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Digitalization in corporate communications: understanding the emergence and consequences of CommTech and digital infrastructure

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Abstract

Purpose – This article studies the digitalization of corporate communications and the emergence of communication technology (CommTech). The authors show communicators’ expectations regarding digitalization, gauge the current level of digitalization across communication departments and agencies and examine the effectiveness of strategic approaches to manage digitalization.

Design/methodology/approach – The authors conceptualize the phenomenon of CommTech and propose a framework for studying CommTech’s emergence and consequences by combining (1) recent theorizing on digitalization in corporate communications, (2) the concept of digital maturity from information systems research and (3) a socio-technical approach to analyze the development of work systems. The authors apply this framework in a quantitative study ($n = 2,664$) among communication practitioners from 46 countries.

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Findings – While digitalization of both communication activities and the underlying support infrastructure is seen as critically important among communicators, a large fraction of communication departments and agencies are still assessed as digitally immature. Further, data reveal the relevance of different (technology, tasks, structure and people) dimensions of digitalization strategies and the influence of such strategies on the digital maturity of communications.

Practical implications – The framework and empirical instruments developed in this study help practitioners to uncover and evaluate the level of digital maturity of communication departments and agencies. This allows to identify current challenges and future opportunities for improvement.

Originality – The authors propose a concise definition for the much-debated concept of CommTech and develop a new theoretical framework for understanding CommTech’s emergence and consequences in the profession. This empirical work constitutes the first large-scale study on the digital maturity of communication departments and agencies.

Keywords Digital maturity, CommTech, digital infrastructure, corporate communications, strategic communication, digital transformation, digitalization

Paper type Research paper

Introduction

Digitalization is a key driver in the ongoing change of the communications profession. New digital technologies are both a trigger and the backbone for a rapid transformation of communication departments and agencies. The latter are under significant pressure to adapt to a changing digital environment with a 24/7 information flow. And they need to implement ever-new technologies to support basic organizational functions as well as the management and tactical execution of communication activities.

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Digitalization is “a sociotechnical process of applying digitizing techniques to broader social and institutional contexts that render digital technologies infrastructural” (Tilson *et al.*, p. 749).¹ Despite its relevance in practice, the digitalization of communication departments and agencies has rarely been discussed in research. Earlier studies mainly focused on the use of digital technologies in communication processes with stakeholders, for example in regard to dialogic communication on social media (e.g., Buhmann *et al.*, 2021; Ewing *et al.*, 2019; Men and Tsai, 2016; Valentini, 2015; Verčič *et al.*, 2015; Wilson *et al.*, 2020; Wright and Hinson, 2017). Recently, the view has been widened beyond executing stakeholder communications by introducing the term ‘CommTech’ (communication technology) to corporate communications (Arthur W. Page Society, 2021; Weiner, 2021; Zerfass and Brockhaus, 2021, 2023). The focus here is on the use of digital technologies to not only execute but also manage communications along the whole stakeholder journey, ranging from monitoring touchpoints to evaluating stimulated action. However, communication departments and agencies face even more severe challenges, as the digital transformation profoundly and simultaneously affects technology, tasks, structures, and people (Bostrom and Heinen, 1977a; Nadkarni and Prügl, 2020; Vial, 2019). Such a broad and foundational understanding of digital transformation, while rarely applied in corporate communications, is highly relevant from a holistic leadership perspective and an important prerequisite for understanding and successfully managing the digital transformation in communications.

Despite their fundamental consequences for corporate communications practice, empirical research on the emergence and effects of CommTech and digital infrastructure in communication departments and agencies is missing. We know little about the perceived importance of different aspects of digitalization in communications and prevalent views on the level of digital maturity across departments and agencies, as well as the emergent strategies for tackling the challenge of digitalization and the effectiveness of such strategizing on raising digital maturity.

Against this background, the aim of this research is to shed light on the state of CommTech and digital infrastructure in communications and on the digital maturity of communication departments and agencies. To achieve this, we introduce a new theoretical framework for studying the

¹ In this article we use the terms digitalization and digital transformation interchangeably.

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emergence and consequences of CommTech. We do so by proposing a concise definition of CommTech based on recent theorizing on digitalization in corporate communications (Zerfass and Brockhaus, 2021), relating this seminal concept to recent work on digital maturity from information systems research (Gollhardt *et al.*, 2020; Mettler *et al.*, 2010), and framing the process of digitalization in communication departments and agencies based on research on the development and change of socio-technical work systems (Bostrom and Heinen, 1977a; Bednar and Welch, 2020; Gerster *et al.*, 2018; Hughes *et al.*, 2017). Based on this framework we conduct an empirical study that focuses on the meso-level of communication departments and agencies and the micro-level of practitioners working in the profession, based on insights provided by 2,664 communicators in 46 European countries.

