest topics for future research related to 5G, technology, and corporate communication.

As stated in the beginning of this study, 5G networks are expected to have a key role in competition in the global market (NIS Cooperation Group 2020) and have gained the interest of the public and news media. The topic was deemed important to research since it can be argued that it would benefit the society if citizens would take interest in and participate earlier in the decision making process when it comes to public policies, such as building national 5G networks, than they tend to (Page et al. 1987). Voicing concerns in news media was seen as a way to influence these policies since the news media has an effect on the perceptions of the public (Cohen 1970; Entman 2007; Wanta, Golan &Lee 2004). The study aimed to examine, as the news media is "the voice of the public" (Cohen 1970, 32) is it giving a voice to the public and who are the other stakeholders that participate in framing the issue of 5G in news media?

Another reason for this was study was that studying how 5G networks are framed can help corporate communication professionals in companies to support organizational goals (Wright 1998) by monitoring how the issue of 5G is being framed and who are relevant stakeholders also managing the issue that the company should build a relationship with (Zerfass & Viertmann 2017). In addition, researching how technological advancement is covered in the media may help in recognizing the points that cause resistance through which the company's reputation and equity could be effected (Laskin 2011; Black, Carnes & Richardson 2000).

From the issues management perspective it was researched, who are the stakeholders that participate in managing the issue of 5G in news media. Based on this study, these stakeholders were mainly organisations. The results showed that the four main stakeholders groups cited in 5G-related news were technology companies, teleoperators, Finnish governmental entities, and foreign governmental entities. In addition to these four, the following stakeholder

groups were also somewhat cited: media, banks or financial analytics companies, research entities or universities, and EU entities.

It is important for corporate communication professionals to monitor the issues like 5G as they can help the organization to adjust corporate strategies based on this insight if needed (Zerfass & Viertmann 2017). In the light of this research, corporate communication professionals in large technology companies such as Nokia and teleoperators such as Elisa may be able to build and maintain their reputation and affect company's equity (Laskin 2011; Black, Carnes & Richardson 2000) through managing the issue of 5G in the Finnish news media. At the same time they can demonstrate their monetary worth for the organization (Duhé 2009). However, smaller companies and other organizations that do not belong to these largest stakeholders groups could gain better results by building relationships with (see Zerfass & Viertmann 2017) these four main stakeholders. However, news media may not be the best way to reach the public in the 2020's which is why companies might do well to widen their communication channels to cover also other channels such as social media (Waters, Tindall, & Morton 2010) and participate in the issue arenas where 5G technology is already discussed by their stakeholders (Luoma-aho & Vos 2010).

Individual citizens were only cited in six news pieces. At least based on this data it seems, that even though the news media has been seen as the "voice of the public" and a supporting function of democracy (Cohen 1970, 32; Page et al. 1987), in the case of 5G it has not actively invited citizens to manage the issue of 5G. However, based on this study it cannot be determined if the lack of citizens' voice in 5G-related news has been due to the fact that citizens are not yet interested enough in the policy (see Page, Shapiro & Dempsey 1987) to actively manage the issue and participate. It must also be noted that the result may be affected by the journalistic process. Galtung & Ruge (1965) have found that in order for common people to be seen interesting enough for news pieces, they usually have to be presented in a negative context unlike persons with a higher status. In the data of this research, the news pieces were mainly neutral (44.2. % of the data) in tone which could explain why individuals appeared less often than public figures such as ministers, CEO's, and foreign leaders.

Framing was one of the theoretical frameworks of this research. According to Hallahan (1999, 207) "frames reflect judgments made by message creators of framers." In the news pieces analysed in this study, the framing choices were

done by both the journalist and the stakeholders who were cited in the news. It was assumed that journalists avoided bias in their processes (Entman 2007). In the whole data set, the economic consequences frame was used the most, conflict frame and responsibility frame in similar frequency after that, human interest frame in roughly half of the news pieces, and the morality frame the least. In addition, the research found some frames through inductive approach that arose from the data but did not match the requirements of the pre-determined frames. These were the politics frame, the threats frame, and the possibilities of technology frame.

With framing, organizations can aim to control the prominence of an issue in media in situations where finding a win-win situation between the parties is not possible (Hallahan 1999; Grunig et al. 2002). In that sense it can be argued that from the frames that were common in 5G-related news, conclusions can be made on what aspects of 5G the stakeholders have wanted to highlight. For example, the fact that the economic consequences frame was used most often shows that the stakeholders see 5G to be important for economy.

