

Forming and transforming shared services: the performativity of management devices

Abstract

Purpose – This study aims to investigate the role of management devices in transformation processes. This was done by analysing how devices persuaded people into actions, resulting in drifts that both led to the creation of a Shared Service Centre (SSC) and transformed it into a cost centre, something resembling an internal joint venture, followed by a profit centre and, finally, a centre of expertise.

Design/methodology/approach – A longitudinal case-based approach inspired by Latour's (2005) ideas on attachments. The aim was to show how links between humans and non-humans in the form of management devices brought about drifts leading to the formation and transformation of a SSC.

Findings – Attachments between devices and humans fuelled the formation and transformation of the SSC. Such innovations were revealed to be a series of drifts, which demonstrates that an SSC is not a static object but rather an ever-evolving innovation.

Research limitations/implications – On the basis of Latour (2005), the study reveals how socio-technical constellations are involved in organisational transformation, resulting in a SSC taking on new and unanticipated roles.

Practical implications – The findings facilitate a deeper understanding of the factors that initiate organisational development and transformation in SSCs. In addition, the study identifies the role different devices play in such transformation processes.

Originality/value – This paper contributes to the literature by analysing how a SSC is created and then transformed over time.

Keywords Management control, Actor-network theory, SSC, Organizational transformation

Paper type Case study

1. Introduction

Both private (Gospel and Sako, 2010) and public (Janssen and Joha, 2007) organisations are in constant search of new ways for enhancing effectiveness and creating cost reductions. Recently, this has led to more focus on optimising support functions such as HR, IT and accounting (Richter and Brühl, 2017). However, instead of only relying on outsourcing solutions, companies and public sector organisations have also sought to establish Shared Service Centres (SSCs). Hence, an SSC is defined as a semi-autonomous business unit consisting of centralised support functions that are provided as services to clients (Bergeron, 2003).

Richter and Brühl (2017) found that over 75 per cent of Fortune 500 companies have established SSCs, and that the use of SSCs in the public sector is becoming widespread. The popularity of SSCs is, on the one hand, driven by reports of cost savings of up to 50 per cent (Deloitte, 2015; Lacity and Fox, 2008). On the other hand, the creation of SSCs also promises to add value by meeting the needs and requirements of clients (Janssen and Joha, 2007).

However, research has also revealed that SSC projects often fail (Ulbrich, 2010a) and/or do not meet expectations (Schulz and Brenner, 2010). As a consequence, the research has



stressed that the implementation of SSCs is a complex process involving internal reconfiguration and coordination (Farndale *et al.*, 2009). For example, Helper and Sako (2010) emphasised that the current use of approaches such as transaction cost economics (TCE) theory or agency theory cannot stand alone in the quest for a more in-depth understanding of the SSC phenomenon. In line with this, McIvor *et al.* (2011) stressed that contemporary research has not kept pace with the use of SSCs in organisations.

Following from the above, there is scarce knowledge about the dynamics related to the evolution of SSCs in practice and what drive this process (Kastberg, 2014; Richter and Brühl, 2017). According to Kastberg (2014) and Richter and Brühl (2017), one avenue of approach is to obtain a better understanding of how different governance structures or management devices are linked to these change processes. As Kastberg (2014) underlined, there is a need for more knowledge about how the development of SSCs can in surprising ways be affected by the connection between devices and humans. Minnaar and Vosselman (2013) supported this by stating that devices have the potential to cause drifts that change the direction of the innovation from what was originally planned.

To fill the gap, this article uses a framework based on the actor–network theory (ANT). More particularly, the focus is on the understanding of attachments between humans and non-humans displayed in Latour (2005). It is by following these attachments between humans and non-humans (management devices) that knowledge is generated about how a SSC is developed and transformed over time. More specifically, the knowledge generated by this attachment in network-like structures can be the starting point for further actions that bring new entities into play and thereby expand or change the attachments that comprise the network. Hence, understanding how a SSC is created and transformed requires following this process of expansion and change. The focus on the unexpected also means that the entire process should be understood as incidents of drift. In other words, insights generated by devices inspire actors to do new and previously unheard of things. Therefore, “attachments are first, actors are second” (Latour, 2005, p. 217).

As a consequence of the above, this paper uses a longitudinal case study of the formation and transformation of a SSC called TT (pseudonym)[1]. Therefore, the overall research question that informs this article is the following:

RQ. What role did management devices play in the formation and transformation of TT?

To answer this research question, the time prior to and after the formation of TT was analysed. As such, the entire process was displayed as moments of drift facilitated by how the accumulation of knowledge and unforeseen opportunities generated by attachments between devices and humans led to TT taking on new and unexpected roles.

As explained above, more recent SSC literature (Richter and Brühl, 2017) indicates that devices affect SSC evolution over time. However, the common approach in the literature views SSCs in a fixed position, which means that this connection is not fully understood (Minnaar and Vosselman, 2013). Therefore, this study adds to the SSC literature by investigating how the link between devices and human action was the catalyst for both the development and transformation of TT (Kastberg, 2014). In addition to this, it was revealed how these attachments interfered with the direction of TT in unforeseen ways that subsequently made TT assume many different roles, of which *centre of expertise* was the last one prior to the end of the case study.