This article contributes to current corporate communications research in three main ways: First, we offer a new and broad conceptualization of the digital transformation of communications as a socio-technical change process. By doing so, we bridge so far largely unconnected research between the fields of corporate communications and information systems. Second, we propose a concise definition of the emergent and much-debated concept of CommTech and provide a large-scale study on the digital maturity of communication departments and agencies – to our knowledge the first comprehensive empirical study addressing CommTech. Finally, the article opens up new research avenues for our field by providing a more holistic understanding of the use of digital technology in communications and lays the relevant groundwork for further studying important trends and developments around CommTech and digital infrastructure.

Literature review

Digitalization in corporate communications research

When speaking of digitalization in communications, scholars in corporate communications and public relations research have mainly studied digital instruments and platforms, such as social media, websites or intranets and their use in stakeholder communications. Specifically, research has focused on three interrelated areas: (1) the use of digital technologies for stakeholder relations in general (e.g., Duhé, 2017; Lock, 2019; McLean *et al.*, 2021), as well as (2) social media platforms and tactics in particular (e.g., Allagui and Breslow, 2016; Buhmann *et al.*, 2021; Ewing *et*

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al., 2019; Freberg, 2022; Lutrell *et al.*, 2021; Men and Tsai, 2016; Valentini, 2015; Verčič *et al.*, 2015; Wilson *et al.*, 2020; Wright and Hinson, 2017) – including different cultural contexts (e.g., Al-Kandari *et al.*, 2019), and (3) big data, automation, and artificial intelligence (e.g., Buhmann and White, 2022; Galloway and Swiatek, 2018; Moore and Hübscher, 2022; Weiner and Kochhar, 2016; Wiencierz and Röttger, 2019; Zerfass *et al.*, 2020a). Studies examine both the potentials (e.g., Sommerfeldt and Yang, 2018) and the pitfalls of digitalization such as cyber-attacks and data fraud (e.g., Zerfass *et al.*, 2020b). A small but important group of studies also provides a critical reflection, questioning the utility of social media and artificial intelligence for publics, organizations and public relations (Bachmann, 2019; Buhmann *et al.*, 2020; Edwards, 2020; Gregory and Halff, 2020; Valentini, 2015).

When discussing strategies for changing current practices in communications, research has focused almost exclusively on stakeholder communication and social media, but not on internal workflows or collaboration. For instance, Johann *et al.* (2021) characterize dialogic communication, transparent communication, and informal communication as three interactive social media strategies, which were derived from research on organization-public relationships when investigating how companies manage relationships with publics on social media. Plowman and Wilson (2018) reveal a rather nascent implementation of strategic approaches in social media. Their study found that practitioners calling for social media strategies are involved in both strategic and tactical practices and that there is a disconnect between elements of social media strategy and implementation.

Beyond the level of stakeholder communications

Going beyond the prevalent tools and stakeholder communication focus, the recent discussion on digitalization of communications has foregrounded in particular the notion of CommTech (Arthur W. Page Society, 2021) – which has been inspired by similar discussions about ‘MarTech’ in marketing research and practice (Brinker and Rimersma, 2022; Chaffey and Smith, 2017; Doughty, 2019). While this constitutes a significant step in taking a broader perspective on digitalization of communications, the concept of CommTech remains rather unclear, as the term

simply describes the intersection of communications and digital technology in any possible way (Arthur W. Page Society, 2021).

To structure the debate on digitalization of communications more broadly, Zerfass and Brockhaus (2021) have suggested to adopt the value chain theory by Porter (1985) for research on the digitalization of communications and use it to distinguish between primary activities (needed to create and deliver core services and products) and support activities (needed to manage those activities and to provide overarching resources, structures and processes). The authors combined this perspective with the business process analysis approach by Jeston (2018) and developed a framework which introduces three dimensions of digital tools and services in corporate communications, making a distinction between primary and support activities. First, there are *primary activities* which are directly linked to value creation through communications: managing and executing communication processes with external and internal stakeholders (stakeholder communications) and internal advising. Beyond these, there are several support activities which refer to internal workflows that make primary activities happen – these constitute the additional dimensions of the framework. Second, *functional support activities*, which are support activities specifically for the communication function, are geared towards tasks such as aligning communication and business goals, monitoring and digital asset management. Third, *generic support activities*, which are basic support activities that go beyond communication and are focused on workflows needed in any department or organization for task fulfillment, e.g., human resource management, accounting or team collaboration.

All three dimensions matter to communication processes and activities and can be supported by digital technologies. Thus, this framework is suitable for examining the digitalization of communication departments and agencies in a broad sense, i.e., going beyond the level of stakeholder communications.

The literature review demonstrates both the relevance and relative lack of research on the digitalization of communications at all levels (primary activities, functional support activities, and generic support activities). Further, a concise definition of CommTech as a key concept in this debate is missing. Moreover, while different dimensions of digitalization in communications have

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been identified, the processes of transforming the status quo and strategies to achieve this have not been discussed so far.