When compared to the results per four largest stakeholder groups, there were some differences. The economic consequences frame was still used often, but news pieces that cited either Finnish or foreign governmental entities often used responsibility and conflict frames. It could be suggested that due to their role in the society, governmental entities are often approached when journalists seek to use the responsibility frame whereas the conflict frame was often linked to geopolitics, also a topic strongly linked to governments. It is also worth noting that citing teleoperators in a news piece tended to shift the framing choices more towards the human interest frame that was not as popular when looked at the whole data. Based on this it seems that teleoperators aim more often than other stakeholders to frame their messages with human interest, or they are interviewed in such situations by the journalists. If this result is indeed due to teleoperators own aims to manage the issue of 5G, it could be explained to some extent by their need to appear more easy-to-approach since teleoperators are not generally organisations that are well-liked.

This research also examined, which frames are used in which news media. The study found statistical differences in the use of two frames: the appearance of the morality frame and economy frame seemed to depend on the media outlet. When looked at how strongly the frames emerged in each news piece, the responsibility frame and morality frame were the only ones where there was any statistical

difference on whether some frames appeared stronger in certain publications. This information can help corporate communication professionals to choose the news media where their framing choices are likely to be accepted or to aim to influence the news media where their preferred frames appear less often.

Most often 5G-related news pieces were located in sections related to economy, digitalization, investing, and homeland. It could be suggested that this is due to the strong connections the 5G issue has to economy and the society, and due to the fact that it relates Nokia, a company founded in Finland that still seems to interest the public.

When examined, why the news coverage was mostly neutral in tone, the fact that the data included plenty of financial results news that are traditionally presented in a neutral tone (Melgin et al. 2017) could have an effect on the results. Journalists also often aim for neutrality in their processes, however their commonly referred ethical guidelines state that journalists should produce truthful coverage (JSN 2011). It could be argued that in some cases truthful coverage may include choices that tip the tone of the news piece to positive or negative.

Melgin et al. (2017) have suggested that, especially when covering financial results, positive expressions may appear too elaborate and be seen as self-appraisal which is why the positive tone is not often used when building the trust of investors. As mentioned before, most of the news pieces in this study were related to economy and used the economy frame. Based on this data, the heavy emphasis on financial news in the data may be one of the reasons why most of the news coverage was neutral in tone. However, it must be noted that journalists also aim for neutrality in their processes.

5.1 Limitations and Future research

No study is without limitations. It should be noted that approximately one third of data from the selected time periods turned out to cover Nokia. Often the news pieces were related to the company's financial results. This may have affected how strong the economic consequences frame appeared in the data. However, this was deemed as an important finding that speaks for the strong connection 5G and technology in general has on the performance of businesses as well as the

global economy (see NIS Cooperation Group 2020). Another surprising finding was the amount of news pieces covering geopolitical relationships that were found by focusing on the issue of 5G. This shows how the issue is not only a technological one but has also been politicized.

When it comes to the limitations in analysis, additional frames were recognized in the analysis that did not appear by the method of Semetko & Valkenburg (2000). Since these extra frames seemed to be reoccurring and separate from the predetermined frames they were also reported. However, they were coded by one researcher and not determined through several questions unlike the predetermined frames. Thus the existence of these new frames should be backed up by future research and it should be inspected whether they also appear in other than technology-related news pieces.

The additional frames also sometimes seemed to overlap with the predetermined frames. For example the threats frame appeared often when also economy frame and conflict frame were used. Also the politics frame seemed to overlap in some instances with the conflict frame. Still they were deemed important to report as they did not always overlap with existing frames. For example not all politically framed news pieces included a conflict. However, further research is needed to determine if the threats frame, politics frame and the possibilities of technology frame truly are separate. They should also be tested on other issues than 5G.

This study separated the economic and political points of view by dividing them into separate frames: the economic consequences frame and the inductively found politics frame. However, in practice these two dimensions are intertwined and difficult to separate. For example, allowing Huawei to enter the 5G projects is likely to have an effect on automobile exports from Germany to China and whether the government of USA will support Google's decision to build datacentres in Finland, such is the nature of geopolitical relationships.

