The Institutional Logic of Digitalism

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Abstract. How are large scale ICT systems related to organizational development and management? We introduce *digitalism* as a new institutional logic compared to managerialism and professionalism. To develop our argument, we combine organisational and institutional logic theory with information systems research. We illustrate our arguments with a case study of a process of organisational development before and after the implementation of centralised large-scale ICT systems at a large Norwegian hospital in 2015. The understanding of digitalism offers insight in how large-scale technology and organisations are tied together and can contribute to effective healthcare management.

Keywords: Institutional logic, professionalism, managerialism

1 Background

The concept of institutional logic has proven to be fruitful for understanding institutional change [1] and in IS research [2]. An important assumption in the understanding of institutional logic is that interests, values, professional norms and identities are embedded in the competing institutional logics within an organisation. Decision behaviours result from how these interests, norms and identities are enabled or constrained by these institutional logics.

The starting point of our study was the observation of unwanted inertia after implementing large scale ICT (Information communication technology) systems in hospitals. How are large scale ICT systems related to organizational development and management? In this article, we show how ICT in organisations could be seen as an institutional logic in itself. We suggest digitalism as a term for a new institutional logic, as opposed to other, more well-known logics in organizations, such as managerialism and professionalism. Applying an institutional logic way of understanding ICT allows us to unfold a pattern and to explain the impact of change and stability that ICT has on organisations. To develop our argument, we combine organisational change research and institutional theory [3] with information system research on enterprise architecture [4], [5] and large-scale ICT systems [6]. The institutional perspective unfolds the institutional features of large-scale ICT and contributes to the explanation of strategies, which encompass organisational change and development, in a dialectic manner of both deterministic and voluntaristic perspective. Digitalism represents a new way of understanding organisational development and adaptation and it challenges the mainstream understanding of organisational behaviour as well as the established IS literature. Our research aim is to analyse the implementation of ICT systems in healthcare organisations according to this theoretical framework. In the last part of the article, we give a discussion of the impact of different blends of institutional logics and why it is useful to understand ICT as an institutional logic in itself. The practical result of ignoring digitalism and instead only seeing ICT as a tool is unwanted inertia and organisational dysfunctionalities. We illustrate our arguments with examples from a case of ICT implementation at a large Norwegian hospital where digitalism was not acknowledged.

2 Competing Institutional Logics

Organisations, such as hospitals, are affected by several competing institutional orders or logics. Studies from Scott and colleagues on institutional change in healthcare organisations show that profound institutional change was due to a multilevel shift from professional and political dominance to managed care. The institutional logic of professions was contested and replaced by the institutional logic of managed care [7].

Institutional logic is defined by Thornton and Ocasio [8] as "the socially constructed, historical pattern of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organise time and space, and provide meaning to their social reality" (p. 804). Thornton and Ocasio follow Friedland and Alford's point of departure, whereby institutional logics are seen as organisational principles informing organisational members' behaviours [9].

Freidson gives a systematic account of professionalism as the third logic in hospitals in contrast with the free market and the bureaucracy [10]. In professionalism, the autonomy of specialised workers is emphasised; in the free market, consumers dominate; and in bureaucracy, managers set the rules. Scott et al. analysed market and bureaucracy as one logic – managerialism, in contrast with professionalism [7]. Several authors have since argued for a hybrid of these and points out how these logics co-exists in public hospitals [11].

Several studies within the Information System (IS)-literature have used the institutional logic approach [2], [12], [13] without addressing technology itself as an institutional logic. These studies have shown how different institutional logics such as managerialism and professionalism enact, blend, handle and create more or less IT affordance [15].

We argue for digitalism, a new blend of institutional logic that has emerged in recent time after the introduction of large-scale ICT systems. ICT systems are more than external factors or adaptive elements to human actions, rather, they are embedded in organisations with their own logic, norms, and values. Understanding these systems in institutional terms enables us more fully to understand processes and consequences of implementations. Instead of analysing institutional change as a result of a disruptive technology whereby existing stable organisational fields are destabilised [16](p.27), we assert that implementing ICT systems should be understood as processes of social restructuring that involve new actors, logics and systems of governance.