A theoretical framework for studying the emergence and consequences of CommTech and digitalization infrastructure

In the following, we develop a theoretical framework for studying the emergence and consequences of CommTech and digitalization infrastructure. We do so by (1) defining the concept of *CommTech* and specifying its constitutive dimensions based on recent theorizing on digitalization in corporate communications (Zerfass and Brockhaus, 2021), (2) introducing *digital maturity* based on recent information systems research (Gollhardt *et al.*, 2020; Mettler *et al.*, 2010) as a concept to gauge and analyze varying levels of applying CommTech and (3) framing the emergence and consequences of CommTech in communication departments and agencies based on the concept of *socio-technical work systems* (Bostrom and Heinen, 1977a; Bednar and Welch, 2020; Gerster *et al.*, 2018; Hughes *et al.*, 2017).

CommTech and digital infrastructure: definition and dimensions

We suggest to use the framework proposed by Zerfass and Brockhaus (2021) described above for theorizing the interplay between communications and digital technology more precisely. In line with this framework, as well as with the popular understanding of CommTech in practice (Arthur W. Page Society, 2021; Weiner, 2021), the following definition can be introduced:

CommTech are digital technologies provided or used by communications functions or departments to manage and perform primary activities, particularly stakeholder communications and internal advising, or functional support activities such as managing internal workflows for monitoring, content planning, or evaluation.

Against this backdrop, CommTech may include digital tools, software and services, online platforms, as well as information systems for communications. Further, the definition emphasizes that the introduction of CommTech encompasses two dimensions (see Figure 1): (1) digitalization of stakeholder communications and other core deliverables of communication units like advising

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top management (primary activities) and (2) building a digital support infrastructure for communications (functional support activities). The first dimension, *digitalization of stakeholder communications*, includes *practices of using* own digital platforms (e.g., websites, intranets and mobile apps) and external digital platforms (e.g., Twitter, Facebook, LinkedIn and Instagram). Hence, digitalized stakeholder communications can utilize at least two kinds of platforms, channels, software services etc.: *Owned digital platforms* (i.e., owned media) that are controlled by organizations themselves, are more difficult and expensive to maintain, but they offer more options for differentiation and competitive advantage, and *external digital platforms* (i.e., paid, earned and shared media) that are provided by third parties, are usually more affordable and easier to implement, but features might be limited and they can be used by competitors as well (e.g., Macnamara, 2016; Xie *et al.*, 2018). This dimension also describes *practices of providing* digital tools to manage and execute communication processes (i.e., content management software, customer relationship management tools), and it can be characterized as *core functional digital infrastructure*.

The second dimension, *building a supportive functional digital infrastructure*, includes workflows that are vital to manage communication in organizations professionally without being part of stakeholder communications or advisory processes. These activities include overall planning (aligning communication and business goals) and monitoring, but also handling digital assets (logos, templates, pictures and videos) or tracking staff hours and resources for projects. An example for this is the use of digital technologies for performing measurement and evaluation of corporate communications (Volk and Buhmann, 2023).

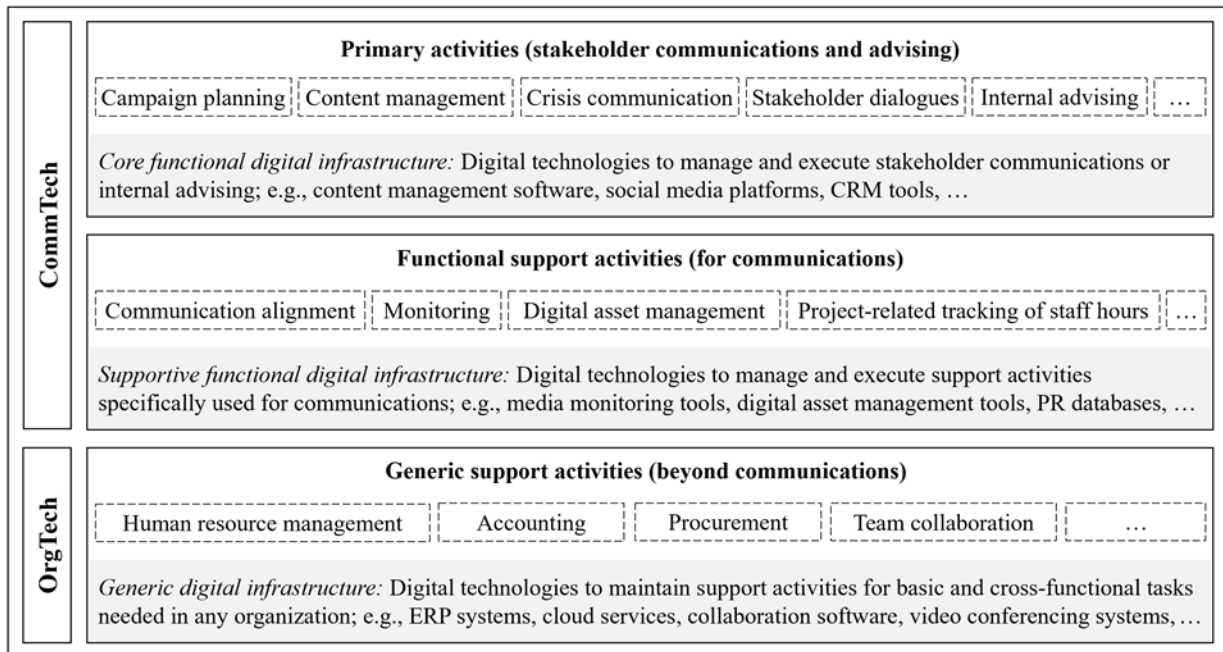
Figure 1 shows that CommTech is complemented by a third dimension of digital technologies that support teamwork and the division of labor in organizations in general. This *generic digital infrastructure* includes collaboration systems like intranets or videoconferencing software and hardware (MS Teams and Zoom) or enterprise resource management systems (e.g., SAP software). These technologies are needed in communications as well as in any other function like human resources, procurement, marketing, sales, etc. Therefore, these organization-wide technologies (OrgTech) can be distinguished from other, functional digital technologies (CommTech, MarTech, etc.).

