Paper was never the problem: The paperless idea as a persistent symbol for organizational digitalization and sustainability

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Abstract

This study problematizes the long-lived assumption that eliminating paper and becoming paperless contributes to organizational digitalization and sustainability efforts. By identifying paperless as a trope in discourse and a norm in practice, we show how the strive for paperless drives digitization of a paper-based logic rather than creates conditions for digital value creation. A sense of doing good when reducing paper, combined with neglecting opportunity costs related to digital technologies can also create adverse effects on sustainability as well as simplify the complexities of converging digitalization efforts with sustainability outcomes.

Keywords: paperless, paper-based systems, trope, digitalization, ecological sustainability

1. Introduction

Since the advent of organizational digitalization, the idea of reducing paper usage through implementation of information technology (IT) has been influential in organizations. For example, during the 1970s, the paperless idea gave rise to the popular concept of a 'paperless office' (Rao, 2012). Initially, the paperless office was presented as a way to cut costs and create efficiency gains (Sellen & Harper, 2003), and over time, as a way for organizations to reduce their ecological footprint (e.g., Xiong, 2021; Degirmenci & Recker, 2023).

Despite the resilient, prevalent and influential role of the paperless idea in organizations, information systems (IS) literature has rarely investigated the consequences of digitalizing organizational operations based upon a paperless idea. In fact, most research treats paperlessness as a nominal phenomenon compared to organizational digitalization (e.g., Wessel et al, 2021), or identify paper as a problem to be solved through IT (Sprague, 1995) and presents technological solutions to decrease paper consumption e.g., with output management affordances (Seidel, Recker & vom Brocke, 2013) or substituting paper with tablets and digital signatures (Degirmenci & Recker, 2023). In addition, few articles have investigated how a paperless idea drives sustainability efforts on an organizational level.

In order to understand and discuss how the idea of paperless is consequential for digitalization and sustainability efforts in organizations, this paper identifies paperlessness as an inherently sociotechnical phenomenon encompassing both technical capabilities and social aspects of organizations that are intertwined and reciprocally consequential (e.g. Mumford, 2006; Orlikowski, 1992). Our analysis reveals how the well-established and common-sensical idea of paperless can lead to adverse results both in terms of digitalization and sustainability.

2. Method

In this paper, we investigate how the paperless idea is expressed in practitioner outlets, relevant research discourses, and in practice through a case study of a paper reducing initiative in Swedish public sector healthcare. The case study approach is appropriate when the research's ambition is to explain why or how a unit of analysis unfolds (see e.g., Yin, 2003).

2.1. Literature search

Like others investigating a discourse beyond the research literature (see e.g., Dahabiyeh & Constantinides, 2022), we aimed at generating a representative sample of online articles across multiple outlets including news publications, magazines, databases for research publications and IS journals. We performed an online search across all issues using 'paperless' as a single search term. In Table 1 we present the number of results that our search generated, and the time span between the oldest and newest publication.

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Practitioners & the public			
Category 1	Results	Timespan	Selected
Forbes	543	1997-2023	36
TechCrunch	131	2006-2024	13
Wired	271	1993-2022	26
Business academics & practitioners			
Category 2	Results	Timespan	Selected
Bus. Horiz.	25	1967-2019	7
Har. Bus. R.	3	2010-2019	1
MIT sloan	3	2021	1
Wider research community			
Category 3	Results	Timespan	Selected
Google Scholar	104 000	(1850-) 1980-2024	20
Scopus	246	1982-2024	25
Mainly IS researchers			
Category 4	Results	Timespan	Selected
DSS	3	1997-2008	2
EJIS	15	1991-2024	6
I & M	25	1984-2023	7
I & O	6	2014-2022	2
ISJ	8	2002-2022	1
ISR	3	2000-2013	1
JAIS	8	2000-2023	5
JIT	10	1986-2024	4
JMIS	10	1996-2022	3
JSIS	13	1993-2011	8
MISQ	6	1991-2005	5

Table 1. Selected articles in practitioner and researcher outlets divided by target audience.

2.2. Literature selection

Publications that addressed 'paperless' as a core topic or issue were first selected based on the publication's title and the final decision to include versus exclude the paper was made based on reading the full article. If possible, we intentionally selected articles across different decades to explore how the idea has developed over time.