3 Digitalism

Digitalism has previously been introduced into research as a somewhat loose term for cultural changes in current society [17]. When we develop the term as a theoretical concept, we build on organisation theory and the discipline of information systems (IS). Digitalism has both practical and theoretical backgrounds. Theoretically, we base the concepts on key insights and beliefs in IS research, as follows:

- Digital technology is different from other technologies in that it is flexible (can be tailored), scales economically (copies of software cost next to nothing) and is layered (each layer can be delivered by a different actor/vendor) [18].
- A successful solution is always socio-technical, i.e., the result of a planned or emergent interplay between people and technology [19].
- Successful solutions balance local needs and global standards. Often, standardised solutions can serve a variety of organisations [20].
- Large-scale solutions have a dynamic that is beyond the control of a single actor, making management challenging [21].
- Modern IT solutions are platform-oriented [5], often as part of larger ecosystems.

The focus of this article is to analyse ICT systems as one of the prevailing institutional logics in hospitals, i.e., as an institutional logic in competition with other existing institutional logics, such as the bureaucratic and professional logics of the hospital.

We analyse the competing logics by showing differences in five dimensions; *actors*, agents and networks [10], *regulation*, i.e., authoritative structure and distribution of power [22], *norms and values*, i.e., responsibility and loyalty relations [10], *cognition*, rationality and adaptation [23] and *coordination* [24]. See Table 1.

As shown in Table 1, digitalism is distinctly different from professionalism and managerialism. Professionalism is typically associated with physicians, scientists, nurses and other clinical personnel and their dedicated labour unions. Managerialism is typically associated with managers, finance teams, administrative staff and HR-personnel. Digitalism is practiced by the IT industry, IT vendors, consultancy firms and IT departments in many organisations. This is a large and growing sector with a global turnover of 5 trillion dollars [25]. Digitalism shares a set of insights, beliefs and work practices that are taught in computer science and information systems programs at universities and practiced across millions of projects around the world. We will discuss these differences in detail in our analysis in section 5 and discussion in section 6.

Table 1. The competing logics in healthcare organisations: professionalism, managerialism and digitalism

Actors	Professionalism	Managerialism	Digitalism
Actors	Physicians, scien-	Managers, leaders, bu-	IT consultants, IT
Agents and net-	tists, nurses, unions	reaucrats, HR	industry, vendors
works			
Regulation	Expertise,	Hierarchy, position	Self-regulated, dis-
Authority and dis-	decentralised		tributed
tribution of power			
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Values	hility, professional	Collective responsibility,	System responsi-
lovelty	lovelty	lovalty	olity, project loy-
loyalty	loyalty	loyalty	alty
Cognition	Optimal	Limited	Adaptive, iterative,
Rationality	- F		integrated
2			0
Co-ordination	Standardisation of	Management by objec-	Agile processes,
	skills, autonomy	tives, organisational	layered digital
		structure	technologies

4 Methods

Our arguments are illustrated by observations from a case study of a large-scale technology implementation process in Oslo University Hospital (OUH). We observed organisational change and inertia in the aftermath of the implementation of a new patient record system, the Distributed Information and Patient-data System (DIPS), in 2015. This took place alongside the merger of several large-scale information systems of economy, HR-data and clinical data (i.e., laboratory information, x-rays images).

Case study is known to be well suited for an exploratory study, where the processes are complex and the data need to be extracted from several sources[26], [27]. This case study include data from document analysis, field observations, focused group interviews and individual interviews. The data were extracted from documents and observations from December 2014 to January 2016 during an organisational audit¹ before DIPS was implemented at OUH. One of the authors participated in this audit of OUH and participated in 11 focus group interviews, 15 project group meetings and 10 steering group meetings. The documents from this period include the report from 2015, memos and minutes from the working groups and notes from SWOT-analyses performed during the audit. The audit represents the baseline and background of this study.