Framing analysis was chosen as a suitable method for examining frames in 5G-related news for it also offered something to the discipline. Semetko & Valkenburg (2000) have suggested that the five frames they recognized should be further studied beyond national boundaries. Applying these frames in the Finnish context provided material for comparative study between countries in the future. However, more data needs to be collected from several countries before such comparative study can be conducted.

Lim (2006) has stated that due to the possibility to continuously update online content, online content can be challenging to research. Also in this study, the chosen news media reports may have gone through changes before or after the data collection which has not been taken into account in this study. However, for the sake of transparency, the date of data collection was marked for each news piece and can be returned to if needed.

This study examined the frames with mainly quantitative measures, although some qualitative content analysis was used to analyse the excerpts. It has been argued that the sheer frequency may not determine the importance of a frame and thus also qualitative framing analysis is recommended to avoid mere sorting of texts (Reese 20019). It may be beneficial for future research to conduct some qualitative framing analysis on the same data. For example by comparing the results of this study with the press releases made by the organisations, it could be examined if the exact phrases and frames been transferred directly from press releases to news pieces or if they have been modified.

Another topic for future research would be the effects that the framing choices have on public opinion since this study did not examine the framing effects. The public opinion is generally agreed by top executives to be important for corporate decision making (Zerfass & Sherzada 2015) and should therefore be studied. Son & Weaver (2006) have reported that neutral media coverage has a stronger effect on public opinion on presidential candidates than coverage that is opinionated or that originates from party members. In addition, Wanta et al. (2004) also have found that negative coverage results in more negative public opinion. Whether these notions also apply to technology news could be researched through examining the effects of the framing choices presented in this study that were now out of the scope of the research. For example, agenda-setting provides one possible framework for such studies.

This study examined the 5G news pieces up to March 2020. Since then, the coronavirus has sparked conspiracy theories relating to 5G networks and the virus that, in addition to alternative media, have also been present in Finnish news media. It also seems that whereas the frames around 5G in the beginning focused on technological aspects and then shifted to politics and economy, the topic is now covered more and more by using frames that relate to health and environment. As the frames seem to shift, a longitudinal study on their development might shed more light on how is the issue of 5G framed by stakeholders in a longer term.

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APPENDIX

Appendix A. 20 yes-no-questions for framing items by Semetko & Valkenburg (2000)

Framing items

Attribution of responsibility
Does the story suggest that some level of
    gov't has the ability to alleviate the problem?
Does the story suggest that some level of the
    government is responsible for the issue/problem?
Does the story suggest solution(s)
    to the problem/issue?
Does the story suggest that an ind. (or group of
    people in society) is resp. for the issue-problem?[1]
Does the story suggest the problem
    requires urgent action?

Human interest frame
Does the story provide a human example
    or "human face" on the issue?
Does the story employ adjectives or personal
    vignettes that generate feelings of outrage,
    empathy-caring, sympathy, or compassion?
Does the story emphasize how individuals and
    groups are affected by the issue/problem?
Does the story go into the private or personal
    lives of the actors?
Does the story contain visual information that
    might generate feelings of outrage, empathy-
    caring, sympathy, or compassion?

Conflict frame
Does the story reflect disagreement between
    parties-individuals-groups-countries?
Does one party-individual-group-country reproach
    another?
Does the story refer to two sides or to more
    than two sides of the problem or issue?
Does the story refer to winners and losers?

Morality frame
Does the story contain any moral message?
Does the story make reference to morality,
    God, and other religious tenets?
Does the story offer specific social
    prescriptions about how to behave?

Economic frame
Is there a mention of financial losses
    or gains now or in the future?
Is there a mention of the costs/degree of
    expense involved?
Is there a reference to economic consequences
    of pursuing or not pursuing a course of action?

Appendix B. The use of all news sections in 5G-related news (bolded news sections form the Other category presented in chapter 4)

News section	Frequency	%
Economy	117	34.7
Digital Economy	32	9.5
Digi Today	32	9.5
Investing	20	5.9
5G	13	3.9
Homeland	13	3.9
Local news	12	3.6
Nokia	11	3.3
Politics	10	3.0
Editorial	9	2.7
Huawei	7	2.1
Foreign Affairs	6	1.8
Cars	5	1.5
Digi & Tech	5	1.5
Networks	4	1.2
Worklife	2	0.6
Technology	**2**	**0.6**
Morning compliation	**2**	**0.6**
Automation	**1**	**0.3**
Blog	**1**	**0.3**
Brexit	**1**	**0.3**
Drones	**1**	**0.3**
Dynamic	**1**	**0.3**
Elisa	**1**	**0.3**
Finance	**1**	**0.3**
Speed of internet connection	**1**	**0.3**
Christmas	**1**	**0.3**