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Differentiating digital technology based on its proximity to the value creation of communications along three dimensions, as outlined in Figure 1, allows us to link our definition of CommTech to the established terminology in information systems research. There, digital infrastructures are defined as “computing and network resources that allow multiple stakeholders to orchestrate their service and content needs.” (Constantinides *et al.*, 2018, p. 381). This umbrella term can also be applied to the field of corporate communications:

Digital infrastructures for communications include computing and network resources that allow communication functions or departments to manage and perform primary activities and functional support activities (CommTech) as well as generic support activities (OrgTech).

Figure 1. *Dimensions of digitalization in communications (adapted from Zerfass and Brockhaus, 2021, p. 209)*



Conceptualizing digital maturity

The digitalization of communications is a transformation process shaped by changing capabilities, structures, and processes (Nadkarni and Prügl, 2020, p. 4). Digital transformation, as an

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organizational change process triggered by digital technologies, aims to improve a specific entity like a company or specific department (Hess *et al.*, 2016, p. 123; Vial, 2019, p. 9). A literature review in information systems, strategic management, and marketing by Piccoli and Ives (2005) shows that information technology (IT)-dependent strategic initiatives leverage sustained competitive advantage for organizations. Matt *et al.* (2015) also highlight the importance of strategic approaches within digital transformation. They describe a digital transformation strategy as “a blueprint that supports companies in governing the transformations that arise owing to the integration of digital technologies, as well as in their operations after a transformation” (p. 340). Digital transformation strategies focus on changing products, processes and organizational aspects, while IT strategies usually only focus on the management of the IT infrastructure within an organization (p. 339). However, research on organizational transformation also shows that strategically planned transformation processes are less prevalent than digital affinity and experimenting with digital technologies (Berghaus and Back, 2016).

The evaluation and comparison of digital transformation processes can be based on maturity models from information systems research, which are used for self-assessment, continuous improvement or benchmarking (Chaniias and Hess, 2016; Gollhardt *et al.*, 2020; Mettler *et al.*, 2010). Accordingly, a digital transformation maturity model helps practitioners to “uncover the areas that are lacking behind in their digital transformation process or self-assess their current transformation status” (Gollhardt *et al.*, 2020, p. 102). Maturity implies an evolutionary progress with the aim of a desired end stage (Mettler *et al.*, 2010, p. 335). For instance, Berghaus and Back (2016) inductively developed maturity stages of a digital business transformation process: “promote and support”, “create and build”, “commit to transform”, “user-centered and elaborated processes”, and “data-driven enterprise” (pp. 6–10).

While applied to other research areas in corporate communications (Johansson *et al.*, 2019; Gilkerson *et al.*, 2019; Swenson *et al.*, 2019), maturity models have so far not been linked to digital communications. Little is known about the digital maturity of communication departments and agencies – particularly with regard to the two dimensions of CommTech, stakeholder communications *and* functional support infrastructure. Therefore, conceptual foundations from information

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systems, a research field that specializes in the introduction of technology, can help to analyze the digital transformation in communications.

Communication departments and agencies as socio-technical work systems

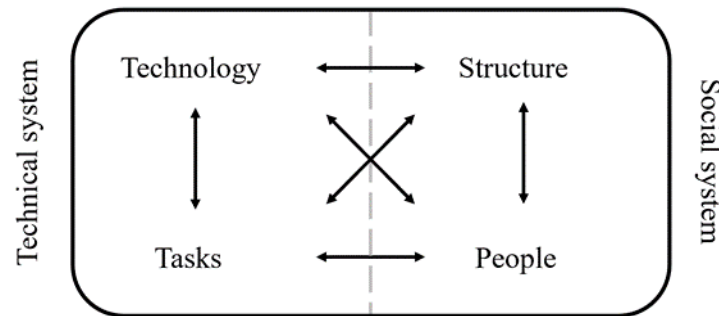
Information systems and information technology are central pillars within digitalization. Research in these fields has discussed the various dimensions of transformation processes and suitable strategies for long. A classical concept from management information systems is the socio-technical systems (STS) approach (Bostrom and Heinen, 1977a; for recent applications see Bednar and Welch, 2020; Gerster *et al.*, 2018; Hughes *et al.*, 2017). The STS approach argues that any socio-technical work system, e.g., a communication department or agency, is composed of a technical subsystem (technology and tasks) and a social subsystem (structure and people):

The technical system is concerned with the processes, tasks, and technology needed to transform inputs to outputs. The social system is concerned with the attributes of people (e.g., attitudes, skills, values), the relationships among people, reward systems, and authority structures. It is assumed that the outputs of the work system are the result of joint interactions between these two systems. (Bostrom and Heinen, 1977a, p. 17)

The notion of ‘joint interactions’ highlights that all four components – technology (in our case: CommTech as well as OrgTech used for general support), tasks, structure and people – influence each other (Figure 2).