Our search in Google Scholar required a slightly different approach since it generated an unmanageable number of results, i.e., 104 000. In this case, we decided to divide the results based upon decades, starting with 1850-1860, and limiting the selection of articles for each decade to the first 10 pages of the search results. As indicated in Table 1, the paperless trope began to appear as a core issue during the 1980s, hence the parentheses around the 1850s and forward.

2.3. Analysis of literature

Our analysis of the literature followed three stages. First, we performed a simple word search for 'paper' and 'paperless' in each publication to identify quotes where paper and paperless were mentioned. Second, we tapped into the context of each quote and wrote a summary that we included in our raw material, i.e., quotes and a summary. Lastly, we grouped the quotes and the summaries to give a rich description of the paperless idea as presented in section 3.

2.4. Case selection & data collection

To investigate the paperless idea in practice, we identified Swedish public sector healthcare as a suitable case setting. The case study was limited to a Swedish region which is a geographically distinct area and a politically governed organization with operational responsibility for healthcare. Like others (see e.g., Agarwal et al., 2010), the region faces challenges of demographic changes and has intensified their digitalization investments to remedy the situation. For example, at the time of our data collection, the region was in the process of preparing for an implementation of a health information support system (HISS) to replace several electronic health records (EHRs) which had been procured and maintained by the inhouse IT department.

In parallel to this collaboration, the IT department had recently performed two larger IT projects targeting paper-based practices to transition the organization towards paperless operations, called "Digital referrals and E-invoicing" (DE) respectively "Safe Printing" (SP) which included a consolidation and redesign of the printer platform. In this paper we present our findings from qualitative interviews with three IT professionals from the SP project and five representatives from healthcare departments called Local System Administrators (LSAs) who are responsible for their local IT environment (see Table 2).

Role	Responsibility	Minutes
Project owner	SP project outcomes	18
Project leader	SP implementation	53
Business developer	Measuring goal achievement for DE & SP	63
LSA 1	Specialist center with 700 employees	48
LSA 2	Primary care center with 50 employees	51
LSA 3	Emergency care department with 60 employees	78
LSA 4	Primary care center with 30 employees	28
LSA 5	Specialist care center with 160 employees	35

Table 2. Informants included in this paper.

2.5. Analysis of interviews

To analyze the qualitative interviews, we first read through the transcribed material to identify and collect segments of data where paper (e.g., documents, printouts, referrals) was mentioned or where informants referred to technologies used for paper consumption (e.g., printers), or paper-based systems and activities (e.g., mailing, taking notes, postal service). Second, we performed a focused content analysis of the collected quotes. At this stage, two researchers read through and coded the quotes in separate documents. Third, the codes were discussed and grouped together into five themes which are presented in section 4.

3. Paperless in the literature

In the 1970s Frederick Wilfrid Lancaster predicted that publishing would be revolutionized with the emergence of electronic systems and the likely adoption of personal computer terminals (Lancaster & Smith 1980). According to Lancaster, this technological opportunity would improve accessibility and dissemination of information at a lower cost for organizations and less inconvenience for customers (Lancaster, 1985). The technological advancements and the economic benefits of becoming paperless were also echoed by other industries and as market leaders and governments responded to the prediction of a paperless society with a technological push towards paperlessness, there was mounting external pressure for other organizations to comply with the paperless paradigm (Sartoris & Hill, 1989). In time, it was also shown that the persistent use of paper was problematic from an ecological perspective: "With the mounting concerns about deforestation, the erosion of the rain forest, and the mounting waste disposal crisis, finding ways to conserve paper has become imperative" (Connolly & Kleiner, 1993:40).

Although a steady increase in organizational IT has been observed since the 1970s, it has not automatically led to the demise of paper. For example, Calvert (1987) was early in pointing out that during efforts to become paperless, there was a paradoxical, simultaneous increase in paper consumption. Despite this paradox being observed throughout the 1990s (Sellen & Harper, 2002) and the 2010s (Briscoe, 2022), the paperless idea in conjunction with both digitalization and sustainability seems to have persisted over time (see e.g., Reistad, 1967; Lancaster, 1985; Sharon, 1996; McFadden, 2006; Harrison, 2013; Xiong, 2021). By taking stock of the technological, social, economic and ecological domains of paperlessness, this section presents the promises, drivers, skepticism and criticism of the paperless idea in the organizational terrain.