The understanding of how devices affect human action in change and transformation processes also contributes to the literature on accounting change. On the basis of the understanding that devices are linked to unexpected drifts, this study adds to Quattrone

and Hopper (2005) by demonstrating that organisational drifts not only affect devices but also the organisations themselves. Furthermore, instead of only focusing mainly on a single device participating in drifts (Andon *et al.*, 2007; Quattrone and Hopper, 2005), this study centres on the role of multiple devices, bringing attention to not only one instance of drift of TT but also on a series of drifts that transformed TT from a cost centre to something resembling an internal joint venture, followed by a profit centre and, finally, a centre of expertise, all of which were linked to attachments between multiple devices and humans. Similar to Revellino and Mouritsen's (2015) approach, this article offers new insights into the effect of devices as transformation engines owing to their capacity to bring scrutiny and visibility to the possibilities that transformed TT into something unexpected. Moreover, this study extends this understanding somewhat by showing how drifts also transformed the devices by adding to them new functionalities or capabilities.

The remainder of the article is arranged as follows. Section 2 highlights the concept of SSC, the performative perspective and the concept of drift. Section 3 describes the case-based methodology. Section 4 presents a longitudinal case study of the formation and transformation of TT. Section 5 summarises the findings and discusses the implications for future research.

2. Literature overview

2.1 Shared service centres, from then to now

According to Bergeron (2003), companies introduced the SSC concept in the late 1980s by combining back-office functions such as HR, IT, accounting and facility services from decentralised business units into a new business unit called a SSC (Bergeron, 2003). Hence, the initial intention was to reap the benefits of centralisation and decentralisation models by setting up an internal client–supplier relationship.

Since the 1980s, the use of SSCs has become increasingly popular in both the public and private sectors (Richter and Brühl, 2017). This has also inspired researchers to develop a more profound understanding of the motives and processual aspects linked to the creation of a SSC (McIvor *et al.*, 2011; Ulbrich, 2010a). For example, Ulbrich (2010a) exposed how the adoption of the SSC concept is very much in the hands of local actors, resulting in a situation where ideas and motives have deviated from what was initially intended. Moreover, McIvor *et al.* (2011) explored the difficulties of setting up a SSC, stating that managers should pay attention to how process redesign and centralisation of support functions has the potential to create resistance.

Research has also tried to define the role of SSCs. SSCs are often viewed as either centres of transactions (Janssen *et al.*, 2012), profit centres (Kastberg, 2014) or centres of excellence (Ulbrich, 2010b). However, according to Kastberg (2014), there seems to be some evidence that SSCs do not maintain a fixed role. Instead, SSCs can evolve and transform over time for several reasons, such as changes in the number of clients or being allowed to serve external clients (Fenema *et al.*, 2014).

The acknowledgment of an evolutionary aspect has prompted Richter and Brühl (2017) to call for more research into how such evolution progresses. More precisely, Richter and Brühl (2017) have emphasised that there is inadequate knowledge about both the direction of the evolutionary process and what drives it. However, the SSC literature does provide some clues about where to start. Herbert and Seal (2012), Minnaar and Vosselman (2013) and Kastberg (2014), all stressed that such research should look into the role of management devices (e.g. contracts, KPIs, budgets, mission statements, etc.) and demonstrate how they have the potential to cause drift. Meanwhile, Ulbrich (2010a) emphasised that humans are integral to this process, meaning that their thinking and commitment also count.

The proposition that both humans and management devices participate in transformation processes is a step away from the common approach to management control in the SSC literature, which, to a large extent, has been inspired by agency theory and transaction cost economics (TCE) theory (Amiruddin *et al.*, 2013; Howcroft and Richardson, 2012). For this reason, this study adopts the understanding of performativity (Latour, 2005), which means that attention is paid to not only humans but also how devices can act by presenting otherwise unconsidered solutions and directions to human actors. As such, it is the attachment between devices and humans that can create distortions and in turn take the development of the SSC in directions other than what was initially expected. This unforeseen change of direction is understood as *drift*, which will be discussed in the next section.

2.2 Management devices and changes as drift

According to Quattrone and Hopper (2001), organisational change in the accounting domain is normally depicted as an incremental movement from one well-defined point to another (Andon *et al.*, 2007). However, Quattrone and Hopper (2001) also pointed out that a new understanding of change must be adopted – change should be understood as drift. Quattrone and Hopper (2001, p. 426) portrayed drift as “a boat in the ocean or friends lost during an excursion in a wood”. This inherent uncertainty means that actors cannot easily intervene or structure actions according to a predefined blueprint.

Quattrone and Hopper (2001) used this understanding to illustrate unexpected events or uncertainties related to the implementation and use of an enterprise resource planning (ERP) system; even though the organisation had an understanding of “where it is and where it should go [...] possession of such knowledge [did] not transcend actions or outcomes to unknown destinations” (Quattrone and Hopper, 2001, p. 427). Hence, change is not linear but rather enacted as a series of dynamic events. As a result, organisational change such as the identity of new ways or new devices is created through praxis.

Following the understanding of drifts, as described by Quattrone and Hopper (2001), drifts can also be the product of devices that are already accepted as routine in organisations. The recurrent enacting of devices such as, for example, total quality management (Feldman and Pentland, 2003) or budgeting (Mundy, 2010), can be the starting point for organisational change and drift by serving as the source of new insights and reflections (Miller and O’Leary, 2007). However, Chua and Mahama (2007) attempted to take it one step further by analysing the link between drift and multiple controls. Firstly, it was demonstrated that pricing, contracts and KPIs made it possible to establish connections between parties by acting as stabilising and organising mechanisms. Yet, as increasing insight was generated, the devices also became focal points for ambiguity and disorder by, for example, creating the unexpected understanding that OzCom was being treated unfairly (Chua and Mahama, 2007, p. 66) by its suppliers. More precisely, the earlier ability of the devices to hold the collaboration together was shattered, resulting in a drift that not only altered the boundaries of the network but also changed its power dynamics owing to how the devices were re-negotiated. As such, the devices exposed the incomplete state of the collaboration, which needed to be managed. However, this role of devices was not understood beforehand, showing that the role of devices should be understood as ambiguous.

