# TRANSFORMATION OF COMPETENCE – THE EFFECTS OF DIGITALIZATION ON COMMUNICATORS' WORK

*Research paper*

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## Abstract

*Studying human competence in relation with digitalization is currently an under-researched area within information systems scholarship. This paper presents a response to the contemporary calls within the IS field for studying the changes brought on by the advent of digitalization. Based on in-depth interviews with professional communicators, we illustrate the effects of digitalization on the formation of work related competences. Employing a new sociotechnical system approach (Neo-STS), we analyze and illustrate the effects of digitalization in multiple ways. First, we propose that any further study of competence cannot be inadvertent to the phenomenon of digitalization. Second, we suggest a new approach for studying competence in relation with digitalization as opposed to studying "digital competence". Third, by applying a Neo-STS perspective, we provide a substantiated explanation of the transformation of competences in the work of communicators.*

*Keywords: Competence, Digitalization, Neo-STS, Work.*

# 1 Competence vis-à-vis Digitalization

Although the obligation to respond appropriately to digitalization is felt by many organizations, it remains unclear what an 'appropriate response' should entail. Lacking practical guidelines, most companies either ignore the advent of digitalization or nervously overreact to the technological hype assuming that merely adopting more digital technologies would boost performance (Rigby & Tager 2014). It has been argued that while ignoring digitalization is unwise, introducing digital technologies to organizations without taking into account the resourcefulness of human agency is also to miss the point (Boudreau and Robey, 2005). If ignoring digitalization is not an option and neglecting it in relation to human agency is problematic, the question is how to juxtapose the agents' competence and digitalization. This is important since on the one hand, the digitalization of organizations is the "new reality" (Yoo 2010, Tilson *et al.* 2010a). On the other hand, the organization's effectiveness is in direct relationship with the competence of its workforces (Nadler & Tushman, 1999, Lucia & Lepsinger, 1999, Gangani *et al.*, 2006). Hence, it is crucial to understand what constitutes the agents' competences in the wave of digitalization.

From among various disciplines, the concept of competence as well as competency models have received the most significant attention in the management field. All over the literature, "competence" has received semantic primacy over other similar terminologies like "prerequisites", "ability" and "skill" (Weinert, 2001, Sandberg & Pinnington, 2009). However, most investigations that have pertained to the study of competence in the workplace have done so without paying explicit attention to the process of digitalization (*cf.* Weinert, 2001; Nadler & Tushman, 1999; Sandberg, 2000; Le Deist & Winterton, 2005). Overall, there are just a scant number of papers published in recent years that acknowledge the importance of digital competence in organizations (Malekifar *et al.*, 2014; Vieru, 2015; Vieru *et al.*, 2015).

The obvious exception where the study of competence in relation with digitalization has already been the area of ample inquiry is the discipline of pedagogy (*cf.* Ferrari *et al.*, 2012; Ala-Mutka *et al.*, 2008; Calvani *et al.*, 2009; Gallardo-Echenique *et al.*, 2015; Ilomäki *et al.*, 2016). Studies within this discourse apply terminologies such as "e-competence", "digital competence", or "digital literacy", in order to study competence in relation with digitalization.

Yet, attributing "digital" as an adjective to competence and branding it as *digital competence* – as has been customary in many disciplines – is problematic. As Ilomäki, Kantosalo and Lakkala (2011) explain, digital competence is grounded in ICT and refers to the abilities of individuals to work with specific digital devices. Hence, *digital competence* arguably refers to the relationship of individuals with a digital tool (Ilomäki *et al.*, 2011). That way, the focus is on the interaction between agents and particular tools and not on the competence grounded by digitalization as a societal and organizational phenomenon. Thus, the characteristics of work practices as a whole that have been affected by digitalization are not sufficiently analyzed or understood.

In this regard, Winter *et al.* (2014) highlight the mismatch between the characteristics of work systems affected by digitalization and the current IS scholarship. The authors emphasize the exigency of critical re-examination of the foundations of prior work conceptions and emerging issues relevant to digital infrastructure, and thereby making a bridge between what is known and what is needed. Tilson *et al.* (2010a) further remark the importance of digital infrastructure and its implication on different subject studies and maintain:

> "The infrastructure-turn calls us to critically review the categories that have so far helped us make sense of the sociotechnical reality we study. As old worlds and connections disappear, we need to invent new concepts, relationships, and vocabularies by keeping our concepts and models fluid and open to new analyses." (p. 758).

In this manner, we intend to reinvestigate the concept of "competence" in relation with digitalization. To do so, we lay the subject matter of our paper on two fundamental assumptions. First, we argue that

understanding work practices are of the outmost importance when studying competence. Here, we lean on Sandberg (2000), who asserts that "the workers' ways of conceiving work make up, form, and organize their knowledge and skills into distinctive competences in performing their work" (p. 20). That is, the cornerstone in studying competence is the workers' understanding of their work. Second, we argue that work practice is changing in the wakes of digitalization. In their critical reflection on conceptualizing 21st century sociotechnical work, Winter *et al.* (2014) maintain that work nowadays is affected by the characteristics of digital infrastructure. They emphasize that "as the nature of technology and work changes, phenomena have arisen that challenge the underlying premises of much of the existing research on information technologies and the organization of work" (p. 261). That is, the study of work systems today entails paying heed to the phenomenon of digitalization.