3.1. The promises of a paperless office

The idea of 'going paperless' originally offered a timely solution to organizations with paper-based systems and paper-based problems. Many experienced that their company size made it difficult to manage information manually (e.g., Lasher et al., 1991), and that paper-based systems for information exchange created unwanted delays, data loss, and information obsolescence (Darling & Bowley, 1992). In addition, office space for filing cabinets and off-premises storage was growing larger than the number of desks available at the office (Wiess, 1994; Phelan, 2003) and organizations were experiencing a demand to manage larger volumes of data more efficiently in the age of an information society (Sprague, 1995; Shetterley & Chmura, 1996; Gellerman, 1997).

From the start IT solutions promised office automation and productivity gains (Landau, 1979) instead of the costs and administrative inefficiencies associated with paper-based systems, e.g., manual search for paper records (Phelan, 2003), sequential information processing (Gellerman, 1997), administrative errors (McFadden, 2006) and dissemination of physical artifacts (Darling & Bowley, 1992). For example, during the 1980s and the 1990s, organizations were encouraged to invest in imaging technologies (Weiss, 1994) to remedy the administrative inefficiencies through digitization of documents (Connolly & Kleiner, 1993), and by extension, create a digital storage (Gellerman, 1997).

A more recent driver is the growing movement of environmentalists who have pushed for the idea of 'going paperless' with IT to reduce paper consumption. Reflected in concepts like stop 'killing trees' (see e.g., Chen, 2009), this perspective frames paperlessness as a way of building a company's reputation as being environmentally friendly and conscientious. An organization could face the risk of receiving a bad corporate reputation if it does not replace paper with IT, similarly, by substituting paper it can also promote itself as green (Harrison, 2013).

Unlike paper, a digitized document promises searchability, instant and simultaneous data retrieval (Weiss 1994; Gellerman, 1997). Similarly, digital storage promises several times more data storage on the same physical space. For example, Gellerman (1997) encouraged contemporary organizations to go paperless by illustrating how a single disk in 1997 offered digital storage equivalent of 600,000 pages of text, which would take a worker (producing 30 words per minute on an average 8-hour workday, without taking breaks and going on vacation) approximately 20 years to deplete. The benefits of digitization also included increased security e.g., password protected data (Weiss, 1994) and

digital backup systems (Johnston & Spencer, 2005) which lowered the risk of data loss (Gellerman, 1997).

Our literature review reveals that the organizational incentives to resolve practical problems related to paper-based systems while increasing the productivity of information workers have served as strong internal drivers for organizations to 'go paperless'. Over time, external drivers have also pushed the paperless agenda forward. For example, expensive transactions with paper-based systems (Sartoris & Hill, 1989), increased costs for paper (WIRED staff, 1997), decreased costs for computer hardware (Connolly & Kleiner, 1993; Batista, 2003; Johnston & Spencer, 2005) and new technological innovations (see e.g., Horak & Posil, 1982; Palvia, Perkins & Zeltmann, 1992; Plimmer & Apperley, 2007; Gupta, Tung & Marsen, 2004; Saha 2017) have all featured as influencing factors in organizations' strive to become paperless.

3.2. The pitfalls of a paperless idea

Although the paperless idea promised business benefits by 'doing away with paper', most organizations experienced challenges in their efforts to go paperless. While not applicable to all initiatives (see e.g., Hunton, 1994), one challenge that arose was the "problem with trying to calculate a return on your investment" (Gellerman, 1997, p.82) thus identifying measurable outcomes of substituting paper with IT.

Another paper-preserving factor can be attributed to the perceived usefulness of the paper medium. For example, Connolly & Kleiner (1993, p.43) state that *"The office of the future may not be entirely paperless"* and Phelan (2003, p.68) writes *"Despite this brave new electronic world, paper isn't obsolete".* Both point to the element of unstructured data which are considered trivial to business, but meaningful for employees: *"people will forever continue to scribble random notes on paper, generate x ideas on index cards, and so on."* (Connolly & Kleiner, 1993, p.43). Moreover, e.g., paper forms can offer a useful structure for employees which is not easily replaced with IT (Harper, O'Hara, Seelen & Duthie, 1997). Paper thus continued to serve as the official information medium between contractors and external parties well into the 2010s (see e.g., Kelly, 1994; Weiss, 1994; Shetterley & Chmura, 1996; Savitz, 2012) which required organizations to manage paper in parallel with its ambitions to digitize its operations.