¹ OUH. Audit of organizational structure of Oslo University Hospital. Oslo 2015 [28].

In addition, a follow-up study was performed in February 2019 by interviewing five key personnel who had been involved in the implementation process. These five senior leaders were selected because we knew from our experience from the audit that they represented different groups of personnel (HR, technical, medical) and different perspectives of the process. We combined our insight gained from the audit with frontline personnel and SWOT-analyses with the interviews with senior leaders to triangulate our emerging insights. We asked the interviewees to reflect on their experience from the audit as well as the ongoing re-organisation. These interviews lasted approximately one to two hours and were transcribed with the permission of the interviewees. Our theoretical framework guided coding and the extraction of data.

5 Analysis - The Case of Oslo University Hospital

OUH is the largest and most comprehensive highly specialised hospital in Norway, and it serves as a local hospital for the main population of Oslo, being the result of a merger in 2009 of four hospitals and employs 23,000 people. In 2015, it converted its various patient record systems into a single one through the implementation of the DIPS patient record system. This implementation required the hospital to be 'frozen' for one year, meaning that departments providing patient treatment were not allowed to change their structures, in order to reduce complexity in the process of implementation. The DIPS system implementation, as such, was perceived as a success with only minor problems.

OUH established a standardised central model for the representation of formal organisational structures in ICT systems. This meant that the administrative ICT system such as those for human resource data, economy data, and clinical systems such as those for DIPS, lab results, x-ray images, were all connected and related to a unified representation of the organisational structure. All systems were integrated, with the aim of enhancing and ensuring their overall quality. Altering one system would affect all the others. Changes in the organisational structure must then be implemented almost synchronously in across all systems to ensure unambiguous organisation for internal and external reporting.

The hospital usually makes 150 to 200 small and large changes per year. In January 2016, after implementing DIPS, the hospital went from 9 to 15 clinics with the intention to further split underlying departments [28]. However, it was a challenge to represent the hospital's actual structural organisation in DIPS, and this limited the choice of organisational solutions. Sources told us that the organisational structure, to a certain extent, was dictated by the ICT systems. ICT systems was constraining the organisational structure and increasing the number of issues to consider before a change.

An expert group comprising ICT personnel and DIPS experts was assigned to plan for organisational change. This group sensitised the challenges and assessed the restraints of organisational change, and it advised the unit of the pros and cons of different choices of structures, often suggesting less-radical changes that would ease the process of change.

To fully understand how ICT systems and healthcare organizations are tied together, we discuss and illustrate the theoretical framework presented in table 1 with the case of OUH and the process of implementing DIPS followed by years of organisational inertia.

5.1 Actors – agents and networks

As is shown by other studies, the different logics would have different agents and associated networks [2]. When working on projects, IT professionals regularly co-operate with professionals in the field (such as physicians during project in the health care sector) and an organisation's project managers. IT professionals often view their role as mediating the many demands of domain professionals (increasing costs) and the economic and temporal limitations set by managers [29].

In OUH a new group of IT actors has become more evident in processes of organisational change. The process of DIPS has clearly shown the importance and need of this type of personnel. One technology source said:

We have changed the procedure for organisational changes. [...] We have established routines so that all plans for restructuring must first be presented and commented upon by our ICT resource, and a specific impact assessment of whether the change will have an effect on the IT setup has to be performed in advance. [...] During the period of 2008 to 2012, IT became a strategic function in the hospital and added to the CEO staff.

The hospital is still discussing the role and position of this new type of personnel, but there is no doubt that they represent a new set of actors with new and important skills in healthcare organisations.