Figure 2. *Interacting components within a work system (adapted from Bostrom and Heinen, 1977a, p. 25)*

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The goal of STS design is to create a work system with high quality of work by optimizing the technical requirements of an organization or department along with the needs and values of individual members (Bostrom and Heinen, 1977b, p. 14). By illustrating how the STS approach can be applied in redesigning an information system, the authors point to the importance of strategic approaches that help to engage people during a change process. The success of introducing, in this case, information systems is based on the management of the change process. A typical problem identified by the approach is that the technological system changes faster than the social system as developing new patterns of behavior or ‘upskilling’ take time (Bostrom and Heinen, 1977b, pp. 26–27). STS design has been successfully applied in many disciplines, e.g., for diagnosing the utilization of social media (Hester, 2014) or for identifying new avenues for organizational change in times of social and technological disruption (Pasmore *et al.*, 2019).

When applied to digitalization in corporate communications, information systems research highlights the need for communication departments and agencies to consider both technological and social challenges and balance the complex interplay between technology, tasks, structure and people. Communication practitioners are directly affected by digitalization, e.g., through alternative work routines, new informal and formal group processes, power shifts or the requirement for new work capabilities and skills. The question to what extent such a broad understanding of digital transformation is prevalent in practice has yet to be addressed.

Research questions

Against the background of the current state of literature as well as the theoretical framework developed above, our research aims at shedding light on the maturity level of communication departments and agencies in applying digital infrastructure and specifically CommTech. Before investigating the maturity, the attribution of importance to digitalization of communications is of interest. The above framework (Figure 2) highlights that the digitalization of communications is a change process affecting and affected by technology, tasks, structure, and people. Therefore, a goal of this study is to reflect how intensively the social and technical dimensions of digitalization are addressed by communication professionals. Specifically, we aim to provide answers to the research questions as follows:

RQ1: How do communication professionals perceive the importance of digitalization of stakeholder communications and of building a digital infrastructure?

RQ2: How mature is the digitalization of stakeholder communications and digital infrastructure in communication departments and agencies?

RQ3: Which strategies and approaches for digitalization of stakeholder communications and building a digital infrastructure are used by communication departments and agencies?

RQ4: To what extent do different strategies influence the digital maturity?

Methodology

Instrument

A quantitative study has been conducted as part of an annual survey among communication professionals in Europe. The survey instrument was derived from the literature review and theoretical framework introduced above. First, respondents were asked about the importance of digitalization of communication processes with all internal and external stakeholders, and of building a digital infrastructure to support all workflows within their communication department or agency.

Second, respondents were asked to assess the current level of emergence of CommTech and digital infrastructure in their communication department or agency on the basis of five dimensions.

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Stakeholder communications was represented by two items: (1) Using own digital platforms with stakeholders (e.g., websites, intranets and mobile apps), and (2) using external digital platforms to communicate with stakeholders (e.g., Twitter, Facebook, LinkedIn and Instagram). The maturity of the digital infrastructure was operationalized based on the three dimensions outlined above with corresponding items: (3) Providing digital tools to create, execute and evaluate communication activities (e.g., content management software, social media platforms, campaign management and news distribution); (4) providing digital tools for functional support activities, i.e., aligning communication and business goals, monitoring public opinion and managing digital assets and (5) providing digital tools for general collaboration and workplace needs (e.g., video conference software and work at home equipment). Thus, items 1-4 are set to capture the emergence of CommTech, while item 5 operationalizes digitalization at the basic level of digital infrastructure for generic organizational support activities.

Third, strategies for the digitalization of stakeholder communications and building a digital infrastructure were investigated. The respondents were asked about the level of development of their (1) overall digitalization strategy for stakeholder communications, (2) digitalization strategies for one or more dedicated communication processes (reflecting strategic concepts for *digitalization of stakeholder communications*), (3) digital infrastructure strategy for the communication department or agency, and (4) routines for selecting new software and digital services (reflecting strategic concepts for *building a digital infrastructure*). To trace how intensively the social and technical dimensions of digitalization are addressed, participants were asked about strategies and approaches for four components: technology (calculated as the mean value of the four items stated before), tasks, structure and people.

A pre-test was conducted with 64 communication professionals across 18 European countries in January 2021. Where necessary amendments were made. The items were measured using a five-point Likert scale ranging from 5 (very important, very high and fully developed) to 1 (not important, very low and not developed at all) (for a table with all items see Appendix 1).