Contrary to the approach taken by Quattrone and Hopper (2001) but similar to the one presented by Chua and Mahama (2007), the focus in this article is not on drift involving specific devices such as ERP systems or performance measurement systems (PMSs; Andon *et al.*, 2007). Instead, the focus is on the multiple devices (Revellino and Mouritsen, 2015) that

were linked to the unforeseen transformative events experienced by TT. In other words, there were no limitations on which devices could produce surprises and initiate a drift. As explained by [Revellino and Mouritsen \(2015\)](#), there are multiple ways in which different devices become attached to innovations. One way is for the focal firm (in this case, TT) to develop devices to mediate or remedy certain situations, either internally or with clients. However, because of the effect of drift, TT did not have the foresight to define all of the devices' effects. Hence, devices do have a managing aspect because they prompt people to act ([Revellino and Mouritsen, 2015](#)), but the direction of movement could not be fully controlled by TT.

This positioning of devices as entities that are linked to actions in surprising ways is parallel to the concept of performativity ([Latour, 2005](#)). Therefore, performativity was used to explain how devices could bring new dimensions or new parts of the world into the formation and transformation of TT. In other words, moments of drift are really a question of understanding the performativity of the devices by following the impacts they have on human actions. The knowledge generated by the devices can be the "fuel" that inspires action anywhere ([Revellino and Mouritsen, 2015](#)). This means that the process of formation and transformation of TT should be understood as very attachment-centred because the sources of transformation can vary over time and space. The forthcoming analysis will provide insight into what makes actors improvise to find new suggestions and solutions to sudden issues, which can in turn be sources of new surprises, thereby causing new drifts. To gain insight into the creation and transformation of TT as moments of drift, as well as to understand the role devices play in that process, this study utilised the concept of performativity as explained in the following section.

2.3 The performative role of management devices

In mainstream accounting research ([Mouritsen and Justesen, 2011](#)), there has been a tendency to view devices as stabilising tools that act as mere reflections of the world ([Vosselman and van der Meer-Kooistra, 2009](#)). However, research relying on [Latour's \(1987\)](#) earlier work has also provided insight into the role of devices in achieving stability ([Latour, 1987](#); [Mouritsen and Justesen, 2011](#); [Mouritsen and Thrane, 2006](#); [Preston et al., 1992](#)). One novel example is [Preston et al. \(1992\)](#), which followed the process of how dominant actors overcome resistance and disorder in collaborations in the fabrication of a management accounting system. In other words, [Preston et al. \(1992\)](#) examined how actors are able to reach a situation where things are taken for granted or as a matter of fact.

However, in [Latour's](#) more recent work ([Latour, 2005](#)), he emphasised the need to shift the focus from matters of fact to matters of concern. This means that the study of things should not only be viewed according to how an actor can use translation processes to alter organisational life by enrolling and mobilising human and non-human actors in networks ([Mouritsen and Justesen, 2011](#)). Instead, researchers should also understand translation processes from a more attachment-centred viewpoint, whereby attention is shifted from actors to attachments: "attachments are first, actors are second" ([Latour, 2005](#), p. 217).

Following [Latour](#) involves paying attention to drifts that occur when one actor comes into contact with other actors, because no actor has supreme power. Hence, [Latour](#) drew attention to how any actor is a network maintained by its many ties to other actors. This implies that researchers should look into the entities, human as well as non-human (i.e. devices), that can affect the progression of innovations. In a sense, devices become actors because they become attached to humans and influence their world. Devices become part of the network that creates the innovation and how it develops over time ([Christner and Strömsten, 2015](#)).

In a case study by [Revellino and Mouritsen \(2015\)](#), different devices such as total quality systems, calculations, sales volume, etc. were enacted in a step-by-step implementation of an electronic toll collection system that transformed the Autostrada Company from a service provider to a financial institution. Another study by [Skærbæk and Tryggestad \(2010\)](#) analysed how devices (budgets and balance sheets) were not passive instruments but actants in the creation of unexpected strategic options, taking a ferry company in a whole new direction than its intended liquidation. This illustrates how devices produce matters of concern that culminate in the reshaping of company strategy, supporting the argument by [MacKenzie \(2006\)](#) that different devices act as engines that urge humans to action.

The represented studies shed light on how devices enable change and transformation during innovations via their capacity to produce information that inspires people to perform. In combination with humans, devices drive innovation such as an engine ([Revellino and Mouritsen, 2015](#)). It is also this understanding that underlines the performative role of devices. In other words, devices are able to influence the world in unpredictable ways, leading to either stability or disorder ([Chua and Mahama, 2007](#)). However, the question is how this applies to an innovation such as the creation and transformation of a SSC, which, according to [Richter and Brühl \(2017\)](#), seems to be overlooked in the literature. The analysis will seek to answer this question.

3. Research methodology

The methodological approach endeavoured to understand the processes leading to both the formation and transformation of TT. According to [Richter and Brühl \(2017\)](#) and [Minnaar and Vosselman \(2013\)](#), little is known about the mechanisms that comprise such an innovation. Therefore, the focus here was on following TT as it unfolded and progressed. This was done by following processes from 2001 to 2011 to adequately account for the role devices played in the formation and transformation of TT.