Katri Kulmuni (politician)	1	0.3
Trade war	1	0.3
Kuopio (city)	1	0.3
Broadband	1	0.3
Traffic	1	0.3
World economy forum	1	0.3
Mobile networks	1	0.3
Financial review	1	0.3
Services	1	0.3
Games	1	0.3
Phones	1	0.3
Investment	1	0.3
Railroad traffic	1	0.3
Weather	1	0.3
Germany	1	0.3
Teleoperators	1	0.3
Health	1	0.3
Cyber security	1	0.3
Results	1	0.3
Turku area (city)	1	0.3
News	1	0.3
Network devices	1	0.3
Network providers	1	0.3
VR	1	0.3
Cooperation negotiations	1	0.3
Entrepreneurship	1	0.3
Total	337	100.0

Appendix C. Means of frames per publication

		N	Mean	Std. Devia-tion	Std. Error	95% Confidence Interval for Mean		Min	Max
						Lower Bound	Upper Bound		
RESP	Helsingin Sanomat	51	1,88	1,633	0,229	1,42	2,34	0	5
	Ilta-Sano-mat	78	1,05	1,205	0,136	0,78	1,32	0	4
	Iltalehti	14	1,64	1,692	0,452	0,67	2,62	0	4
	Kaleva	16	0,94	0,998	0,249	0,41	1,47	0	3
	Kaup-palehti	82	1,35	1,391	0,154	1,05	1,66	0	5
	Keskisuom alainen	46	1,39	1,468	0,216	0,96	1,83	0	4
	YLE	50	1,44	1,312	0,186	1,07	1,81	0	5
	Total	337	1,37	1,402	0,076	1,22	1,52	0	5
MOR	Helsingin Sanomat	51	0,49	0,579	0,081	0,33	0,65	0	2
	Ilta-Sano-mat	78	0,38	0,707	0,08	0,23	0,54	0	3
	Iltalehti	14	0,14	0,363	0,097	-0,07	0,35	0	1
	Kaleva	16	0,38	0,619	0,155	0,05	0,7	0	2
	Kaup-palehti	82	0,33	0,589	0,065	0,2	0,46	0	2
	Keskisuom alainen	46	0,17	0,437	0,064	0,04	0,3	0	2
	YLE	50	0,42	0,575	0,081	0,26	0,58	0	2
	Total	337	0,35	0,595	0,032	0,29	0,42	0	3
CONF	Helsingin Sanomat	51	1,22	1,045	0,146	0,92	1,51	0	3
	Ilta-Sano-mat	78	1,09	1,142	0,129	0,83	1,35	0	3
	Iltalehti	14	1,07	1,385	0,37	0,27	1,87	0	4
	Kaleva	16	0,75	1,125	0,281	0,15	1,35	0	3
	Kaup-palehti	82	1,2	1,17	0,129	0,94	1,45	0	4
	Keskisuom alainen	46	0,98	1,043	0,154	0,67	1,29	0	3
	YLE	50	1,66	1,206	0,17	1,32	2	0	4
	Total	337	1,19	1,154	0,063	1,06	1,31	0	4

ECON	Helsingin Sanomat	51	1,63	1,058	0,148	1,33	1,92	0	3
	Ilta-Sano-mat	78	1,4	1,085	0,123	1,15	1,64	0	3
	Iltalehti	14	1,21	1,311	0,35	0,46	1,97	0	3
	Kaleva	16	1,31	1,014	0,254	0,77	1,85	0	3
	Kaup-palehti	82	1,66	0,892	0,098	1,46	1,85	0	3
	Keskisuom alainen	46	1,24	1,037	0,153	0,93	1,55	0	3
	YLE	50	1,12	1,1	0,156	0,81	1,43	0	3
	Total	337	1,42	1,05	0,057	1,31	1,53	0	3
HUM	Helsingin Sanomat	51	0,69	1,157	0,162	0,36	1,01	0	5
	Ilta-Sano-mat	78	0,94	0,972	0,11	0,72	1,15	0	5
	Iltalehti	14	1,07	1,072	0,286	0,45	1,69	0	3
	Kaleva	16	0,88	0,719	0,18	0,49	1,26	0	2
	Kaup-palehti	82	0,63	0,794	0,088	0,46	0,81	0	4
	Keskisuom alainen	46	0,61	0,856	0,126	0,35	0,86	0	4
	YLE	50	0,82	1,024	0,145	0,53	1,11	0	5
	Total	337	0,77	0,952	0,052	0,66	0,87	0	5