Based on these two assumptions, the purpose of this paper is to study competence in relation with work practices that are affected by digitalization. Thus, the overarching research objective that we are pursuing in this paper is to explain "how digitalization has affected the formation of competences". Nevertheless, the point of departure for such an effort is to look at the work practices that are formed by the characteristics of digitalization. In addressing these issues we hope to: 1) respond to the call for re-examining the concept of competence by attending to the emerging technological phenomenon of our age, as required by the IS scholarship, and 2) present a new way of understanding competence by focusing on work practices that are affected by digitalization rather than focusing on the interaction of individuals with single digital tools.

Next, we introduce Winter *et al.*'s updated sociotechnical systems approach as the theoretical perspective for our study and then describe the methodological approach. We thereafter present our empirical results which are subsequently discussed. The paper ends with conclusions and implications for practice and research.

## 2 Digitalization as a Sociotechnical Process

Today, digitalization is considered an assumed necessity in IS research (Tilson *et al.*, 2010a; Yoo *et al.*, 2010), a *sine qua non* of many systematic investigations within our discipline. One reason is that the information systems are – just as digitalization – in essence sociotechnical. According to Briggs *et al.* (2010), what is under study in the sociotechnical agenda is technological artefacts, as well as actors who use or develop those artefacts, and their mutual relationship. In a more general sense, then, digitalization highlights the importance of "mutual constitution of social and technological" (Sawyer & Jarrahi, 2014).

Traditionally, IS research typically focuses on the application of computers in organizational contexts, where many assumptions are drawn from a sociotechnical systems (STS) approach (Winter *et al.*, 2014). Thus, while far from all IS scholars refer explicitly to STS, a significant portion of IS research is rooted in the STS tradition and builds on its underlying assumptions (Hirschheim & Klein, 2012; Winter *et al.*, 2014).

IS research has acknowledged the importance of mutual adaptation between technology and its surrounding organizational context (*cf.* Orlikowski, 2007; Leonardi, 2011; Sarker *et al.*, 2013; Sawyer & Jarrahi, 2014). However, recent technological development regarding "changes in the nature of the technical and information infrastructures upon which work systems rely" (Winter *et al.*, 2014, p. 257) has enabled practice to transcend organizational boundaries in ways that make the organization unsuitable as the (single) unit of analysis. This increasing capability of the infrastructure can be referred to as "digitalization" (Tilson *et al.*, 2010a).

It has been argued that entirely new organizing structures have emerged and many organizational work practices have been radically changed as a result of digitalization (Yoo *et al.*, 2009). Research on digitalization has raised questions about the relationship between organizations, work and information technology (Yoo, 2010; Yoo *et al.*, 2010; Tilson *et al.*, 2010b), and digitalization is said to transform the nature of relationship between technology and work, (Yoo *et al.*, 2012,).

As a consequence of this transformation, Winter *et al.* (2014) argue that while STS has had – and continues to have – an influential impact on IS research, it will limit us in our ability to address the new kind of work that spans organizational borders, as organizations no longer create and control the infrastructures their workers use and rely on. Hence, they argue that the fundamental principles of STS must be revised to form what they refer to as "a neo-sociotechnical systems approach"; a set of premises that include not only traditional studies of IS and work but also the emerging phenomena that digitalization brings. Consequently, and based on what they argue are the four premises of STS (Organizational encapsulation, Sociotechnical coherency, Downward inheritance, and Joint optimization), they present a modified set of corresponding but updated neo-STS alternatives. Next, we present Winter *et al.*'s four neo-STS premises as we have understood and used them in our work to understand digitalization's effect on competences.

### 1. From Organizational Encapsulation to Multi Encapsulation

"Neo-STS Premise 1: Work systems are necessarily encapsulated within one or more, potentially overlapping, sociotechnical systems".

As a result of digitalization, work does not have to be encapsulated within a single organization from which it inherits structure and goals. This does not imply that boundaries have disappeared; it means that digitalization has changed them, and studies of work in digitalized environments must therefore more actively examine and scrutinize encapsulation. In previous studies, Winter *et al.* argue, organizational boundaries were largely taken for granted, even in inter-organizational systems research, and such an approach is too naïve to be useful in today's situation. Winter *et al.* explain: "Dropping the organization-as-container assumption amplifies rather than eliminates the need to explicitly consider encapsulating boundaries" (2014, p. 259).

### 2. From Sociotechnical Coherency to Complex Interrelations

"Neo-STS Premise 2: Work systems have interrelated, possibly complementary, redundant, competing, or conflicting, social and technical elements that may co-exist without ever being fully reconciled".