To acquire such knowledge, ANT ([Latour, 2005](#)) was used to understand the attachments between humans and devices that allowed TT to come into existence. It is these associations that became the starting point when trying to understand what transformed TT. The task was to both find these associations and follow how variations such as strategic initiatives, new clients and ingenuities shaped and transformed TT over time. Hence, the attachment approach examined all the entities – both humans and devices – that influenced the progression of TT in unforeseen ways. More explicitly, the approach established devices as actors because they affected how humans talked, acted and developed TT, and will remain part of the network of changing attachments that will continue to change TT over time. ANT drew attention to the devices that participated in the formation and transformation of TT by detecting the actions which unfolded in the attachments between humans and devices. It is this socio-technical mobilisation that adds to the literature about how SSCs and, more broadly, organisations evolve and transform.

3.1 Methods applied

As explained above, to obtain a proper understanding of how the creation and transformation of TT unfolded, the following analysis is connected to relevant historical events. To reconstruct the history of TT, different empirical sources have been collected. The predominant method of data collection was interviews, which lasted between 1 and 2 hours. The key interviewees were the steering committee (SC), which was composed of representatives of both TT and the colleges and support workers from TT and the colleges. Most of the interviews were conducted in 2010, however, continuous follow-ups and interviews in 2011 made it possible to account for transformation processes up to that point.

In total, 12 interviews were conducted, the subjects of which each played a role in the development and transformation of TT.

The interviews were used to recreate the history of TT, meaning that the data concerning the formation process up to 2010 were based on first-hand statements. The interviews were open-ended, allowing the respondents to explain their answers to “what happened”, “how they dealt with that issue” and “what has changed over the years”.

Although formal interviews were the dominant source of data, other sources such as emails, contracts and service catalogues were also collected. Additionally, informal corridor meetings with employees of both TT and the colleges turned out to be an important source of insights into the historical events of TT as well. Taken together, the interviews, observations and meetings permitted the recreation of the history of TT as a series of episodes containing unexpected, transformative events fuelled by surprising attachments between devices and humans. It is these episodes that comprise the following analysis.

4. Creating and transforming shared services

In 2001, a vocation educational college (VEC) in Denmark felt the need to address the increasing competition from other educational institutions. However, it was unclear how the college should respond[2]. The corporate head (CH) envisioned that a modern educational environment would provide the college with the ability to attract and retain students. Towards this end, a study was conducted to determine students’ needs and requirements. The study revealed that students were strongly focused on the ability of the college to provide a modern digital environment, as explained by the educational director:

It was important to the students that the college provided things like fast internet, modern PCs and software possibilities, etc. So we decided to investigate how we could accommodate these needs to ensure that our educational offerings remained attractive. (Educational Director, VEC)

The following analysis of the college’s ability to provide modern information and communications technology (ICT) revealed an organisation unfit to accommodate its vision. Over time, an increasing number of decisions regarding hardware and software had been scattered throughout its various constituent colleges. Therefore, it was decided that a new and more coherent way of structuring ICT resources had to be implemented. This pushed the CH to enrol resources from other actors, such as consultants and IT companies. Under the coordination of the CH, several solutions, including creating individual IT units, upgrading competencies, outsourcing or creating a new centralised IT unit, were discussed.

However, the CH became intrigued by the prospect of creating a new IT unit to enhance the limited IT competencies of the college. Suddenly, the college had materialised its vision by enrolling the necessary resources, and work commenced on building the IT unit. All IT personnel were assigned to the new unit, and the CH made TT (pseudonym) responsible for guaranteeing a high standard of ICT across all of the colleges. To further clarify the role of the new unit in the organisation, it was decided to set up TT as a traditional support function. Compared to the SSC model presented by [Janssen and Joha \(2007\)](#), TT could, at this point in time, be perceived as a typical centralised department. This perception was supported by the idea that TT would increase cost efficiency and optimisation through centralisation. However, this assumption did not achieve the status of a matter of fact. Instead, the decision became a matter of concern because the formation of TT was met with dissatisfaction among the colleges.

In general terms, end-users were mostly distressed by how the instalment of a common ICT standard (control protocols and security standards) resulted in poor usability of the systems. Furthermore, the sheer physical distance between TT and some of the colleges

made it very difficult to initiate and maintain useful communication, which again affected the efficiency of problem-solving.

Overall, the dissatisfaction among the end-users merged into a common understanding that TT had a negative impact on the college's ability to fulfil its teaching obligations and was, therefore, not worth the cost, as explained by a support worker:

The end-users felt like they didn't have anything to say, it was just take it or leave it with no real interaction with TT due to the physical distance. As a consequence, they couldn't really see the benefits of TT. (Support Worker, TT)

However, the head of TT thought this distrust was misdirected and unfair. To deal with the situation, new devices were crafted that could display the performance of the college's IT systems. The idea was that such information could visualise factors affecting performance among the colleges. This shows that the innovative move to set up IT was still at this point in time an open box.

The gathered information revealed how instabilities were caused by outdated hardware and "homemade" programmes at the colleges. After presenting this knowledge to the CH, it was decided to remove all local software to clean up the system. To deal with the situation, it was decided to first undertake a complete review of the ICT situation. The resultant information was used in meetings with end-users and local managers concerning how to deal with the changes caused by TT. The outcome was both a roadmap for upgrading the hardware and a forum where supporters and end-users could work together on re-installing essential homemade programmes on the servers.