The persistence of paper-based practices has also had consequences for the organization's technological infrastructure. For example, during the 1980s and the 1990s organizations invested in semi-automated IT solutions, built for processing paper on the one hand (e.g., scanners, facsimiles, and printers) and digitizing data on the other (see e.g., Weiss, 1994; Shetterley & Chmura, 1996). With parallel paper usage persevering over time (Briscoe, 2022) some organizations have continued to scan their paper records by hand (Gelashvili & Papell 2021) or switched to fully automated processes with digitizing robots (Heater, 2017).

On the other hand, IT itself may become a pitfall of the paperless idea. Many organizations have found themselves investing in unreliable solutions that present unexpected disruptions for employees, e.g., downtime which requires constant hardware and software updates (Phelan, 2003). Furthermore, there is a safety aspect of storing digital data both in terms of the risk of data loss (Johnston & Spencer, 2005) and the risk of unauthorized access. Hence, there is a continuous need to upgrade the IT infrastructure once it is in place.

Based on our literature review, we can conclude that the paperless ambition of a single organization is contingent upon the extent to which paper has been replaced in the sociocultural systems where it has played a central role (Enriquez-Gibson 2015), the technological maturity levels of its external environment (Calvert, 1987; Kelly, 1994; Rao, 2012), as well as the technological advancements of the IT industry (Rao, 2012).

3.3. Paperless as a symbol for digitalization & sustainability

The paperless office is a common representation of paperlessness in organizations since it refers to a physical workplace which is increasingly digitalized (see e.g., Hunton, 1994). The paperless idea thus became synonymous with office automation by encouraging a simple solution: eliminating paper from the organization. For example, Johnston & Spencer (2005) used the metaphor of the Starship Enterprise to capture the essence of 'going paperless': *"... the modern office will resemble the bridge of the Starship Enterprise, where not a single scrap of paper is evident."* (p.45). The costs, inefficiencies, and loss of productivity associated with paper made organizations increasingly inclined to think of paper as a problem to be eliminated (e.g., Gellerman, 1997; Phelan, 2003). In this sense, the paperless office can be interpreted as a visionary instrument which makes organizations aware of their paper-based practices and invites organizational actors (e.g., managers and employees) to imagine a futuristic and modern embodiment of information processing which has substituted paper with an IT-infrastructure (Connolly & Kleiner, 1993; Xiong, 2021).

The paperless idea in conjunction with digitalization has been explored by a wide range of disciplines, e.g., computer science (Plimmer &

Apperley, 2007), business administration (Tallberg, 1997), and information systems (Palvia et al., 1992). Researchers have echoed the surge for paperlessness by e.g., investigating the organizational outcomes of technological implementations for automated information processing (see e.g., Ralph, 1995; Plimmer & Apperley, 2007; Saha 2017), investigating technical constraints for achieving a paperless office (see e.g., Calvert 1987), exploring social impacts of a paperless transition (see e.g., Cross, 1986), and discovering problems of automating paper rather than innovating information and decision processes through a digitalization logic (see e.g., Fox & Frolick, 1999). Although the global hype around the paperless office was at its peak during the 1980s and the 1990s, we have also seen that paperless operations have resurfaced with the topic of artificial intelligence (see e.g., Gelashvili & Papell 2021) and continue to preoccupy researchers in countries, such as, India (see e.g., Ranjan, Chaudhari & Singh, 2023) and Ghana (see e.g., Addo, 2021). Since the 1990s, the paperless office has also become closely intertwined with ecological sustainability. Paper consumption is associated with the negative environmental impact of deforestation (Connolly & Kleiner, 1993; Hartman & Stafford, 1998) and the greenhouse gas emissions, pollution and toxic chemicals used by the paper and pulp industry for manufacturing paper (Harrison, 2018; Xiong, 2021). As a result, the act of eliminating paper promises a combination of both business benefits and ecologically friendly practices (Hartman & Stafford, 1998; Harrison, 2013; Harrison, 2018; Xiong, 2021).