Data collection and sample

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The questionnaire was circulated for five weeks in February and March 2021. More than 15,000 professionals throughout Europe were invited with personal e-mails based on a database built by the research team over a decade (Zerfass *et al.*, 2021). In addition, 29 national research collaborators (situated in Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom) and professional associations sent invitations to participate in the study. In total, 6,587 respondents started the process of filling in the questionnaire and 3,574 completed it fully. Those who could not clearly identified as part of the targeted population of communication professionals were excluded, e.g., scholars, students and practitioners from other professions. This resulted in a final sample of 2,664 communication professionals working in communication departments and agencies.

The sample was composed as follows: The majority of the 2,664 respondents have more than ten years of professional experience in communications (69.8 %), followed by a group with less than five years of experience (15.6 %) and six to ten years of experience (14.5 %). In total, 35.2 % hold a top leadership position as head of communication or as chief executive officer of a communication consultancy; 26.3 % are unit leaders or in charge of a single communication discipline in an organization. Seven out of ten professionals in the sample work in communication departments in organizations (joint stock companies, 16.1 %; private companies, 23.0 %; government-owned, public sector, political organizations, 22.4 %; non-profit organizations, associations, 10.9 %), while 27.6 % are working in agencies or as consultants. In total, 60.8 % of all participants were female and 39.2 % were male. The average age was 43.8 years. The respondents were based in 46 European countries with 26.1 % coming from Western Europe, 23.8 % from Northern Europe, 33.7 % from Southern Europe, and 16.4 % from Eastern Europe. While the sample cannot claim representativeness, as the overall population of communication professionals in the region is unknown, it is without any doubt a strong representation of experienced practitioners that are able to report upon the status of the field.

Analyses

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Data analysis was performed using the Statistical Package for the Social Sciences (SPSS). Significant differences and (inter-)dependencies across different types of organizations (joint stock companies, private companies, governmental organizations, non-profit organizations, consultancies and agencies) were revealed using one-way ANOVA with post-hoc Scheffé. Regression analyses were applied to test the effects of strategies for technology, tasks, structure and people on digital maturity.

Findings

The study reveals a gap between the strong necessity for digitalization of communications and the current level of maturity in communication departments and agencies. On the one hand, the importance of digitalization of communications is clearly seen in the profession. On the other hand, there is still much room for improvement regarding CommTech, building a generic digital infrastructure and developing strategic concepts for digital transformation. The current maturity level of communication departments and agencies does not reflect the importance of the topic for the future of the profession. Or put differently, the high importance that practitioners place on digitalization is echoed in their relatively low assessment of the status quo.

Importance of digitalization in stakeholder communications and building digital infrastructure

The data show that introducing CommTech is perceived as a necessity among communicators in both communication departments and agencies. Almost every communication professional in the sample stresses the importance of digitalization in stakeholder communications and building a digital infrastructure. In total, 87.7 % of the respondents highlight the importance of digitalization of stakeholder communications with all internal and external stakeholders, and 83.9 % recognize the importance of building a digital infrastructure to support all workflows within the communication department or agency.

Digital maturity in communications

Our data suggest that the level of digital maturity across communication departments and agencies is perceived as relatively low, especially on the underlying dimension of digital infrastructure. Only one out of four practitioners (26.1 %) assess their department or agency as mature in both the digitalization of stakeholder communications and building a digital infrastructure. A similar share of respondents (26.1 %) describes their department or agency as mature in digitalization of stakeholder communications only and 8.6 % in building a digital infrastructure only. In total, 39.2 % assess their department or agency as being ‘digitally immature’ on both dimensions.

Table 1 shows the maturity level on the basis of the different dimensions outlined. The data indicate that communication departments and agencies are seen as most experienced in using external digital platforms for stakeholder communications (71.4 %) and in providing collaboration platforms for their team members (76.2 %). When it comes to providing digital tools for support activities that are specific for communications – such as handling digital assets – only a minority is considered mature (43.8 %). According to our findings, the respondents assess the current level of maturity of the supportive functional digital infrastructure as least mature.

Table I. *Digital maturity in communications*

Current level of maturity in ...	
<i>Digitalization of stakeholder communications</i>	
Using external digital platforms to communicate with stakeholders**	71.4 %
Using own digital platforms to communicate with stakeholders**	64.3 %
<i>Building digital infrastructure</i>	
Providing digital tools to create, execute and evaluate communication activities (core functional digital infrastructure)**	53.4 %
Providing digital tools for functional support activities (supportive functional digital infrastructure)**	43.8%
Providing digital tools for general collaboration and workplace needs (generic digital infrastructure)**	76.2%

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Note. $N = 2,664$ communication professionals in Europe. Q: How do you assess the current level of maturity (capability and performance) of your communication department/agency in the following dimensions? Five-point Likert scale ranging from 1 = “Very low” to 5 = “Very high”. Frequency based on scale points 4-5.

The level of maturity varies significantly across different types of organizations (Table II). Joint stock companies clearly outperform other organizations in almost every dimension, while governmental organizations are lagging behind.