Secondly, to remedy the issue regarding the lack of direct contact, TT had to transform by adding a helpdesk combined with a rotation system. The rotation system was used to allocate local support workers from the colleges to the helpdesk to share knowledge about special needs and requirements. Hence, the transformation helped TT to connect more directly with the colleges; soon, information began to flow between the units. According to the support workers, the devices described above paved the way for a new understanding among the end-users about the benefits of TT. In other words, the devices facilitated communication and modernisation, which, in turn, freed up time and allowed the end-users to focus on teaching.

The above analysis reveals how TT became a reality to modernise ICT competencies via devices such as strategy documents. However, the development of the relationship between TT and the colleges showed how the promises undergirding TT as stipulated by the same devices also initiated an unexpected drift by both, preventing actions by the colleges and creating physical distance. This resulted in the development of new devices such as forums, updating programmes and a helpdesk that unexpectedly transformed the internal landscape of TT, enabling both it and the colleges to do more things together. Suddenly, it became possible to distinguish between two central departments in TT: the "front-office" department that dealt with incoming enquiries and the "back-office" department that solved identified hardware and software disruptions and other issues. Put another way, the devices both closed and opened the intra- and inter-organisational space by adding new capabilities to TT.

Overall, TT has faced several trials involving the connections between devices and human actions. These trials have unexpectedly transformed TT from a centralised IT (Janssen and Joha, 2007) function to something resembling an internal supplier-client relationship. However, the transformation of TT did not stop there. The next section will deal with the transformation of TT into an independent SSC with external clients.

4.1 Entering the market

In 2006/2007, the Ministry of Education (MOE) started to look more closely into the use of SSCs in the educational sector. As a result, information about various aspects and initiatives, including the creation of TT, were gathered, analysed and presented in reports regarding the potential of the SSC idea in the sector (see for example [Deloitte, 2007](#)). According to the head of TT, this development brought about an entirely new focus:

We realised that we had actually already created a SSC. Therefore, we saw a huge potential in using our experience with TT to create a strong SSC in the region. (Head of TT)

However, the MOE also published preliminary guidelines that together with the history outlined in section 4.0 inspired TT to apply further transformations. Firstly, it was decided to implement a cost allocation model based on the number of students. This move meant that TT was now transformed into a cost centre. Meanwhile, all the devices developed up until then were recorded and incorporated into a document known as *the white book*.

At almost the same time, the push by the MOE to promote the SSC idea became part of an ongoing strategy process at a vocational and training college (VO) just north of TT. According to the vice president of VO, the college highly anticipated the benefits of collaborating with an SSC:

We hoped that by collaborating with an SSC we could modernise ICT in order to attract students. In that process we got in contact with TT. (Vice President, VO)

VO and TT began collaborating in 2007. The first step was to apply the white book, which contained hardware updates, a helpdesk function and a forum. According to the interviewees, use of the abovementioned devices made the integration and transition process very smooth by successfully merging the local strategy process at VO with the promises of TT. This made for a more stable future by instilling a collective understanding of how and why the college collaborated with TT. This stability also made it possible to concentrate more intensely on customisation by upgrading user support and contact. However, according to the head of TT, this focus became more challenging than expected because it touched upon the balance between workload and obtaining a high degree of customer orientation:

We wanted to be there for everybody. However, this created huge expectations that again resulted in rising pressure on both the helpdesk and the local supporters. Over time, the atmosphere became very stressful. (Head of TT)

New ways of structuring the workload had to be developed. One of the first solutions involved transforming verbal instructions about Wi-Fi settings and printers, etc. into written manuals. Secondly, a task management system that prioritised incoming tasks from 1 to 5, with 5 being the lowest level of priority, was implemented. The system both made it possible for end-users to follow an expected timeframe and for TT to determine the resources needed to solve the tasks. To further control the inflow of tasks, end-users were obliged to first check the manuals before filling out an online form containing information about the tasks.

In the beginning, the end-users viewed these initiatives as a waste of time. However, by both prioritising workflow and empowering the end-users, the devices made it possible to achieve a much faster and more accurate handling of complex requests from end-users, leading to higher satisfaction. Moreover, the devices also transformed the employees' jobs and competencies, as they now had to read and organise their work based on information

presented on computer screens. Hence, there was no longer a need for the same degree of human-to-human interface. Many supporters were sceptical at first. However, they soon discovered that the information helped to structure and organise their daily work in a more harmonic way in terms of gaining a better understanding of the needs and requirements of clients. Furthermore, the head of TT presented the gathered information at meetings with the individual colleges. This helped to ensure that the colleges used TT more effectively. One example was a “top 10” list of services that helped to visualise how the colleges used TT.

Following from the above, the devices seemed to order and stabilise the collaboration, functioning as persuasive actors. In essence, the devices gave TT and clients more opportunities to analyse and control how they worked together. Yet, the devices never specified what TT was to be, but rather outlined what had to be managed to make the innovation fruitful. This juxtaposition of many activities also made it increasingly difficult to define the boundaries of the innovation as the colleges and TT became more integrated. The accumulated knowledge also made it clear to both the head of TT and the colleges that further optimisations should be made to better facilitate communication:

The meetings with the colleges became more and more frequent and intense, and they started to be very aware about how the other (colleges) used us because they could see in the reports that we were affected by this use. This made it very clear that we needed to intensify the use of the steering committee. (Head of TT)

After some debate, it was decided to more formally use the established steering committee (SC) comprising of one representative from each college and the head of TT. The role of the SC was to ensure horizontal collaboration regarding strategy and the scope of TT’s service portfolio to enhance efficiency and effectiveness. According to a member of the SC, this more formal cooperation resulted in further enhancement of communication and knowledge sharing. This made the collaboration deeper and, as expressed by the members of the SC, led to the realisation that TT had turned into something reassembling an “internal joint venture”.