5.2 Regulation – authority and distribution of power

A well-known distinction in addressing different institutional logics is the definition of authority and system of regulation. Managerialism grants authority according to a person's position in a hierarchy. The higher the rank, the higher the authority, is a central guiding principle for all bureaucratic organisations [30]. In contrast, management by profession, or professionalism, sees authority granted according to level of expertise and, more specifically, the weight of the best argument based on facts and science. In this way, the most knowledgeable employee would have the most authority, disregarding his or her position in a hierarchy [22]. In professionalism, it is not enough to ground a decision on coercion or instruction; it needs to be based on professional knowledge and expertise [10]. Digitalism takes a radically different perspective on regulation. Digitalism seeks systems with no need for a centralised authority or even a need for authority. This perspective is illustrated by blockchain technology, it solves issues of regulation by distributing control across a network of users without the need for a centralised authority to ensure the continuity of the system [31].

At OUH, the implementation of the integrated ICT system resulted in a new IT governance system that was, to some extent, both distributed and outsourced, according to one HR source:

> "Almost half of the IT staff was outsourced to NN [an external enterprise partner]. The day-to-day running of IT services was to be handled by NN. If there were troubles with the IT services, the employees were to contact them for help. The local IT department had only a strategic IT-function, not the operational responsibility. [...] Members of the local strategic IT department have become experts at blaming NN and addressing NN whenever problems arise. "

The IT command line has blurred out after it have been outsourced. Now IT services is seen as an automated and self-regulated service system without a clear distinct authority.

However, the need for IT competence in organisational development is acknowledged as was reflected in the before mentioned established routines for organisational change at OUH whereby an expert group was set up that consisted of IT personnel and DIPS experts to advise on solutions before organisational changes were decided.

5.3 Values – responsibility and loyalty

The next dimension addresses institutional values, which include views on responsibility and loyalty. The principle of professionalism holds that each professional individual has an individual responsibility [10]. Carrying out the profession of a doctor or nurse imply a personal responsibility, and the organisation is required to facilitate this responsibility. This is also the foundation and argument for autonomy within professions. From a managerialism perspective however, the emphasis is that employees have a collective responsibility to fulfil the goals of the organisation, whereas managerialism expects loyalty to be linked to the organisation [30]. From a professionalism perspective, loyalty is primarily linked to the field of expertise, the ethics of the profession and the professional global community – loyalty goes beyond organisational boundaries. Digitalism is primarily organised across agile projects whereby loyalty is a more volatile and ad hoc concept [32]. The possibilities, ethics and values are built into the system.

Clinicians may bypass the structures and demonstrated their lack of loyalty to the organisation as a result. Their actions promote individual responsibility. From a managerial perspective, the responsibility is collective. Digitalism adaptive and volatile loyalty concerns the responsibility of integrating large-scale ICT systems to fit the whole organisation. The large-scale ICT system in question was about the standardisation and integration of work processes, which contested clinicians' free choice of sequence in their work assignments. Digitalism's institutional order can be observed in its effects on work processes. In theory, the effects of integration would not directly impact clinicians' work but, as explained, this was not the case in practice. Clinicians often postpone or rearrange assignments; however, DIPS did not allow assignments to change

their order, as it was pre-set for ideal workflow and had its own requirements, according to one of our medical informants:

Clinicians do not realise that DIPS is changing work processes. Everything is more integrated. The work can no longer be done as separate assignments nor without proper documentation. The logic of DIPS assumes that the work is integrated with the units and follows how the work processes set up in DIPS. [...DIPS] connects work processes which were previously disconnected. Now the system requires everything to be more integrated and standardised, from the patient's entry, sampling, re-location to other departments, discharge and referral.

This paradoxical relation between the need for standardisation and the quest for autonomy in professionalism has been addressed by several other scholars [33]. The paradox is especially visible in day-to-day routines that promotes standardisation, and work practices that promotes autonomy [34]. This was evident in our ICT case.

5.4 Cognition – rationality and adaptation

The cognitive dimension addresses optimal, adaptive and limited rationalities as different approaches to solutions and problems. In contrast with optimal rationality, Simon argued that it is ineffective in an administrative context to present too many choices to a decision-maker [23]. Optimal rationality requires a costly and time-consuming search for best alternatives and would, in the end, be irrational. Decisions are thus better served with fewer alternatives [35]. The solution is to settle with a 'good enough'-decision. The organisation would provide the limits for the search by how the decision-making is structured, and the 'administrative man' would settle for solutions given by the limitation of the organisation – limited rationality.

