

Standardized work processes: the role of programmed and lateral mechanisms of coordination

Thim PRÆTORIUS

Department of Business and Management, Aalborg University Copenhagen, Denmark

Abstract. This paper finds that standardized work processes should be considered as a bundle of coordination mechanisms—plans and rules, objects, routines, roles and proximity—rather than a coordination mechanism of its own. The bundle builds the accountability, predictability and common understanding needed to coordinate. This implies that the coordination potential rests on those underlying coordination mechanisms, thereby lending theoretical insights to the traditional view on standardized work processes. The research builds on an in-depth, qualitative analysis of hospital care pathways.

Keywords. Coordination, Standardized work processes, Care pathways, Hospitals

1. Introduction

The challenge of coordinating interdependent workers and tasks, be it pooled, sequential or reciprocal (Thompson, 1967), is fundamental to any organization that aims to achieve a collective goal (Malone & Crowston, 1990). To this end, organizations have long favoured programmed processes (March & Simon, 1958) because they are efficient and considered to reduce the need for personal interactions (Van de Ven et al. 1976).

Recent theory, however, finds that standardized work routines such as CPs also facilitate relational coordination (Gittell, 2002); i.e., a mutually reinforcing process of interaction and communication carried out for the purpose of coordination. Similarly, Faraj and Xiao (2006), Okhuysen and Bechky (2009), respectively, emphasize the dynamic and emergent side of coordination. Lateral, emergent interactions are thus increasingly highlighted alongside programmed coordination. This could also suggest that standardized processes rely on both programmed and emergent coordination mechanisms.

In a hospital sector faced by big coordination challenges, the recent perspectives offer new insights that are important to investigate further. Hospitals are insightful because care work is distinctive and has stochastic properties (Argote, 1982) that require care delivery to remain flexible (Ramanujam & Rousseau, 2006). Interestingly, hospitals increasingly meet the coordination challenge by organizing around standardized processes (Vos et al., 2011). To the question of coordination, standardized CPs are illustrative and relevant for at least two reasons. They have an interesting duality because they mirror standardized work routines, but also facilitate relational coordination (Gittell, 2002) and "cut across clinical departments and professional specialities" (Adler et al., 2003: 18). Also, standardized work routines can be different from the actual routine because they have ostensive and performative properties that make them stable, yet changeable, and potentially different from one time to the next due to human agency (Feldman & Pentland, 2003).

These insights raise the question of how precisely standardized work processes such as CPs are coordinated in a hospital setting. The relationship between programmed and emergent coordination mechanisms is also undeveloped, especially empirically (Becker,

2004). To these ends, the paper aims to investigate the micro-mechanisms of coordination that facilitate the task coordination potential of standardized care processes in hospitals.

1.1 Coordination: an integrative perspective and framework

Okhuysen & Bechky (2009), recently, synthesized traditional and recent, emergent perspectives on coordination into an integrative framework. Five categories of coordination mechanisms—*plans and rules*, *objects and representations*, *roles*, *routines* and *proximity*—make up an integrative set that can be brought about and coordinate in programmed as well as emergent, dynamic ways. The equal emphasis is recent in the organization theory literature. The five coordination mechanisms lead to three integrating conditions: *accountability*, *predictability* and *common understanding*.

Plans and rules such as standard operating procedures concern prospective preparation for task completion. These types coordinate by defining responsibilities for tasks, allocating resources and developing agreements among the people involved. *Objects and representations* are artefacts such as papers, spreadsheets or monitors that can provide information about, e.g., task status and progress. This provides workers with means to acknowledge and align work, structure activities, make the task progress obvious, create a common perspective and share information directly. *Roles*, formally or informally established, coordinate through the associated expectations people have. This offers opportunities to monitor and provide updates on activities. Roles also allow people to substitute for each other and create a common understanding about the task that needs coordination. *Routines* coordinate in formalized or informal ways “by providing a template for task completion, by bringing people together, and by creating a common perspective across groups (p.477)”. Routines offer this potential because they foster task completion, stability and provide a backdrop for work hand-off. *Proximity* influences interaction and communication among people. It coordinates by providing visibility and familiarity. The former makes it possible to monitor and update each other. The latter builds trust and makes it possible to anticipate and respond to each other.