Traditionally, IS scholars have focused on the 'coherent whole' that interrelated technical and social elements supposedly form. Tasks, strategies and technologies are assumed to align in a rationalistic way (Winter *et al.*, 2014). Although there have been empirical studies suggesting that alignment and harmony are difficult to achieve (*cf.* Ciborra, 2001), rationality and coherence as necessary conditions for success have dominated the STS approach thus far. This mindset must be challenged, argue Winter *et al.*, since it is likely to mislead us in times of digitalization. While alignment and complementarity may be useful in some contexts, Winter *et al.* argue that we must also allow for the existence of redundancy, competition and conflict, and still be able to view these work systems as functional.

### 3. From Downward Inheritance to Multi-Directional Inheritance

"Neo-STS Premise 3: Work systems can derive purpose, meaning, and structure from the multiple contexts in which elements are embedded and they may pass on purpose, meaning and structure to the sociotechnical systems that emerge around them".

As a result of the idea of organizational encapsulation, it was plausible to implicitly assume that work systems would inherit their goals, structures and meanings from the organization in which they were embedded. In this view, Winter *et al.* (2014) explain, it is tacitly assumed that organizations precede work systems and therefore set the agenda. The multi-directional inheritance does in no way rule out this possibility, but it allows for a more complex inheritance structures including the possibility of 'upward causation'. Work systems that involve many heterogeneous stakeholders will inherit purposes and meaning from multiple contexts, but will also in turn shape those contexts. Nesting and inheritance of both structure and purpose thus continues to remain central. The difference is that digitalization can decouple work from the traditional organizational structures and enabled work systems to self-organize to form new embedding organizations (Winter *et al.*, 2014).

   4.   **From Joint Optimization to Continual Negotiation**

"Neo-STS Premise 4: Creation and continued existence of work systems involves simultaneous support for both performance of work and the ongoing negotiation of goals, values, and meaning".

The idea of joint optimization – between individual/social on the one hand and organizational/technical on the other – has created an ideological landscape in which actors seem always to strive towards a balanced agency of combined human and organizational goals. However, joint optimization presumes some level of agreement about the nature of the goals, and that work systems exist within the boundaries of a larger organization. When digitalization has made the idea of a singular organizational encapsulation problematic, joint optimization also becomes questionable (Winter *et al.*, 2014).

Winter *et al.* (2014) point to several sub-disciplines within IS research that have struggled with the implications of joint optimization, and common to all of these is the idea that organizationally provided information systems must be accepted by the organizational members for it to be considered successful. Success factors are defined in terms of particular organizational objectives (*cf.* DeLone & McLean, 2003). But when the organizational encapsulation, sociotechnical coherence and downward inheritance no longer can be assumed, successful work systems must be defined much broader. Digitalization through new technical infrastructures results in work systems that Winter *et al.* describe as "a 'negotiated order' among different organizations and individuals".

It should be mentioned that rather than a theory, the Neo-STS approach presents more of a perspective through which much of the previous socio-technical literature is summarized and reconsidered critically. Therefore, as an alternative to narrowing the theoretical framework to a specific theory, we find this perspective to be an appropriate lens that enables us to deliberate more holistically about work in the face of new arising phenomenon. The details of such deliberation is presented in the next section.

# 3   Research Method

This is a qualitative study based on semi-structured, open-ended interviews. As is typically the case when carrying out qualitative research, our work has not followed a linear trajectory but circled back and forth, between collecting data and analyzing data. For clarity, we still describe the process rather linearly starting with data gathering and following with data analysis.

## 3.1   Data Gathering

The empirical data for this study comes from interviewing professional communicators. The reason for selecting this profession is twofold; first, the profession of communication is present in almost all organizations and thus of interest to a broad audience. Second, the profession of communication corresponds directly to both media and technology industries – the two industries that are expected to receive the most digital transformation through 2020 (Rigby & Tager, 2014). This way, the results of the study could typically exemplify the effects of digitalization on work practices and their related competences. As a result, we identified *what* communicators do in a digitalized work setting as well as *how* they do that.

Selecting in-depth interview as a method of data collection was mainly influenced by the fieldwork approach of our study (*cf.* Creswell, 2013). The in-depth interview maintains an emic perspective and provides the insider's viewpoint about the interviewee's experience (Hennink *et al.*, 2011). It is this experience that we intend to capture and examine. For our study, we first identified 45 prospective interviewees holding the title of communicator or information officer at two different local universities. These invitees were identified through the universities' official webpages. Each communication officer was sent an invitation via email, which was followed up after two days through phone calls in case no response was received from the invitees. Fifteen communicators agreed to be interviewed.

Two "pilot interviews" were conducted as a pre-run to help us fine-tune our questions, and these interviews were therefore excluded from the subsequent analysis. We thereafter started to interview, code

and analyze until the point of saturation, i.e., where "information begins to repeat itself" (Hennink *et al.*, 2011, p. 88). In this study the saturation point was achieved after at the 11th interview. This is fully in line with Guest *et al.*'s (2006) conclusion that 6-12 interviews are often enough to reach saturation, particularly when a certain degree of participant homogeneity can be expected, as in our case where the respondents were purposively chosen. Still, two more interviews were conducted to be on the safe side, but almost no new information surfaced, confirming our initial decision. Hence, thirteen interviews form the basis for our analysis. All interviews were audio recorded and subsequently transcribed verbatim. Additional information is provided in table 1.