In contrast, professionalism seek optimal rationality. Knowledge-workers seek to increase their fields of expertise, and so their search for better solutions would be global. Professionalism is, in a sense, 'anti-organisational', as it lacks respect for organisational boundaries. Professions take pride in breaking down boundaries and seeking new innovations. They typically see budget constraints as matters of negotiation, and not determined by finite resources. Digitalism however, is based on a logic of adaptation, asking what the best fit for an action is in a given situation. Digitalism seeks to address the problems at hand and mirror work processes, to be able to assist with or take over assignments in the organisation.

In contrast with the logic of professionalism, which seeks optimal solutions, and managerialism, which searches for 'good enough' solutions within the confines of an organisation, the logic of digitalism involves adaptation. The intention of ICT architects is to design systems that fit the activities of an organisation, as shown in the above quotation. The work assignments had been carefully mapped before the system had been developed, and the rationale was to find the system that best fitted the organisation. However, this mapping does not always come out right.

5.5 Co-ordination

The final dimension addresses the principle of co-ordination. Proponents of managerialism believe that co-ordination is achieved by setting goals for an organisation and by the design of its formal structure. Mintzberg illustrated differences in co-ordination using organisations' configurations and by showing how professional bureaucracy is, in contrast, co-ordinated through the standardisation of skills [24]. As managerialism presumes that decision-making behaviours follow the formal structure, this structure also sets out how an organisation is co-ordinated. The managers at OUH expect large scale IT to be just as changeable as the organisational structure. A HR source describes it as follows:

> The warning lights should have started to blink when we first started to plan the implementation of DIPS. We were told that the entire organisation had to be frozen during implementation. This should have given us a clue that we were now introducing a very rigid system that required the organisation to be unchanged for a year.

The quotation shows us that Digitalism, reflected in large scale ICT systems, does not see the organisational structure as a changeable instrument for coordinated actions. This view is also reflected in the differences of beliefs in the importance of the formal structure as such. A HR source explained to us how they experienced the differences in understanding how organisations work:

For IT people, organisation is just a pile of boxes. They do not see the big picture and what it is really about. Organisation is about processes and creating command-lines that handle inconsistencies and shifting goals. This requires the structure to be able to change. [...] The structure is not a stable system set once-and-for-all, as IT personnel seem to think. Oddly enough, this is also how clinicians seem to think about organisational structures. They look at structure as just simple boxes and do not see the possibilities. That is, they hate organisational change.

This source reflect managerialism. Their frustration from the lack of respect and knowledge of the formal structure as a tool for co-ordinated action is evident. More surprising was the mentioning of the lack of understanding among IT personnel. Professionalism and digitalism do not believe or do not emphasise the co-ordinating effect of formal organisational structure, which can be perceived as hindering co-ordinated action rather than supporting it.

Digitalism sees organisations as layers of systems and data. This layered perspective originates from the structure of ICT systems, which are typically designed with layers of hardware, network software, operating systems, domain systems, databases and user services. In the sub-discipline of enterprise architecture[4], these technical layers are connected to the work processes of the organisation, as previously discussed in relation to DIPS.

These layered models serve at the root of digitalism, for two reasons. First, they represent the organisational view of ICT experts, which is distinct from that of clinicians and managers. It contrasts with the standardisation of skills and autonomy as the basis for co-ordination in professionalism, and with the formal organisation structure as the basis for co-ordination in managerialism. Second, the models guide ICT experts in the implementation and maintenance of systems. Since organisations focus on (generalised) work processes, digitalism exploits the scalability of digital technology to structure all units with the same heavyweight solutions.

6 Discussion

Many contributions in IS research have used the lens of institutional logic, but few have identified digitalism as a logic in itself. In doing so, we offer a new perspective on the relationship between organisations and digital technology.