It is interesting how devices such as the helpdesk and forums intensified trust and collaboration, resulting in increased workload on TT. New devices such as task management systems, forms and manuals had to be fabricated to deal with the situation. However, these devices made it possible, in unprecedented ways, to operationalise the performance of TT in terms of resource management, which actually transformed the role of the employees. Furthermore, the devices also empowered the end-users by enhancing the usability of online self-help services as well as by making them obligatory.

This shows that the innovation continued to transform even when it reached quasi-stability because of how the collaborating parties were transformed into something resembling an internal joint venture. However, new challenges and transformations arose as a consequence of the decision to start collaborating with another college. These aspects are analysed in detail below.

4.2 New challenges and possibilities

In 2008, a large adult education college (LAEC) initiated collaboration with TT. Initially, LAEC hoped to achieve a more efficient use of ICT resources without compromising their quality. Following [Janssen and Joha \(2007\)](#), this represents a classic argument behind the decision to either join or create a SSC. As a consequence, LAEC reduced spending on IT staff and infrastructure. However, LAEC’s approach did not achieve the status of a matter of fact.

Instead, it became a matter of concern as questions and concerns emerged about the feasibility of this decision.

First and foremost, the effect was that TT could not deliver the promised service level. In addition, the lack of communication resulted in a situation where the end-users at LAEC started to express concern about the value of the collaboration. On its end, TT experienced high levels of role conflict and ambiguity because the different departments at LAEC expected it to enact its role as a service provider. However, the reduction in spending resulted in a very low degree of anchorage in the departments, making it very difficult for TT to enact that role. According to the head of TT, the situation was unstable because it revealed an inconsistency between LAEC and TT in terms of the expected output of the collaboration:

Value to us is living up to the expectations in the white book. On the other hand, LAEC had another understanding. (Head of TT)

More specifically, the collaboration became a battleground between rationalisation on one side and the need for local investment to optimise service delivery on the other. The SC was unsuccessful in facilitating a solution and the collaboration came to a standstill. In an attempt to remedy the situation, meetings between the head of TT and representatives of LAEC were arranged. At these meetings, the head of TT used performance charts (system stability, response-time, user satisfaction, etc.) to link the actions of LAEC with the current status of the collaboration.

Interestingly, the debate between LAEC and TT also spawned discussions about the opportunity to operate with full disclosure. The idea behind this was to compare the usage of TT between the colleges. Although reluctant at first, LAEC decided that this could further enhance the common understanding of being in the same “boat”. Much to the surprise of LAEC, the disclosed information revealed that the college was not receiving the same improvements in terms of user experience, stability and satisfaction per Danish Krone (DKK) as the other colleges. As such, LAEC had to choose between investing more money and accepting a lower service level, as explained by the head of TT:

We just stood our ground, meaning that LAEC had to choose between investments or failing to accommodate the students with contemporary ICT solutions. (Head of TT)

After some consideration, LAEC began to hire more IT support workers and invest in upgrading the hardware to fulfil the college’s strategic focus on higher effectiveness.

However, the disclosure of information had much wider consequences than first expected. The compared information revealed that VEC was receiving more support time than the number of students justified. In other words, VEC was getting more support per DDK than the other colleges. According to the head of TT, it was necessary to deal with the situation quickly to avoid damaging the collaboration:

Especially, LAEC were getting increasingly dissatisfied with the situation, so we had to summon them to work on the allocation model to properly reflect the college’s usage of TT. [...] This led to things like prices on storage needs, number of PCs, server use and prices on specific programmes being included in the allocation model. (Head of TT)

More importantly, the introduction of new devices to accommodate the situation also transformed the colleges from clients to customers. Hence, the focus was now on the distinct ability of TT to provide value to each of the customers in a way that was much more diversified than before. As explained by a supporter, this change was quite profound:

We became more nuanced in our understanding of the colleges. They should be allowed to diversify from only buying basic services such as server management to letting us run the entire infrastructure. (Back-office supporter, TT)

This underlines how the collaboration not only transformed TT but also the clients. Likewise, the transformation was tied to relations between many entities: clients, supporters and devices.

In addition, the relations between the entities also pushed TT to view itself as a profit centre because of the change from only focusing on cost to also including revenue. In retrospect, this change had a profound effect on TT, as discussed in the next section.

4.3 Towards a centre of expertise

As mentioned in the last section, the first effect of the new allocation model was diversification. However, during 2009/2010, it became common practice in the SC to compare information such as price lists, top 10 lists, etc., with each other. Slowly, a new agenda emerged concerning the idiosyncrasy of the colleges, as explained by the head of TT:

The colleges found out that they were paying for all sorts of programmes and licenses. In order to save money, the steering committee became a forum for discussions about the possibilities of using the same systems. (Head of TT)

The process was named “shared systems”, a result of which was the decision to use the same types of phone, phone subscriptions and administrative systems. In a sense, the devices had empowered humans to develop a “consciousness” about the consumption of services (Kastberg, 2014). The reduced uniqueness enhanced mobility among the IT staff because it also reduced the need for narrow expertise. Furthermore, by freeing up resources, it was possible to reduce the overall handling time of the task management system, which improved user satisfaction. The overall result was the creation of “a more flexible organization”.