| Respondent | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| University | A | A | A | B | A | A | A | A | A | A | B | A | B |
| Duration (mins) | 68 | 82 | 55 | 40 | 69 | 34 | 57 | 52 | 67 | 55 | 70 | 47 | 44 |
| | *Total interview length*: 12h 20. *Mean interview length*: 57 mins | | | | | | | | | | | | |

*Table 1.*　　　*Number of respondents, their affiliations, and duration of interviews.*

## 3.2　　Data Analysis

The coding of the data was initially inductive and firmly grounded in the data itself. We had initially asked two general open ended questions: "what does the work of a communication expert entail" and "who is a competent communication expert in your opinion". Apart from general probes such as "how" and "why", we followed up each of the two main questions by one key probe: "do you think digitalization has made any difference in your definition of work/competences". We did so to capture any nuances of opinion when it came to new forms of work practices or competences from the perspective of the participants.

The analysis was carried out in an ongoing iterative process including multiple rounds. During the first round of analysis, we tried to identify all concepts related to competence by examining statements in relation to their surrounding context. The focus was on *what* the communicators did as part of their work and *how* they performed these tasks. The resulting concepts were then clustered according to their similarities in order to form common themes. Note that the focus of our analysis was never on individuals' skills in regard to specific tools. Instead, we focused on what we refer to as more general and overarching competences, and we aggregated our emerging themes accordingly. Again, this was an iterative process where new concepts were developed tentatively, compared to existing concepts, and then kept as they were or relabeled. New concepts could also force themes to be split up in subthemes that were later perhaps merged with other subthemes or expanded to become main themes. The resulting themes were thus all firmly grounded in the data.

In a subsequent round of data analysis, we focused on the statements that were made in relation to the differences in the tasks/competences brought about by *digitalization*. During this phase we applied the Neo-STS perspective with its four premises, which allowed for new concepts to surface. These concepts were compared and contrasted to the preliminary sets of concepts formed in the first round of analysis. Posing questions relevant to the four premises enabled us to develop concepts that were pertinent to the features of digital infrastructure[1], but also made us sensitive to subtle rearrangement of

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[1] This is a non-exhaustive list of digital tools and technologies employed by communicators in this study: Adobe Creative Suite, Airmail, Apsis Newsletter, Blogger, CSS, Drupal, Facebook, Google Analytics, HTML, Infoglue, Instagram, LinkedIn, Microsoft Office, Outlook, podcasts, Search Engine Optimization, SharePoint, Snap Chat, SoundCloud, Tumblr, Twitter, Vimeo, WordPress, YouTube.

work and their associated competences based on the participants' descriptions. The result of this iterative analysis is presented in the next section as four transformations of competence.

# 4    Results

In terms of "what" constituted the work of the communicators, our respondents frequently referred to two major tasks. Either for internal communication or external newsletters, the major task includes preparing a message and transmitting it through an appropriate channel to get the intended visibility by the target audience. First, the large amount of information that could be made available to various target groups needs to be prepared for the desired impact. That is, the intended core of the message has to be highlighted and put into the proper context with relevant background information which further elaborates the core. This way the message would appear more appealing and comprehensible to the target audience.

Second, a channel that supposedly suits a prepared message has to be decided upon. Determining which channel is appropriate for a certain kind of information has become of significance. Since nowadays channels provided by digital platforms are versatile and the desired audience can be dispersed in a variety of these channels. Therefore, selecting the right channel for a certain message or task requires knowledge about the way communication works within that particular channel. On the other hand, confirming whether the optimum result is achieved by selecting a certain channel or preparing the message in a certain manner is controversial. This is because there is no direct numeric value for successful communication. In explaining how preparation of a message and transmitting it in a suitable channel is executed, our participants described four overarching competences they believed a communication expert needed to possess. These competences are exemplified in the following section.

## 4.1    Timing/Being Alert

During the interviews, there were often statements about the limited time span available to carry out various tasks. Our respondents also contended that due to digitalization of the work practices, things go faster, cycles become shorter, and there is a need for keeping up with what is most recent. Previously, as our respondents report, tasks were expected to be done according to a rather stable and predictable timetable, whereas nowadays deadlines are fluid if not immediate. There is a more pronounced focus on being the first or at least quick in responding to the current event.  Therefore, the communicators must react promptly not to fall behind.

> […] *Everything is more rushed now. The journalists used to have definite regular deadlines and you could know that and act according to the deadline. Now, something happens and it's already out in the morning, and it runs during the day and if you want to wait for the news at night, the researchers just add their own angle at night. Ten years ago if you sent them [the journalists] the news, they would wait for the news hour at night. Now, even when you send something to a newspaper, the newspaper can publish it on its web.* (Respondent 10)

The respondents would oftentimes mention that it is no longer enough to catch up with deadlines mainly because now deadlines are hardly stable. Instead, the respondents acknowledged that nowadays the demand for the spontaneous availability of information is high. Thus, the information circulates fast and consequently becomes obsolete in rather short time spans. On that account, our respondents often mentioned how their preferences for longer texts with more valuable content in them is replaced by the obligation occasioned by the hallmarks of digital platforms for more spontaneous messages that communicate the ambience of the moment.