6.1 The interplay of competing logics

The different logics do not appear isolated [11], although we argue for different carriers and advocates of these. The mix of competing logics is especially evident in large-scale organisational change and large projects, such as reorganising OUH and implementing DIPS. It is in these meetings that we find these paradoxical effects and dysfunctionalities. Managerialism believes in top-down and centralised regulation; thus, embracing and arguing for a monolithic and heavyweight system without understanding how these systems disable managerial control and co-ordination. Professionalism believes less in co-ordination through management and the organisational structure and emphasises work processes and standardisations of skills. Digitalism adapts this and follows the work processes of the hospital, albeit in a more standardised and less flexible manner than what professionalism would expect. The mix and the confrontation between logics has interesting adverse effects and increased complexity.

The introduction of DIPS provided examples of how professionalism can collide with the implementation of new ICT systems. A source told us how he had experienced clinicians establishing workaround routines to complete a task:

> Doctors have told me that they use their own phones to take pictures of patients and pass these on to colleagues for expert comments. They say it is so cumbersome with the functionality of the established IT systems. [...] They bypass all routines and this, of course, breaks with all privacy legislation.

From a managerial perspective, as this source reflects, the structure of authority is centralised, and clinicians were expected to follow the rules no matter how cumbersome they were. The innovation mentioned above were not seen as legitimate, but the inflexibility of the central ICT system was acknowledged. Clinicians advocated the logic of professionalism during the process, and the distributions of authority and power were seen as decentralised in authority structures that followed clinical expertise, and they expected technology to follow.

Still, digitalism does not follow managerialism either, in the sense that authority is defined by positions within the organisations. It is true that the ICT system had been implemented from above with a centralised distribution of power, but IT experts define a solution and managers often do not have the competence to understand its logic nor fundamental functionalities.

One aspect of this is, what would distribute power and authority in an organisation? The perspective of digitalism see authority as distributed albeit with the same emphasis on expertise as professionalism. Digitalism argues that technological competency is essential for development, as seen from our interviews, but authority and regulation should be distributed and self-regulated. However, digitalism when blended with managerialism has the tendency to end up with a centralised authority as the nature of large-scale system and observable in our case with OUH and DIPS.

How does the interplay address the different approaches to solutions and problems with the distinction of optimal, adaptive and limited rationalities? The logic of digitalism largely follows what is possible as a logic of adaptation, not as a search for the optimal solution, but as a search for what is the most appropriate solution for the situation [35]. The result would be an integrated logic with the intent to mirror the activities in the organisation in an agile iterative process [5]. The difficulties are that workflow processes (De facto) is not reflected in the formal structure (De jure). A technology source told us how the organisation needed to construct imaginary units to comply with system requirements:

There were units we had to construct but do not exist in the organisation. [...] We handled this by "shading" the fictitious units. That is, the units thereby only exist hidden in the system. The clinicians do not have to deal with these units.

This "shading" was a technical issue that was easily handled. Another example was even more interesting and profound. One source with a technical background seemed to blame the organisation rather than the new technology itself, regarding the organisation as redundant and old-fashioned. This source commented that DIPS presupposed a structural feature that did not exist in the organisation:

> DIPS is structured in a way that follows the path of the patients. But the organisational structures in hospitals actually follow how the medical specialties are structured. This makes it very difficult for us to map the two systems together. It is as if DIPS has been made for the future, not for how the hospital is formally structured today.

The architects of DIPS probably observed how the clinicians actually work, and the de-facto, albeit informal organizing, is by how different clinical roles, such as nurses,

midwives and physicians work together, around the patient, and across different specialties in multidisciplinary teams. However, the de jure, formal structure of the organisations is mainly sorted by specialties in medicine and by this differs from these multidisciplinary teams.

Digitalism ends up of amplifying the dysfunctional formal structure of hospitals. Normally the formal structure has only a vague co-ordinating effect, but when the ICT systems is designed according to actually workflow the gap between the De facto and De jure structure become more evident.