The paperless office as an expression for ecological sustainability is a less explored topic in research and most of the literature has echoed the environmental benefits of decreased paper consumption (see e.g., Khan et al., 2017; Nayyar & Arora, 2019; Degirmenci & Recker, 2023). In this respect, literature has often neglected the environmental impact of IT and the lack of problematization has attracted some criticism from practitioners (see e.g., Haggith, 2010) and researchers (see e g., Enriquez-Gibson (2015). For example, Enriquez-Gibson (2015) describes paperlessness as an eco-friendly choice which is socially encouraged, however, considering that paper is renewable compared to its counterpart, i.e., IT, Enriquez-Gibson (2015) also concludes that paperlessness is a poorly informed eco-friendly practice which is currently resulting in a mountain of e-waste.

By reviewing literature that has explored the promises and pitfalls of paperlessness from a technological, social, economic and ecological perspective, we can see that over time the paperless idea has become a symbol for both organizational digitalization and sustainability. As such, it has often been theoretically value-laden with positive connotations of forward-thinkingness and eco-friendliness. To complete the picture of the consequences of digitalizing organizational operations based upon a paperless idea, we turn to practice and explore a case of Swedish healthcare digitalization.

4. Findings from the qualitative case study

To explore the paperless idea in practice, we conducted a qualitative case study of paper reducing IT initiatives in the context of Swedish public sector healthcare. The region in question has been on a computerization journey since the 1990s with its first implementation of an EHR taking place in 1992 and its current EHR in 2002. Prior to the first EHR implementation, the healthcare departments experienced an administrative burden of physical archives i.e., time-consuming tasks, such as locating, searching and tracking down patient records. In addition, the healthcare departments experienced problems of data loss: *"... some doctor could have left it [referring to a paper record] in a pile of direct mail, so you didn't know what the patient had suffered from in the past"* – LSA 3. According to LSA 4, who was employed at the time of these implementations, the transition to an EHR has improved searchability and information accessibility between clinics, as well as saved time and energy for staff: "*the digitalization which has been done saves the time and energy for those who work with these things, since it is easier to find it*" – LSA 4.

After the EHR implementations, the IT department has continued to digitalize the daily operations of employees by implementing an intricate ecosystem of hundreds of isolated systems and specialized solutions to provide technical support for diverse stakeholders. Although resulting in a complex IT environment for staff: *"... a doctor once said, during a day they work in seven, eight, nine different computer systems to be able to do their job"* – LSA 3, the IT department seems to have transitioned most of the healthcare departments' paper-based activities to the computer: *"There may still be paper. It still exists, but perhaps not to the same extent. Most of it is in the computer these days, I think."* – LSA 2. However, as LSA 2 also declares, paper is somewhat alive in the organization which indicates that the IT department has yet to achieve a paperless organization.

4.1. Painting a paperless picture

The historic review of the region's digitalization process demonstrates that there is an established vision

of becoming a paperless organization. The idea of paperlessness has structured previous implementations of EHRs and is currently structuring how the IT department is designing the new HISS: *"What we are up against now is to implement the new health information support system of the future and, with that, a new way of working. A mobile way of working, which makes us quite confident, or at least we believe that the need for printing will decline."* – Project owner

The HISS implementation also ties back to the recent initiative to consolidate the printer platform which is now designed for a 'paper light' environment: *"Sending fewer things on paper to patients is connected to the fact that we will also print less"* – Project leader. Indeed, the new printer platform represents a first step of printing less paper before a digital infrastructure could fully support a paperless organization: *"It's really a makeover of an old way of working, it isn't digitalization according to me, it's more of an advanced way of computerizing or digitizing, because digitalization is all about quitting paper"* – Business developer. In the end, the project owner, project leader and business developer expected that paper consumption would decline with a digital infrastructure in place: *"…I promise you that I haven't printed a single paper at work the last year and that's because I have entirely different digital tools."* – Business developer.

4.2. Replacing paper with digital substitutes

The paperless idea is also reflected in other IT initiatives which have been presented by the IT department, for example, in addition to digital referrals, the LSAs also mention digital health declarations and e-cards for subsidized healthcare: *"… well consider health declarations, those were only on paper in the past, every single patient was supposed to fill them in, well, but now we send it through 1177 [digital health portal] instead"* – LSA 5; *"… we just sat in a meeting today where they announced 'Now we are implementing a new e-card to digitalize, and this is how its works'"* – LSA 1.