By 2010, collaboration between the colleges and TT had become very close and intertwined. As a consequence, profit was generated through negotiations directly with the members of SC about the number of services, prices and standardisation possibilities. As time went on, members of SC began to resemble a board, with the head of TT playing a dominant role regarding the direction of TT. The more advanced role of SC meant that the generated surplus was not distributed back to the colleges. Instead, the money was allocated to further investment in TT. The reason behind this surprising development was that TT had over time accumulated substantial knowledge about possible investment opportunities. These opportunities were presented by the head of TT at SC with the aim of showing how further modernisation of ICT could support the colleges’ strategic focus.

Unexpectedly, the distribution of more decision-making power and knowledge at the SC allowed TT to take on the role of a centre of expertise. This transformation was supported by how the allocation model and the SC made it possible for the head of TT to present ways in which the colleges could re-invest money generated from the “shared systems”, as explained by the educational director of TT:

The head of TT would present ways in which we could both save money and use the money to develop or buy new applications that could modernise ICT. (Educational Director, TT)

The transformation of TT into a centre of expertise also affected its intra-organisational aspects as it was decided to establish a new “development” department tasked with producing new ideas and solutions for the colleges. This demonstrates how the attachments between devices and humans unrelentingly moved the innovation forward by adding new

components and abilities. In 2011, the head of TT was in charge of a very different and transformed organisation than when it was a centralised IT unit at VEC. The drifting role of TT was the result of different devices that transformed its identity by becoming part of human decision-making, which essentially made the performativity of devices central to this innovation.

5. Discussion and conclusions

In the case of TT, the devices not only helped the human actors to perceive the world, they also became sources of transformation. At the beginning, strategic documents and optimisation opportunities inspired human actors to deal with strategic concerns by creating a centralised IT department. However, this transformation process was not linear but, instead, marked by drifts often fuelled by concerns. One example is how unexpected uncertainty generated by attempts to optimise ICT forced the head of TT to implement devices such as forums and a helpdesk to bridge the physical distance between the unit and the college's part of VEC to restart the collaboration. The most prominent result of this was that it pushed TT towards becoming more client-orientated. Hence, the force behind these drifts was linked to both uncertainty and opportunities created by attachments between humans and devices.

However, the transformation process was not finished, as the making of reports about the advantages of SSCs in the educational sector pressed TT out onto the "market". New devices were fabricated due to both past experience and preliminary guidelines from the MOE, which essentially configured TT as a cost centre. At the same time, this lured human actors at VO to initiate collaboration with TT, making VO the first external client. In the beginning, already well-established devices filled the void and stabilised the collaboration, resulting in extensive trust building. However, an unanticipated effect of this was an increase in the workload hoisted onto TT supporters because TT had started to do an increasing number of things together with the colleges. Once again, the innovation had to transform, demonstrating how attachments between devices and humans in unforeseen ways reveal the incompleteness of the innovation. In other words, humans had to develop manuals and a task management system to empower the end-users in an attempt to transform them from clients into self-served users to reduce the workload. Surprisingly, the devices also changed the role of the supporters from working human to a more information-based approach that emphasised information and task processing.

Next, the information generated by the devices had a more profound effect on TT because it opened up a more strategic and intense integration of VO and VEC. This was supported by how the use of a SC that juxtaposed information transformed TT into something resembling a joint venture, allowing both clients and the head of TT to establish a unified direction. One interesting aspect of this development is that the devices did not specify what TT was or its exact role. Instead, they directed human attention towards what had to be managed if the innovation was to be successful and profitable.

Yet, once again, stability was only temporary. The decision to collaborate with LAEC in 2008 paved the way for new transformations as a result of the shift in focus imposed by LAEC. More precisely, LAEC brought forth a new reality that included dealing with cost and revenue. This reality conflicted with the singular focus of TT to provide the promised service level. Concerns arose among VO and VEC as collaboration between LAEC and TT deteriorated. Again, devices inspired humans to act by prompting a discussion about introducing full disclosure. The idea was to compare usage with the costs of each college to reveal how LAEC's actions impaired the service level.

Even though this move made LAEC change course, it also revealed that, on paper, VEC was getting more support per DDK than the other colleges. Once more, the progression and direction of the innovation had been influenced by the manner in which the devices made the unknown known. The reaction to the situation was to implement a more advanced allocation model that transformed clients into customers, allowed for by very specific services outlined in pricelists and service catalogues. Suddenly, the TT was no longer a cost centre but rather a profit centre that had to deal with the diversity of customer needs.

Interestingly, this focus did not last long because the SC made it possible for the colleges to compare and benchmark service requirements, costs and prices between each other. This brought about an unprecedented focus on service consumption; and an entirely new direction, labelled “shared systems”, was followed. The change from diversification to standardisation made TT more flexible and available for focusing on other aspects of the collaboration, including how to reinvest the surplus into new ICT opportunities, which transformed the role of the SC into something resembling a board that could take direct action to deal with generated profit which essentially promoted TT as an enterprise. Furthermore, this opened the door for the head of TT to utilise specific knowledge about each of the colleges by presenting investment opportunities at SC meetings. Doing so essentially distributed more power to TT by allowing the unit to pinpoint ex ante opportunities. In essence, TT assumed a new role as a centre of expertise, displaying superior skill and know-how compared to the colleges about how to develop ICT. This new role was reinforced by the creation of a new “development” department.