Table II. *Digital maturity in communications across different types of organizations*

	Joint stock companies	Private companies	Governmental organizations	Non-profit organizations	Consultancies and agencies
Using external digital platforms to communicate with stakeholders**	3.99	3.93	3.77	4.00	3.97
Using own digital platforms to communicate with stakeholders**	4.02	3.83	3.85	3.88	3.55
Providing digital tools to create, execute and evaluate communication activities**	3.66	3.55	3.24	3.44	3.63
Providing digital tools for functional	3.47	3.32	3.07	3.04	3.44

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support activities**

Providing digital tools for general collaboration and workplace needs**	4.34	4.09	3.94	3.98	4.10
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Note. $N = 2,664$ communication professionals in Europe. Q: How do you assess the current level of maturity (capability and performance) of your communication department/agency in the following dimensions? Five-point Likert scale ranging from 1 = “Very low” to 5 = “Very high”. Mean values. ** Highly significant differences (ANOVA, $p \leq 0.01$).

Strategies for advancing the digitalization of stakeholder communications and digital infrastructure

Overall, strategies for the digitalization of stakeholder communications and digital infrastructure are lacking in many communication departments and agencies. Only 46.3 % reported on an overall digitalization strategy for stakeholder communications, i.e., how to use technologies to engage with stakeholders, shape their perceptions, and influence desired behaviors. At least 60.0 % have digitalization strategies for one or more dedicated communication processes, e.g., for creating and publishing content, virtual events, nurturing relationships or monitoring.

Strategies and approaches for building a digital infrastructure exist in 54.4 % of the communication units assessed in the sample, i.e., regarding basic information technologies, services, and facilities necessary to function. Only 32.3 % have routines for selecting software and services, e.g., specified criteria and scoring systems.

Applying the perspective of the STS approach (Bostrom and Heinen, 1977a, b), we examined to what extent communication departments and agencies have digitalization strategies that encompass the four components – technology, tasks, structure and people – since all components are vital to consider when introducing technologies. The results indicate that strategies for transforming structure (42.1%), people (41.9%) and especially tasks (39.4%) are less prevalent than

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approaches for using technology (48.3%). Joint stock companies, private companies and consultancies and agencies are significantly better than governmental organizations and non-profit organizations in developing strategies and approaches for digitalization and digital infrastructure. The finding that compared to other types of organizations (especially to joint stock companies) governmental organizations are lagging behind in terms of digital maturity as well as in developing strategies and approaches for digitalization and digital infrastructure is much in line with work that has stressed the relatively slow progression of innovation and digitalization in the public compared to the private domain (Halvorsen *et al.*, 2005; Sethibe *et al.*, 2007).

Influence of different digitalization strategies on digital maturity

Statistical analyses with a regression model indicate that developing strategies for all four components technology, tasks, structure and people predicts successful digitalization of communications. This shows that strategic approaches help communication departments and agencies to increase their digital maturity (Table III).

Table III. *Influence of strategies on level of digital maturity*

Digitalization strategies for...	Technology	Tasks	Structure	People	Overall
Maturity in digitalization of stakeholder communications	$\beta = 0.095$	$\beta = 0.086$	$\beta = 0.022$	$\beta = 0.107$	$R^2_{adj} = 0.127$ **
Maturity in digital infrastructure	$\beta = 0.122$	$\beta = 0.112$	$\beta = 0.127$	$\beta = 0.113$	$R^2_{adj} = 0.278$ **

Note. $N \geq 2,462$ communication professionals in Europe. Q: How do you assess the current level of maturity (capability and performance) of your communication department/agency in the following dimensions? Five-point Likert scale ranging from 1 = “Very low” to 5 = “Very high”. Q: Introducing digitalization and digital infrastructure is a change process. Some communication departments and agencies have developed strategies and approaches for this, which are formally

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documented and communicated in the team. How would you describe the situation in your organization? Five-point Likert Scale ranging from 1 = “Not developed at all” to 5 = “Fully developed”. ** Regression models highly significant ($p \leq 0.01$).

Discussion

This article contributes to the nascent body of knowledge in the field of CommTech and digital infrastructure in corporate communications by first introducing a new framework encompassing CommTech, digital maturity, and digitalization of work systems, and then analyzing the current level of digital maturity of communication departments and agencies. The research provides a much-needed empirical perspective on the digitalization of communications. Applying a STS approach, this research draws on an expanded understanding of the digital transformation of communications as socio-technical process. It is a first step to understand the interplay between technical and social system aspects in the digitalization of communications.

According to our survey data, the current level of digital maturity of communication departments and agencies is often not viewed as satisfactory by practitioners. The necessity and potential for digitalization is understood, but sound strategic approaches for a digital transformation of communications are often missing. This result is consistent with findings from Berghaus and Back (2016) analyzing overarching digital transformation strategies in businesses. Their study indicated that digital transformation processes are often intuitively managed and not strategically planned. The same seems to be true for communication units. Our regression analyses prove that strategies for technology, tasks, structure, and people foster digital maturity. As a consequence, communication practitioners are advised to start developing a holistic strategic approach when heading towards digitalization of communication processes to ensure a successful digital transformation.