> *Because it [Twitter] is short and fast and you can, now that it's developed, add pictures and short videos to it easily. It is becoming more and more useful. It is very spontaneous. When I was working in [a particular location], if there was an incident I could go out and take a picture and tweet it. With the web it takes couple of days probably. By Twitter you say, come here and watch now! It is Twitter!... I think the demands are higher today. We have all these channels and information over-*

*load. Everyone is shouting: Look here! Look here! Watch this! See that! Everything goes fast! To-morrow is too late! It is already forgotten!...* (Respondent 8)

## 4.2     Reconciling/Linking

A recurring theme in the interviews was that of maintaining a balance between contrasting opinions or opposing agendas. Different research teams, departments or even entire universities are sometimes supposed to show a united front to the audience, but according to our respondents, it often becomes the responsibility of the communicators to make sure this happens. Since research teams, departments not to mention universities have individual agendas and are looking to promote themselves first and foremost, this reconciliation task can be rather tricky. One example displayed how a department that organizationally belonged to two different universities, had to incorporate two different visibility agendas when it came to publishing newsletters on the website. Reaching a middle ground that met the expectations of both organizations turned out to be a difficult task, requiring very specific skills:

> *We send the newsletters to the Faculty of Science and we prepare what they think is interesting for them. Because it's always this University A and University B. Many times we have prepared news that we think is interesting for the whole department and it should be out and we have included interviews in it, but they are like "No! Because the person you have interviewed is from University A and not from University B, so we are not interested" [laughs]. It's very incompatible.* (Respondent 11)

Our respondents would time and again argue that the digital platforms and technologies usually added another twist to the problem of reconciling conflicting agendas. The diverse platforms for communication, they argued, had made it impossible to reconcile a myriad of contradictory or redundant goals and policies. They mentioned that universities are usually late adopters of new societal changes. Their agendas are not those of being the front runners of new technologies especially when it comes to informal media. However, the respondents explain that their organizations have gradually had to give in to the demands of the audience. Of course, this had not meant that the university had let go of its academic countenance. Rather the paradox of using non-academic outlets to present the academic world has been solved by the characteristics of open source media which provided the opportunity of connection and disconnection whenever needed for the organization. The example below is an illustration of how, according to our respondents, such contradictions were overcome by the features of social media. As the respondents put it, despite the contradictory characteristics of non-academic media such as Facebook, there was a complementary side to using them as well. That is, they could compensate for the inability of the formal website for transmitting a softer or a more attractive feeling:

> *The upside [of today's tools] is that you can do so much and quite fast, if you are not limited by technical capabilities or skills. I mean this is a university; it is not the front of everything. We know what we could do, but being this kind of organization we usually wait and see what happens, what people say about new things. I think Facebook was a good example. We talked over and over again to decide if we needed to have a Facebook page or not. Why? How? Talk, talk, talk and talk! And then one day we just had to do it, because our target group was already there, so we needed to be there too. So now we just do it. The technical stuff is not up to us here, it is <u>there</u>. It is not like our website; it takes time for technical supports for the website. So Facebook was not like the website. That for every profession, there are certain needs and our organization is very complex and it takes quite some time to do what you should do. So the technical formal website takes a long time to be developed, but not the social media. So the social media is good for us who have been working with student recruitment because we can feel stuff there. And it is quite fast! And we can transfer some of the mood or, umm attitude from social media to our website too at a slower pace. We can make it more attractive too with the inputs from social media. We don't need to be so heavy all the time like we are on our website…* (Respondent 7)

## 4.3    Strategizing/Tuning

Our respondents explained that they often had to take in a more holistic or even strategic role these days. They mentioned the need to think about and plan for all the possible things that can happen; the long-term effects of selected tools, channels and the content that is made available online. The respondents explained that availability alone does not sanction the tool's suitability for application. Rather any decision regarding tools must consider the long-run consequences. As the respondent below mentions, by taking on this responsibility, the communicators feel they help translate the vision of the organization into practice while minimizing possible clashes at the same time. Being a competent communicator thus means long-term strategic deliberation on communication issues.

> *…and you also need to be, uhhh, "strategic" in some way since we don't have any board or bosses to tell us or give us any directions about what to do. That also means that we have to keep track of what our colleagues or other people do. It's constant benchmarking. Be strategic and try to have an overview, I'm not sure what to call this competence but not to be this [making a gesture with his hands showing a small box in front of his eyes]! Have the bigger picture. I don't know what to call this competence but that's a very important thing. And you really need to be confident, because again nobody asks us about our opinion, nobody thinks that the communication department is the motor or the engine. But we need to think that. So you need to be confident and professional. So that when my boss comes to me and says I would like to do this, I can then say "yeah, but that's not a good idea, because blah blah blah". So you need to stand up for yourself and for your subject. I have this struggle every day. Good researchers who think press conference or media is just bull-shit, I don't need that. You have to keep telling them how important it is and build your case; the communication case! Collect the evidence to prove how important it is.* (Respondent 3)

However, the sheer number of digital platforms could make long-term strategizing impossible at the same time. The respondents called for attention to the knowledge required for understanding various channels and the way people communicate in them. Moreover, as they mentioned, the audience is no longer silent and cannot be fed with just about any sort of information. Their feedback should be taken into consideration when strategizing. Nonetheless, the respondents contended that the feedback is barely a stable flow of information. Therefore, nowadays it would be impossible to sketch long term plans based on fluctuating and unstable figures received through feedback. Rather, they argued that it was more effective to re-connect to this flow regularly and tune their strategies accordingly.