The description above answers the research question by showing how the attachments between devices and humans unrelentingly moved the innovation forward by adding new components and abilities. The immediate consequence of this was that the devices developed alongside the transformation of TT to accommodate concerns related to its exposed incompleteness. In essence, the devices pushed the social to perform transformations whenever new obstacles emerged, making the progression of the innovation a result of socio-technical attachments.

5.1 The effect and presence of management devices

Relating the description above to the SSC literature, there have been several calls for research on the processes and dynamics related to the formation and development of SSCs (Fenema *et al.*, 2014; Richter and Brühl, 2017). Firstly, it is interesting how the configuration of the creation and transformation of TT exposes how the number and functions of the devices are not established all at once. Instead, different devices are mobilised at specific moments in time. One example of this is how, from time to time, the helpdesk performed more effectively by highlighting structural issues. On certain occasions, the helpdesk became an engine that powered transformations, such as the progression from a centralised IT department to a SSC. At other times, the helpdesk was ignored by actors in favour of other devices. As another example, the allocation model remained in the background until collaboration with LAEC, where it suddenly accelerated the transformation of TT into a profit centre. In essence, it seemed as if the different devices either came to life or lay dormant as the innovation of TT progressed. Furthermore, it is also interesting how devices can pinpoint areas of concern that human actors need to overcome, which seems rather contradictory. One example of this is how the allocation model first pushed for more emphasis on individuality, only later to direct the focus towards standardisation.

This dynamic understanding complements the SSC literature by bringing it up to date in terms of understanding how devices are connected to the evolution of SSCs (Kastberg, 2014; McIvor *et al.*, 2011). As portrayed in the analysis, devices are closely coupled with

the transformation of TT by directly affecting human actions, emphasising how attachments with humans make devices function such as engines (see also [Revellino and Mouritsen, 2015](#)). It was these socio-technical configurations that gradually changed the role and composition of TT and its clients. Hence, devices caused drifts ([Kastberg, 2014](#); [Minnaar and Vosselman, 2013](#)) that altered the perception of TT by making it possible for human actors to explore new and unforeseen worlds far from what was originally intended. It was this exploration that equipped TT with new capabilities and an internal re-organisation to meet new challenges. This is a clear step away from the fixed view on the role of a SSC in the SSC literature insofar as a SSC is not necessary either a cost centre or a profit centre, but can be both when accounting for time and space.

Furthermore, this insight also provides another view on how devices affect changes in SSCs other than the common approach in the SSC literature. In this literature, devices are presented as tools with pre-determined roles (hierarchy or market; [Amiruddin et al., 2013](#); [Howcroft and Richardson, 2012](#)). Yet, this paper demonstrates that devices have a more dynamic nature, making the common approach seem reductionist. From this perspective, it was revealed that SSC dynamics cannot fully be understood by only investigating a single device ([Goh et al., 2007](#)). Instead, the impact made by multiple devices must be identified. Some devices have multiple roles that both stabilise and expose weaknesses at specific moments of time. Additionally, different devices are present at certain times, while being relegated to the background at other times.

5.2 The composition of devices and dynamics of organisational transformation

The presented insights also add to the literature dealing with the role of management devices in organisational change. In the case of TT, challenges and concerns of a coordinative nature, as revealed by the attachments between devices and humans, gave rise to dynamics. This also demonstrates that the actors, relations, organisational units and services were, in fact, not stable or complete, and that this incompleteness became the catalyst for transformation. As a result, new identities in relation to others had to be established, and services had to be defined as the transformation of TT moved forward. However, it is important to emphasise that the problematisation of the existing roles and relations also led to new devices. Therefore, it was actually unexpected events and issues that led to the introduction of for example databases and rotation principles, as well as TT and clients, to assume new roles.

As a result, the understanding of drift displayed in this article stands apart from the understanding of drift in [Quattrone and Hopper's \(2005\)](#) study by how drifts not only create changes in devices, led to new devices, but also changed the trajectory of organisations. This understanding is, to some extent, similar to that displayed in the study by [Andon et al. \(2007\)](#) and [Revellino and Mouritsen \(2015\)](#) by supporting the understanding that devices functioned such as engines ([Revellino and Mouritsen, 2015](#)). However, this study extends this understanding somewhat by showing how drifts reveals new unforeseen aspects that in some cases also transform the devices to such as an extend that new functionality or capability is added to the devices as for example displayed in the development of the helpdesk, the allocation model or the SC.

However, it is important to note that this role was an effect of the attachments between the devices and humans. By generating increased insight and knowledge about such relationships, the devices made it possible for the human actors to explore new avenues and worlds. Through these attachments, the devices acted back on the social by regulating or prompting certain actions. In this way, the devices became active participants in the formation and transformation of TT. Hence, it is the formation of the actor-network,

consisting of both humans and non-human entities, which drive the change processes that are reflected in ANT's statement that innovations contain these hybrid constellations (Mouritsen and Justesen, 2011). In fact, it is impossible to separate the social and the technical when analysing the fabrication of such innovations.

Moving on to future research, it is important to underscore that this study stretched over many years and dealt with multiple organisations to obtain a firm grasp of transformation processes. However, the consequence of this design choice was difficulty balancing the explanatory power of the socio-technical constellation in each episode, which, in turn, means that some episodes or attachments between humans and devices have not received enough attention. Hence, future studies of SSC transformation and change can reduce the scale by providing a more in-depth examination of the transformative power of, for example, a single device working as an engine.

Notes

1. The case has been given a fictional name to preserve anonymity.
2. The college functions as the corporate head for a group consisting of several colleges, such as a technical upper secondary college and a college of professional higher education.

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