Following insights from information systems research (Bostrom and Heinen, 1977a, b; Nadkarni and Prögl, 2020; Vial, 2019), this article suggests that a narrow perspective on introducing digital technology is misleading. Instead, a broad understanding comprising not only technology but also tasks, structure and people is needed to appropriately assess and master the overall challenge of the digital transformation.

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Limitations and future perspectives

The study provides insights into the digital maturity of communication departments and agencies. As the data for this research were produced as part of an European research project, the results might be different in other parts of the world. Additional studies are needed to create comparative data. Moreover, the data are based on self-reporting by practitioners. The situation might be assessed differently by neutral observers of the processes and practices at hand. However, such approaches would only be manageable for case studies and could not provide a big picture which is helpful to structure the current nascent field. In addition, social desirability and a potential confirmation bias need to be considered as limitations of the research design, since a new concept is introduced that may then be perceived as desirable by communication professionals.

Based on our research findings, we strongly encourage future research on CommTech, digital infrastructure, and the digital maturity of communications. Researching the maturity of CommTech along the two dimensions outlined in Figure 1 (primary activities and functional support activities) over a longer period of time can generate multiple longitudinal insights of the digital transformation in corporate communications. Since the regression analyses demonstrated that strategic approaches positively affect digital maturity, further studies might elaborate specific strategies for improving the level of digital maturity.

In addition, further studying the consequences of introducing CommTech and generic digital support infrastructure in communications would be a valuable research endeavor. How does increased use of digital technologies affect the performance of communication departments and agencies? How does it contribute to the overall organization’s success? Furthermore, qualitative research could provide important insights into the obstacles that prevent communication units from reaching more mature stages of digitalization. According to Bostrom and Heinen (1977a) three questions become crucial when introducing new digital technology into a social system: “1. What are the human or behavioral problems? 2. What are the causes of the behavioral problems? 3. How can the causes be eliminated to solve the behavioral problems?” (pp. 29–30).

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Apart from this, future research might also explore the drivers of technology acceptance and use among communication practitioners at a micro level, looking for example at the effect of technological features on practitioners’ adoption and use of CommTech (Park *et al.*, 2014).

Lastly, we suggest that both practitioners and scholars adopt the socio-technical perspective more often in the domain of corporate communications in general. The interplay of technological and human challenges will become more important in the future in many ways, and the conceptual perspective used in this research can be fruitful for various other questions in our discipline. The applied perspective allows to rejoin the artificial distinction between a technology (it’s properties, features, outcomes etc.) on the one hand and its context and use on the other hand. Instead, it favors a view on CommTech as ‘technology in practice’ and ‘practiced technology’.

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Appendix 1

Table I. *Empirical instruments*

DIGITAL NEEDS FOR COMMUNICATIONS					
Q1					
Most communication departments and agencies use software applications and digital services to support stakeholder communications and internal workflow.					
The Covid-19 pandemic and trends towards more agility and virtual collaboration speed up this development. But it doesn't mean that such investments and changes are always necessary to meet goals and expectations.					
How important are the following aspects for the success of your communication department or agency?					
	Not important			Very important	
Digitalising communication processes with all internal and external stakeholders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building a digital infrastructure to support all workflows within the communication department or agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Q2

How do you assess the current level of maturity (capability and performance) of your communication department / agency in the following dimensions?

	Very low					Very high				
Using own digital platforms to communicate with stakeholders (e.g. websites, intranets, mobile apps)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using external digital platforms to communicate with stakeholders (e.g. Twitter, Facebook, LinkedIn, Instagram)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing digital tools to create, execute and evaluate communication activities (e.g. content management software, social media platforms, campaign management, news distribution)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing digital tools for functional support activities (e.g. aligning communication and business goals, monitoring public opinion, managing digital assets)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing digital tools for general collaboration and workplace needs (e.g. video conference software, work at home equipment)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

STRATEGIES FOR DIGITALISATION AND DIGITAL INFRASTRUCTURE

Q3

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Introducing digitalisation and digital infrastructure is a change process. Some communication departments and agencies have developed strategies and approaches for this, which are formally documented and communicated in the team.

How would you describe the situation in your organisation?

<i>My communication department/agency has ...</i>	Not developed at all				Fully developed	Don't know
An overall digitalisation strategy for stakeholder communications (how to use technologies to engage stakeholders, shape their perceptions and influence desired behaviours)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Digitalisation strategies for one or more dedicated communication processes (e.g. for creating and publishing content, virtual events, nurturing relationships, monitoring)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A digital infrastructure strategy for the communication department or agency (regarding basic information technologies, services and facilities necessary to function)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Routines for selecting new software and digital services (e.g. specified criteria and scoring systems)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Descriptions of tasks and how they can be transformed through digital technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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(e.g. writing, storytelling, presenting)

Strategies for transforming organisational structure in times of digitalisation

(e.g. reconfiguring processes and reporting lines, new work routines and culture)

Strategies for transforming people in times of digitalisation

(e.g. competency development, digital mindset)