> *First you need some kind of basic skills about how communication works of course, but more and more today I think you need these especial skills like how to work with social media, how to make videos, etc. So maybe it's that you need to both be an expert and a strategic person today. Yes, you have to make plans and everything but still you can make it to your Facebook page today. You are constantly working on both the long-term things and the small fast happening things as well. So maybe you need to change your mindset many times per day. Maybe you need to be a bit more all-around everything today. We need to be at least the small experts of everything… Maybe analyzing is a competence that we need to learn more, like working with statistics and all that. We try to do it but we could go further and deeper.* (Respondent 12)

## 4.4    Prioritizing/Analyzing Feedback

The respondents pointed out that the amount of information is massive and there exist various available channels where the information could be streamed. This has turned selecting, managing and controlling the information and its relevant channels into a demanding task. This is problematic because as the possibility for visibility in digital platforms has increased, the demand for being visible in such platforms has intensified too. The respondents mentioned how impossible it is to keep the news about each project updated, and that they often need to prioritize one from among other information and channels. Moreover, they emphasized that it is imperative to make the management understand the necessity for such prioritization:

> *…In our department, we have almost 200 projects currently running that may run for 1 to 3 years. It would need constant updating. The ambition they have to be visible on the web is just not possible. I just gave up. If you want me to sit all day and update every project, then fine! But I don't think it is the only thing that I can contribute to. […] I think we need to write a priority list. We communication officers are all in the same situation on this. There are too many things that we could do and help out with! We sometime are expected to be copywriters, art directors and photographers. I mean all these competences in one person! If we can just make the management understand that I can't do everything you want me to do, but if you just prioritize things that you want done, it will be easy. I am going to do that but I haven't yet.* (Respondent 13)

Yet, the respondents maintained that prioritizing a specific project over the others, or selecting one channel for promoting the visibility of a project could be quite complicated. One complication, according to them was to decide and persuade the management and researchers as to why primacy should be given to a particular project/channel. When probed about how the imbalance of tasks caused by diversity of communication channels and their related features could be compensated for, the respondents often mentioned the advantages of analyzing feedback systems. They reasoned that a feedback system and the skills to analyze the obtained feedback could provide the basis for prioritizing one message/channel. The solution according to them was not the increase of the human work force to match the workload. Neither was it having a policy for placing preference on specific projects or channels. The respondents questioned whether all this information should be deemed necessary in the first place. They often reasoned that rather than prioritizing, analyzing feedback could diminish the need for persuading the researchers or management for prioritizing. It would instead facilitate the researchers with a tool that leads to minimizing unproductive proofreading:

> *I mean, who reads them [all this information]! I mean, sure, there might be curious people for some projects but it is hard for me to know which projects people are very interested in. I can't decide that from our research description. I think our university's webpage has too much information on it. It would be very interesting to see how the traffic of the readers on that web page looks like. I have that information available but haven't had a time to look it up. We do some Google Analytics but it is a tool that is difficult to master… The researchers are so much engaged in their research area. They keep climbing each other that my research is more important than the other ones here at the department. You can't really say "no! It is not! We need to be displayed in this or that way". I might be exaggerating it now because I can't find perfect wording for it but it is quite like it! Feedback systems can absolutely work. If we can show them that these projects for which we spent hours and hours to put on the system have actually had 3 visits in 2014 [laughs], then it will be quite easy to convince them. That would be easy for them too, because they spend time to proofread what we write.* (Respondent 13)

## 5    The Transformation of Competences

Many different statements concerning the necessary competences for accomplishing tasks, as conceived by the communicators, surfaced during our interviews. In our thematic analysis, and while having digitalization at the focal point while examining the empirical accounts, four distinct yet thoroughly intertwined competences were identified, and are listed on the left hand side of Figure 1. However, in our attempt to further elaborate the role of digitalization on transforming the work practices and consequently also the competences, we deployed the Neo-STS framework as described previously. Our analysis shows that in addition to these four overarching – and 'traditional' – competences, the ongoing digitalization has also created *a need for a new set of complementary competences*, listed on the right hand side of Figure 1. These competences are new, yet not utterly new – they are in a sense derivatives or nuances of the competences previously needed. Thus they do not replace but *complement* the existing competences. We contend that this insight – i.e., digitalization creates a need for complementary competences that coexist with our existing competences – is a novel finding, which is