As their names and labels indicate, digital substitutes usually replace an analog twin, thus, making it an archetypical case of digitization (see e.g., Yoo, Henfridsson & Lyytinen, 2010). However, the success of these substitutes is often contingent upon the digital maturity levels and the digital infrastructures available for the healthcare departments and their external collaborators and patients. For example, in the case of digital health declarations, patients will have to access the digital health portal 1177.se which is only accessible to Swedish citizens having a Swedish insurance number, a national e-identification service, and access to a computer or smartphone with internet connection.

Besides having the hardware and digital infrastructure in place, medical staff also need to trust in the digital infrastructure and patients' ability to access these tools. For example, LSA 1 describes a scenario where staff continues to print referrals and send them by traditional mail because of distrust*: "we don't trust that the referrals are sent [to the patients] so we boycott it and continue to print papers and put them in an envelope because we don't trust the patients to be able to read in Kivra [digital mailbox service]"* – LSA 1.

Reliance on IT can also result in unexpected downtime which causes immediate disruption of daily operations: *"We are vulnerable, very vulnerable. We saw this just the other week, on Thursday, we were probably without a functioning system for three and a half hours, and then you realize, because the phones weren't' working either, and the patient record was not working, and we couldn't get online with our computers, then you realize, we are very vulnerable"* – LSA 4. The consequences of such disruptions are several, but in relation to paper, it becomes evident that paper and pen is the only available back-up system for medical staff: "*… it is as I've said, if there is a failure [referring to system downtime], well, then you must go back to paper notes. And afterwards, you will have to go through your paper-notes and transfer the information to the patient record in the right order"* – LSA 2

4.3. Feeling greener with fewer print outs

As previously mentioned, the IT department expected that paper consumption would decrease with the HISS implementation and with new digital tools in place. In line with this prediction, the IT department also consolidated and redesigned its printer platform to further support digital work practices.

With the new printer platform in place, the IT department had successfully raised the administrator's awareness on their printing habits: *"Well, I settle with reading the information on the screen rather than printing it out, this is changing, step by step we learn to consume information on screen rather than reading it on a piece of paper"* – LSA 4. When asked about the environmental benefits of this setup, most respondents expressed a belief that decreased paper consumption was an ecologically responsible practice. For example, *"… if you look at Safe Printing and sustainability, I think it is fewer print outs"* – LSA 3; *"… we try to talk and think about the environment and, […] be aware of what we use, not overconsume paper, not do any unnecessary printing"* – LSA 2; *"I can't say that I pay sustainability much thought, but absolutely, it saves paper, and other material as well"* – LSA 5.

The project leader reframed this as creating less 'waste'. *"… in this case, the effects are very obvious,*

like in terms of less material that goes to waste, so to speak, but also in terms of less time waste, which is something that we focus a lot on since we want things to be easier for healthcare" – Project leader. The idea of becoming paperless with digital means is therefore closely associated with the idea of becoming a more environmentally friendly and efficient organization.

4.4. Portraying paper as inherently problematic

The idea of 'quitting paper' and the associated belief of becoming a more environmentally friendly organization suggests that organizational actors view paper as an inherently problematic medium for e.g., documentation and communication. In previous sections, we have mentioned costs, administrative inefficiencies and paper waste as unwanted effects of paper use which places a negative connotation on paper-based activities in the organization. In addition to these effects, paper is also deemed problematic from a security perspective. For example, in the following quote, an LSA firmly states that notes on a piece of paper are 'not as secure' as notes in an electronic patient record: *"You should not scribble down notes on a piece of paper. There is no security in the paper notes, it should be written in the patient record."* – LSA 2. This belief is echoed in the words of the business developer who states that: "*... if you are dependent on paper, you don't have a secure and mobile way of managing information"* – Business developer. Indeed, this belief provides a strong justification for going paperless where digital solutions are available.

In addition to the unwanted effects and security risks being mentioned by LSAs, the problematic nature of paper is also reflected in the talk about paper-based practices. For example, in the following quote, an LSA expresses their frustration towards the thought of medical professionals using paper-calendars at their department: *"... we don't see the problem. But it should be a problem. I'm thinking "paper-calendar". 'Hello?' Is that okay?"* – LSA 1. On a more general level, LSA 1 also describes a feeling of knowing that there is paper in the organization and that the LSAs want to access these practices: "*There are plenty of shady ways that are used to perform work. We are not aware of them all and we don't really know how to access them either."* – LSA 1.