Appendix D. Appearance of frames in articles than used main four stakeholder groups as a source

		RESP				Total	
		No		Yes			
		Amt	%	Amt	%	Amt	%
Stakeholder category	Finnish governmental entity	13	16,9%	64	83,1%	77	100,0%
	Foreign governmental entity	9	12,2%	65	87,8%	74	100,0%
	Technology company	57	35,6%	103	64,4%	160	100,0%
	Teleoperator	53	58,9%	37	41,1%	90	100,0%
Total		107	46,2%	179	94,1%	286	140,2%

News pieces were able to contain several stakeholder groups which is why the percentage of yes-no can be over 100 %.

		CONF				Total	
		No		Yes			
		Amt	%	Amt	%	Amt	%
Stakeholder category	Finnish governmental entity	14	18,2%	63	81,8%	77	100,0%
	Foreign governmental entity	6	8,1%	68	91,9%	74	100,0%
	Technology company	59	36,9%	101	63,1%	160	100,0%
	Teleoperator	30	33,3%	60	66,7%	90	100,0%
Total		104	38,1%	182	102,1%	286	140,2%

News pieces were able to contain several stakeholder groups which is why the percentage of yes-no can be over 100 %.

		MOR				Total	
		No		Yes			
		Amt	%	Amt	%	Amt	%
Stakeholder category	Finnish governmental entity	41	53,2%	36	46,8%	77	100,0%
	Foreign governmental entity	34	45,9%	40	54,1%	74	100,0%
	Technology company	132	82,5%	28	17,5%	160	100,0%
	Teleoperator	66	73,3%	24	26,7%	90	100,0%
Total		208	95,5%	78	44,8%	286	140,2%

News pieces were able to contain several stakeholder groups which is why the percentage of yes-no can be over 100 %.

		ECON	Total

		No		Yes			
		Amt	%	Amt	%	Amt	%
Stakeholder category	Finnish governmental entity	36	46,8%	41	53,2%	77	100,0%
	Foreign governmental entity	30	40,5%	44	59,5%	74	100,0%
	Technology company	14	8,8%	146	91,3%	160	100,0%
	Teleoperator	26	28,9%	64	71,1%	90	100,0%
Total		67	37,1%	219	103,1%	286	140,2%

News pieces were able to contain several stakeholder groups which is why the percentage of yes-no can be over 100 %.

		HUM				Total	
		No		Yes			
		Amt	%	Amt	%	Amt	%
Stakeholder category	Finnish governmental entity	35	45,5%	42	54,5%	77	100,0%
	Foreign governmental entity	51	68,9%	23	31,1%	74	100,0%
	Technology company	93	58,1%	67	41,9%	160	100,0%
	Teleoperator	22	24,4%	68	75,6%	90	100,0%
Total		135	70,3%	151	69,9%	286	140,2%

News pieces were able to contain several stakeholder groups which is why the percentage of yes-no can be over 100 %.

Appendix E. Tone * News media Crosstabulation

			News media					
			Hel-singin Sano-mat	Ilta-Sano-mat	Kaup-palehti	Keskisuoma-lainen	YLE	Total
Tone	Neg-ative	Count	21_a	$25_{a,\,b}$	18_b	9_b	$15_{a,\,b}$	88
		% within news media	41,2%	32,1%	22,0%	19,6%	30,0%	28,7%
	Neu-tral	Count	22_a	30_a	36_a	23_a	25_a	136
		% within news media	43,1%	38,5%	43,9%	50,0%	50,0%	44,3%
	Posi-tive	Count	8_a	$23_{a,\,b}$	28_b	$14_{a,\,b}$	$10_{a,\,b}$	83
		% within news media	15,7%	29,5%	34,1%	30,4%	20,0%	27,0%
Total		Count	51	78	82	46	50	307
		% within news media	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Each subscript letter denotes a subset of news media categories whose column proportions do not differ significantly from each other at the ,05 level.