likely to extend beyond the current context of communication professionals. Below, we discuss the details of such contention.
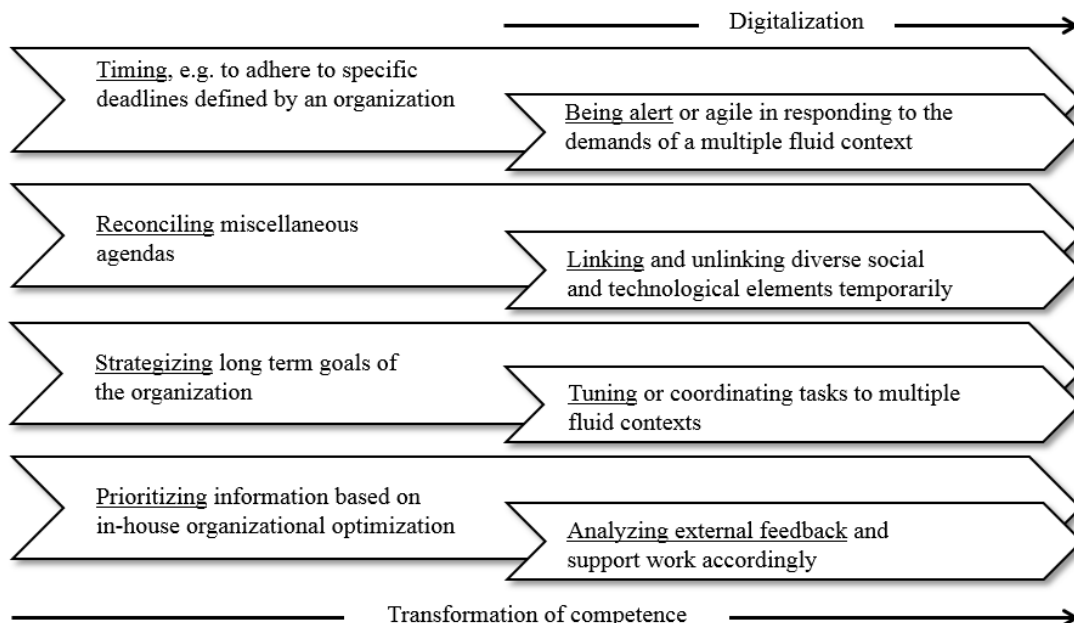


*Figure 1.      Four overarching 'traditional' communication competencies and their complementing 'digital' derivatives as identified in our study.*

First, a Neo-STS emphasis on the dynamics of non-firm organizational contexts provides the means to identify fluidity as well as multiplicity as a determining feature of organizational context. That is the organizational context is both multiple and fluid. Notably, deadlines and demands – and thereby the rhythm of work – are no longer defined by *one* organization, but by the fluid course of actions taking place between organizations, communicators, and audiences. Such context-in-flux, has changed the nature of work practices. Deadlines are no longer definite. Every piece of information has a limited lifetime thanks to advances that improve the speed of information transferability and delivery.

As information becomes obsolete faster than before, being alert or agile for responding to the demands of the moment grows to be a key competence for communicators in the face of digitalization. *Being alert or agile* is a competence needed not simply to work to deadlines or catch up with a definite time table but to act in accordance with the fast-moving information flow. Lacking momentum in reacting to information flow in a digital environment at one moment can render that information obsolete in the next moment. This draws attention to the requirements of the surrounding context, i.e. what the trend at the moment is.

In this regard, respondent 10 explains that realizing the current course of events and responding to it forthwith becomes an existential urge. This means that the visibility of a specific message is jeopardized in a sea of competing messages. Lacking promptness in sharing the control of the current flow can mean invisibility. Due to digitalization, a communication expert's competence, therefore does not include catching up with a specific deadline defined by an organization. Rather it entails *the ability of being alert or agile* in responding to the demands of a multiple fluid context.

Second, a Neo-STS perspective maintains that work systems entail practices developed around the characteristics of digital infrastructure as well as the agendas or guidelines of multiple contexts. Such particular characteristics and guidelines form interrelated technical and social elements within work systems. However, these agendas, guidelines or characteristics could be contradictory, complementary or redundant from time to time without compromising a work system. These elements are indispensable to the work systems, even if they are not rationalistically aligned in relation with each other.

In this regard, respondent 7 highlights, being diplomatic turns into a competence required to reconcile or find a middle ground where various agendas can meet for functionality. However, as the respondent continues to elaborate their opinion with an example, it becomes evident that digital media has facilitated the possibility of functionality without necessitating a full fundamental agreement among various policies or tactics. A formal academic organization can connect to an informal non-academic digital platform such as Facebook. In this midst, neither the university discards its academic tone, nor does Facebook necessarily turn into a formal platform dedicated exclusively to academic content. Rather, the functionality of visibility is activated by what Winter *et al.* (2014) call a loose coupling between sociotechnical elements. The university thus creates a link to a platform that is deemed as useful at the moment and disconnects the link or moves it to another more fitting platform the next moment.