5. Discussion

To understand how the idea of paperless has been consequential in both discourse and practice we have investigated how it has been expressed in practitioner's outlets, in the IS research discourse, and through a case study of digitalization efforts in a large public health care organization in Sweden. Our results show how the idea of paperless at its core has been resilient over time and is intrinsically intertwined with organizational digitalization and sustainability efforts.

Below, we will explicate how the idea of paperless carries sociotechnical assumptions that are consequential beyond semantics. We do this in three steps, first by identifying paperless as a trope for digitalization and sustainability in the discourse. Second, by identifying paperless as a norm that impacts goals, decisions, and action strategies in practice. Third, by recognizing the sociotechnical character and complexities in both digitalization and sustainability, we show how the idea of paperless can have adverse effects on sustainability.

5.1. The paperless trope

Our literature review shows how the idea of paperless has been tightly coupled with digitalization since the advent of organizational use of digital technologies in the late 1960's and become increasingly intertwined with organizational sustainability efforts. Despite technological, organizational, and social changes during this period, our review shows that the concept of a paperless organization has remained stable over time. As such, it can be understood as a trope in the discourse.

A trope can be defined as either one of two things. In media studies, a trope refers to a common idea, theme, or image of a typical genre (e.g., human-like robots in science fiction), while in linguistics a trope refers to "a way of using words that means something different from their ordinary meaning" (Cambridge dictionary, 2024). The latter definition has been used in organizational studies as an analytical tool to uncover organizational dynamics, e.g., metaphors (Oswick, Putnam & Keenoy, 2004). However, in our case, paperless fulfills both definitions.

On the one hand, paperless has been established as a shorthand way of referring to a genre of efforts that is understood to be beneficial for organizations. For the first five decades the benefits in question were primarily related to efficiency through e.g. cost reduction, information management, and process automation. With the increased attention toward ecological sustainability, paperlessness has also become a shorthand way of referring to digitalization efforts that are understood to be beneficial for the natural environment, in terms of reducing paper consumption and waste. On the other hand, we see paperless as a trope for a digital space where information and communication flows are supported by digital technologies, thus leading to the

promised business benefits and higher degrees of sustainability through digitalization. By combining these perspectives, paperlessness has become an expression for the digitally transformed and environmentally conscious firm.

The paperless trope has been nourished by external demands and drivers e.g. technological pushes from market leaders and decreased costs for hardware which have served as important conditions for organizations to continuously pursue paperlessness. As a result, the paperless idea has remained relevant for organizations over time, which has eventually established the paperless idea as a trope visible in literature and active in shaping practice.

By identifying paperless as a trope for organizational digitalization and sustainability, we draw attention to collectively shared connotations of paperless that help people view and shape phenomena and relationships over time. As such, the paperless trope becomes consequential beyond the semantic and linguistic levels of organizational discourse since it also impacts decisions and action strategies. In short, the paperless trope has been central in establishing a paperless norm.

5.2. The paperless norm

Our case study showed how the idea of paperless was at the core of digitalization efforts in the organization, deeply intertwined with a vision of increased mobility, flexibility, and novel ways of working. In fact, replacing paper and paper-based practices with digital technologies emerged as a key action strategy for the case organization. Consequently, it shaped the attention of practitioners towards all instances of paper-use, rather than helping them identify settings and practices where the affordances of digital technologies could be leveraged to increase value. In effect, eliminating paper had become a norm that was shared by practitioners and significantly helped shape practice. At the core of the norm lay the thought of paper as inherently problematic.

Norms are important resources in facilitating individual and collective action in organizations (Giddens, 1984). They are shaped and reshaped by how we act, and, therefore, each time an organization makes decisions or takes action in accordance with the norm, it becomes reinforced. The efficiency of norms in collective action, e.g. in organizational operations, is largely derived from how they limit the need to negotiate goals or action strategies for every action or decision. Accordingly, the paperless norm highlights paperless as embedded in decision-making processes of practitioners which effectively means that paperless both shapes how practitioners identify problems and how they address them.