6.2 Practical implications

Understanding large-scale ICT systems as an institutional logic helps us to interpret the frictions of logics that were observed at OUH. The institutional logic of the hospital (for instance, the practice of changes in the organisation structure) collided with the logic of the large-scale systems, which were characterised by stability and inertia once they had been installed and integrated.

What are the consequences of such collision? First, clinical and administrative staff will probably be dissatisfied, and organisational actors (as well as external actors, such as vendors) will struggle to understand why this friction occurs. Then organisational actors and external actors will try to negotiate solutions by trying to adjust the logics to harmonise their interactions.

In a similar discourse in the 1990s, enterprise systems research found that the logic of large systems should prevail over organisational practices [36]. The reason echoes new institutionalism: most industrial and commercial firms are basically doing the same things and should be structured in similar ways. Whether this argument applies to healthcare organisations is currently a much-discussed topic without clear answers.

What is clear, however, is that we can conceptualise ICT as a new institutional logic. This distinction has important implications for the acquisition and implementation of ICT systems in healthcare organisations. While it is outside the scope of this article to discuss these issues, it is worth noting that modern ICT solutions are moving towards platform-oriented ecosystems [5]. These allows for satisfying the different organisational logics at different layers; digitalism should be executed at the platform layer, managerialism should be executed at co-ordination layer, while the needs of the professional should be satisfied at the user service layer. This is a topic for further research.

7 Conclusion

In this article, we propose a new type of institutional logic in the healthcare sector called digitalism. Digitalism represents a new set of regulations, values, integrations and perspectives on the co-ordination of organisations. Introducing large-scale systems, such as DIPS, brings digitalism into healthcare organisations.

Does digitalism apply outside the healthcare field and in smaller organisations? We believe that the answer is yes, but this should be investigated by further research.

References

- [1] P. H. Thornton, W. Ocasio, and M. Lounsbury, *The institutional logics perspective: A new approach to culture, structure, and process.* Oxford University Press on Demand, 2012.
- [2] A. Burton-Jones, S. Akhlaghpour, S. Ayre, P. Barde, A. Staib, and C. Sullivan, "Changing the conversation on evaluating digital transformation in healthcare: Insights from an institutional analysis," *Information and Organization*, vol. 30, no. 1, p. 100255, 2020.
- [3] W. J. Orlikowski and S. R. Barley, "Technology and institutions: What can research on information technology and research on organizations learn from each other?," *MIS quarterly*, pp. 145–165, 2001.
- [4] J. W. Ross, P. Weill, and D. Robertson, *Enterprise architecture as strategy: Creating a foundation for business execution*. Boston: Harvard Business School Press, 2006.
- [5] J. W. Ross, C. M. Beath, and M. Mocker, *Designed for digital: how to architect your business for sustained success*. Mit Press, 2019.
- [6] I. Sommerville, *Software Engineering*, 10th ed. Essex: Pearson, 2015.
- [7] W. R. Scott, M. Ruef, P. Mendel, and C. Caronna, "Institutional change and healthcare organizations: From professional dominance to managed care," *Contemporary Sociology*, vol. 47, no. 2, 2001.
- [8] P. H. Thornton and W. Ocasio, "Institutional logics," *The Sage handbook of or-ganizational institutionalism*, vol. 840, no. 2008, pp. 99–128, 2008.
- [9] R. Friedland and R. R. Alford, "Bringing society back in: Symbols, practices, and institutional contradictions. Powell WW, DiMaggio PJ, eds. The New Institutionalism in Organizational Analysis." University of Chicago Press, Chicago, 1991.
- [10] E. Freidson, *Professionalism, the third logic: On the practice of knowledge*. University of Chicago press, 2001.
- [11] H. Byrkjeflot and P. K. Jespersen, "Three conceptualizations of hybrid management in hospitals," *International Journal of Public Sector Management*, 2014.
- [12] A. Boonstra, U. Y. Eseryel, and M. A. van Offenbeek, "Stakeholders' enactment of competing logics in IT governance: polarization, compromise or synthesis?," *European Journal of Information Systems*, pp. 1–20, 2017.
- [13] S. Hansen and A. J. Baroody, "Electronic health records and the logics of care: complementarity and conflict in the US healthcare system," *Information Systems Research*, vol. 31, no. 1, pp. 57–75, 2020.
- [15] I. Faik, M. Barrett, and E. Oborn, "How Information Technology Matters In Societal Change: An Affordance-Based Institutional Logics Perspective.," *MIS Quarterly*, vol. 44, no. 3, 2020.
- [16] W. R. Scott, *Institutions and organizations*, 2nd ed. Thousand Oaks, Calif: Sage Publications, 2001.
- [17] J. P. Bowen and T. Giannini, "Digitalism: the new realism?," *Electronic Visualisation and the Arts (EVA 2014)*, pp. 324–331, 2014.