By loose coupling one can imagine a temporary negotiation of a middle ground to accomplish a present task that is descendent from the characteristics of multiple inter-related elements. This middle ground is impermanent and formed around the present requirements. This is perhaps the oxymoron of a digitalized era where two apparently contradictory elements are juxtaposed, but also where a concealed point lies. That is, there needs not to be a clear or rationalistic line which aligns fundamentally agreeing elements next to each other for a functional work system. Given this assumption, it is arguable that the ability to reconcile miscellaneous agendas is turning more and more into *the ability to create various temporary links* for specific purposes. So a competent communication expert in charge needs to have the ability to link and unlink diverse social and technological elements temporarily.

Third, work systems which include various developers and users due to the digital nature of their employed technological infrastructure can inherit purpose, meaning and guidelines from multiple contexts. This is a phenomenon that Winter *et al.* (2014) refer to as the "multi-directional" inheritance of work practices. This means that the organizations are no longer superordinate and work structures subordinate. Instead, today's technological infrastructure is stipulating the possibility of the work structures to precede their encapsulating organizations. In this case, the inheritance of work structures is no longer merely a top-down transaction.

For instance, the vast number of channels, heterogeneous groups of audience and the fast changing trends of the contexts in which messages are being published make it impossible for the organization to have a clear guideline for *strategizing* necessary actions. Thus, thinking strategically about the long-term effects of today's actions becomes a competence that is required on the side of professionals who are directly working with these channels and their relevant message styles.

In this regard, respondent 13 expressively mentions how helping the organization keep track of right thinking has become the responsibility of each professional. Strategizing, then, has grown into a competence on an individual level. Nevertheless, as the respondents continue to further elaborate their points, digital media entails shifting characteristics. Strategizing long term policies can thus be problematic in the face of media with fast changing qualities. Additionally, now that the technological support allows for analyzing the response to the communicators' work, long term strategizing might not be the most practical idea. It is rather the ability to *tune* work practices according to the demands of the current context, a process that Tilson *et al.* (2010a) call "connect and coordinate". Therefore, tasks are identified as each individual professional is connecting to multiple fluid contexts and immediately coordinates or tunes tasks with them.

Fourth, Winter *et al.* (2014) maintain that when the organization is no longer the only container of work or the system, primacy of organizational goals becomes problematic. The reason is that, as discussed, purpose, meaning and goal are inherited from multiple contexts. In such circumstances, work systems are formed around the work practices and the characteristics of the technological infrastructure encapsulated in multiple fluid contexts. Thus work systems are a result of a "negotiated order".

In this regard, respondent 13 points out that the ability of *prioritization* applies to the control mechanism of information overload facilitated by the advent of numerous digitized technologies. Yet this control can hardly be exerted on an organizational level. The need for distinguishing the right action for the moment is required on the side of the communicators as they are in direct contact with the con-

text which determines the current direction. However, respondent 13 exemplifies how impossible it is to determine the supremacy of one project over another by just looking at the research description. S/he explains that a system of feedback could help distinguish a project's significance based on the demands of the audience. At the same time analyzing feedback is not a one-time task. It is a continual dialogue among several contexts in order to guarantee optimum result.

Thus, work practices do not originate from organizational emphasis. Alternatively, they originated from a negotiation with the demands of the multiple fluid contexts. The organization then becomes a support establishment for such work practices emerging from a negotiation of goal and demands. Respondent 13 points to how a joint optimization of the work force alongside the technological infrastructure does not really solve the problem of information overload. Rather, an analysis of the work effect received through feedback systems can form the basis according to which the organization supports what is practical for the moment. If under feedback analysis, a particular project should be given primacy, then the organization organizes order, support and infrastructure correspondingly. Here, not only the ability for prioritizing has shifted from organizational level to employee level, but also prioritizing has become a matter of acquiring the ability for *analyzing feedback*.

## 6    Conclusions

Our aim was to explain how digitalization has affected the formation of work related competences and we have done so by studying professional communicators. The study offers three contributions.

First, our study has revealed that not only has digitalization enabled multiple contexts for work practice – it has also resulted in what we refer to as context-in-flux, i.e., more fluid and dynamic contexts that change and reconfigure quickly. As a result of such analysis, we demonstrate – in particular for professional communicators as illustrated in figure 1 – how digitalization has spawned the transformation of competence. We argue that digitalization requires 'new' competences, but these competences are new only in form: They more seem to be new flavors of already existing competences that co-exist with – rather than entirely replace – the old flavors.

Second, we noticed that understanding competence in relation with digitalization under the label of "digital competence" is as common as it is insipid. Instead, in this paper we aspired to make room for another kind of relationship between the two terms where we study what it means to be competent in a digitalized environment. We brought together digitalization and competence focusing on the work practices rather than the interaction between agents and a particular digital tool. In doing so, we are hopeful that we have responded properly and accordingly to the implications of the effects of digital infrastructure on the concept of competence.

Third, we introduced a new theoretical framework to the study of competence, i.e. Neo-STS. We discussed how, through the lens of Neo-STS, the understanding of changing work practices could be described. By doing so, we have followed Winter *et al.*'s advice – taken from organizational studies – to look beyond the assumptions regarding work and work systems currently prevailing within the IS discourse. This does not mean that the Neo-STS premises are to replace current assumptions or make previous work practices irrelevant; instead they refresh and extend our perspectives to fit better with a rapidly expanding work environment in times of rapid digitalization.

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