Understanding paperless as a sociotechnical norm embedded in organizational decision-making processes shows how it helps shape how problems are identified, and the decisions made on how to address them (Barrett et al. 2013). By shaping the attention of IT managers towards paper and paper-based practices, it drives organizational change through the use of digital technologies towards a focus on substituting paper with digital rather than identifying ways of generating organizational value leveraging the affordances of the technologies, related infrastructures and ecosystems. In addition, the sustainability dimension contributes to an increased perceived importance of becoming paperless because it calls to the emotions of practitioners in a way that efficiency and cost reduction has not. By using paperless as a way of feeling greener, the paperless norm becomes even stronger and deeply rooted not only in the rationale of digitalization but in personal values. As a result, two co-existing dimensions of the norm can be identified: 1) paper as a problem to be solved and 2) paperlessness as a value to be achieved.

5.3. Consequences for digitalization and sustainability

From the perspective of digitalization, the paperless trope invokes the idea of eliminating paper through digital means. By acting upon this idea, organizational actors tend to eliminate paper by e.g., converting paper to a digital format, such as, e-cards for subsidized healthcare and digital referrals which becomes a digital twin of the original paper. The same logic applies to e-books, e-bills, e-tickets, or e-receipts and more recent expressions such as digital mailboxes. The IS literature commonly refers to this as ‘digitization’. At a fundamental level, digitization means that data is decoupled from the information medium which means that digital documents have added capabilities that the physical documents do not possess (Yoo et al., 2010). However, as their labels indicate, digital referrals and e-books replicate and reinforce the characteristics of an analog paper, which automates rather than challenges the paper-based practices in organizations (Fox & Frolick, 1999). In other words, a paper paradigm prevails in the digital age albeit in a digitized form, which has consequences for how organizational digitalization is conducted. Based upon these insights, we suggest that the paperless trope has created a preoccupation with becoming paperless and ironically reinforced a paper-paradigm which encourages a digitization logic.

From the perspective of sustainability, the paperless trope also invokes the idea of reducing paper

consumption and paper waste by eliminating paper from the organization through digitization. As our findings from the empirical case illustrate, employees associate paperlessness with reduced environmental impact without questioning the environmental impact of IT. The lack of discussion concerning the environmental impact of IT can also be seen in the literature on Green IS where paperless through digital means has been promoted as an eco-effective solution for organizations (Degirmenci & Recker, 2023). The trope as an established norm explains why practitioners and researchers repeatedly talk about the positive effects of going paperless without questioning them. A notable exception is Enriquez-Gibson (2015), who describes paper as a renewable information carrier compared to its counterpart, IT, which produces e-waste. In this respect, Enriquez-Gibson (2015) offers the counter arguments to an already established discourse of justifications (see Barrett et al., 2013) that places a negative connotation on paper by depicting ecological consequences such as deforestation and emissions. As a result, practitioners and researchers present justifications for paper as 'bad' compared to IT without presenting the same analysis of ecological consequences within the IT industry. By bringing e-waste into the equation, Enriquez-Gibson (2015) illustrates the necessity to calculate the opportunity costs of IT investment, thus challenging the taken-for-granted beliefs about being paperless. Based upon these insights, the paperless trope simplifies the relationship between digitalization and ecological sustainability by creating a norm that places a negative connotation on paper as bad while promoting IT as good.

6. Conclusions

In this paper we have shown how the paperless idea has become a persistent symbol for organizational digitalization and sustainability, and how it has had an impact on organizational goals, values, and actions. By identifying paperless as a trope and norm, we explain how paperless shapes the attention of practitioners toward substituting paper with digital technologies, which results in adverse effects for organizational digitalization and eco-friendly practices. As such, our analysis and discussion reveal how paper was never the problem in organizational efforts for digitalization and sustainability. In fact, we have shown how focusing on paper makes both digitalization and sustainability more difficult to achieve.

To this end, this research has implications for both practice and research. By making the paperless norm visible, practitioners can challenge taken-for-granted beliefs and established practices to make informed decisions about their IT investments and sustainability efforts. In addition, our findings indicate that there exists a lack of critical reflection within the research community, where paper has been routinely characterized as bad and IT as inherently good. Future research should thereby investigate organizational use of paper from the perspective of information needs and practices to further delineate where, how and when paper should be replaced with IT as well as pay attention to opportunity costs.

7. References

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