- [18] S. Nambisan, K. Lyytinen, and Y. Yoo, "Digital innovation: towards a transdisciplinary perspective," in *Handbook of Digital Innovation*, Edward Elgar Publishing, 2020.
- [19] G. Baxter and I. Sommerville, "Socio-technical systems: From design methods to systems engineering," *Interacting with computers*, vol. 23, no. 1, pp. 4–17, 2011.
- [20] N. Pollock, R. Williams, and L. D'Adderio, "Global software and its provenance: generification work in the production of organizational software packages," *Social studies of science*, vol. 37, no. 2, pp. 254–280, 2007.
- [21] O. Hanseth and K. Lyytinen, "Design theory for dynamic complexity in information infrastructures: the case of building internet," *Journal of information technology*, vol. 25, no. 1, pp. 1–19, 2010.
- [22] S. Glouberman and H. Mintzberg, "Managing the care of health and the cure of disease—Part I: Differentiation," *Health care management review*, vol. 26, no. 1, pp. 56–69, 2001.
- [23] H. A. Simon, Administrative behavior. Simon and Schuster, 2013.
- [24] H. Mintzberg, *Structure in fives: Designing effective organizations*. Prentice-Hall, Inc, 1993.
- [25] "IT Industry Outlook 2021," *Default.* http://connect.comptia.org/content/research/it-industry-trends-analysis (accessed Aug. 19, 2021).
- [26] B. Czarniawska, Social science research: From field to desk. Sage, 2014.
- [27] R. K. Yin, Case study research and applications: Design and methods. Sage publications, 2017.
- [28] OUS. Deling av klinikkene og videre organisasjonsutvikling, IKT-, teknologiog stabsfunksjoner ved Oslo universitetssykehus HF. Prosjektnr: 93114, Delrapport 3. Oslo: Oslo University Hospital, 2016.
- [29] K. P. Gallagher, K. M. Kaiser, J. C. Simon, C. M. Beath, and T. Goles, "The requisite variety of skills for IT professionals," *Communications of the ACM*, vol. 53, no. 6, pp. 144–148, 2010.
- [30] M. Weber, *The theory of social and economic organization*. Simon and Schuster, 2009.
- [31] R. Beck, C. Müller-Bloch, and J. L. King, "Governance in the blockchain economy: A framework and research agenda," *Journal of the Association for Information Systems*, vol. 19, no. 10, p. 1, 2018.
- [32] H. K. Andreassen, L. E. Kjekshus, and A. Tjora, "Survival of the project: a case study of ICT innovation in health care," *Social Science & Medicine*, vol. 132, pp. 62–69, 2015.
- [33] J. Evetts, "Professionalism: Value and ideology," *Current sociology*, vol. 61, no. 5–6, pp. 778–796, 2013.
- [34] H. Wilhelm, B. Bullinger, and J. Chromik, "White coats at the coalface: the standardizing work of professionals at the frontline," *Organization Studies*, vol. 41, no. 8, pp. 1169–1200, 2020.
- [35] J. G. March, *The pursuit of organizational intelligence: Decisions and learning in organizations*. Blackwell Publishers, Inc., 1999.
- [36] B. Swanson, "Innovating with Packaged Business Software in the 1990s.," 2000.