1.2 Care pathways in hospitals: a standardized work routine

A CP is “a complex intervention for the mutual decision-making and organisation of care processes for a well-defined group of patients during a well-defined period” (Vanhaecht et al. 2010). Hospitals use CPs to achieve resource, clinical and quality improvements (ibid.). Similar to standard operating procedures and programmed coordination (Cyert & March, 1963; March & Simon, 1958), a CP represents a coordination mechanism because it standardizes in writing how, when and in what sequence interdependent health care workers who work in different departments and across different stages of a specific care process should act (Prætorius, 2013). For clarification purposes, the CP concept carries two meanings. It is a formalized procedure, but it also refers to the real-life, specific care task to be solved. This paper investigates the latter by focusing on how a standardized CP contributes to coordinate care tasks.

2. Methods

The research was a fine grained qualitative and single-case, embedded case study of three outpatient CPs at a medium-sized Danish hospital. The design was selected because the research aimed to investigate in-depth how CPs contributed to coordination within a real-life context, and for which case studies are appropriate (Yin, 2009). The different coordination mechanisms that facilitated this potential were investigated. A single organization was investigated because it was a unique case (Siggelkow, 2007), in part, due

to the mission of using CPs to develop new ways of changing inpatient care to outpatient.

Out of six eligible CPs three were selected: cancer, cardiac disease and co-morbidity diagnosis. Case selection was based on (a) four process criteria—extent of standardization, type of interdependence, duration and patient volume (Mintzberg, 1989; Thompson, 1967)—and (b) three structure criteria—clinic-based, use of coordinator and departments involved (Gittell, 2009; Ramanujam & Rousseau, 2006; Van de Ven et al., 1976).

The three CPs provided different sets of task characteristics that needed coordination in and across departments. To illustrate this is the organization and the task of diagnosing cancer briefly described. Based on triaging a doctor sees the patient and determines the proceeding plan. The collective coordination effort primarily required the effort of medical doctors, coordinators, radiographers and radiologists. Coordination mainly took place when the patient was not present. The coordinator served the role of a hub in the spoke; i.e., coordinate the task by interacting with hospital workers and departments. The task of diagnosing cancer was anchored in a cancer clinic made up of two examination rooms, two coordinator offices and one clinical doctor (manager) office. The layout provided access and communication between and among doctors and coordinators. The location of the clinic also provided proximity to the rest of the hospital. The two other tasks resembled this set-up, but also differed along the above-mentioned criteria.

Twenty semi-structured interviews were made with sixteen respondents across the three CPs. Respondents were selected to ensure that interdependent relationships and different roles were interviewed. A semi-structured interview guide that drew on theory of coordination was used (Mintzberg, 1989; Okhuysen & Bechky, 2009; Van de Ven et al., 1976). Documents used for coordination purposes were obtained. Observations were used to understand and ask questions about coordination.

Interview data were, similar to Rerup and Feldman (2011), coded in two steps: open followed by a theory guided grouping. Interview data was analysed using a descriptive and conceptually ordered display (Miles & Huberman, 1994) that followed Okhuysen and Bechky's (2009) framework. The rich, open coding was used to capture details that went beyond Okhuysen and Bechky (2009). Observations and documents served as a frame of reference for comparing interview data. Data was analysed using NVivo.

3. Results

The analysis of how CPs contributes to coordination (a) distinguishes between programmed and emergent coordination and (b) highlights the three integrating conditions for coordination: accountability, predictability and common understanding.

3.1 Programmed coordination and the coordination of three care tasks

Many traditional coordination mechanisms (formal/programmed) are used in the coordination of the three care tasks. A clinical medical director has the role of a direct supervisor in connection with the three CPs. A designated coordinator is another role used in coordinating the three care tasks. In the case of diagnosing cancer, the coordinators rotate roles. As regards coordination, this opens for substituting for each other.

Formal meetings such as weekly scrum-like meetings are held in connection with all three. At these meetings those involved in the CP process meet for 15-30 minutes to, e.g., adjust work across departments, optimize and follow-up. The meetings link participants together across departmental and professional boundaries. This fosters familiarity and understanding about how each other work. Short planning meetings in the morning, which establish task accountability, are also used to coordinate cancer and cardiac diagnosis.

Plans and rules are used mainly to achieve predictability. Agreements such as having

access to book specific appointments or being promised hospital appointments help allocate resources. This reduces uncertainty and eases coordination because resources are available when needed. Notification and schedules similarly help to allocate resources. This defines task responsibility because booking and default rules allow health care workers in or across departments to anticipate subsequent task activities.

Three types of objects and representation are used: electronic patient records (EPR), written and electronic documents. The EPR system is particularly interesting because the system and the core functions of displaying daily (the bookings and planned activities for the whole day) and reminder (tasks that needs to be done by specific individuals) programmes appear to bridge common understanding of the whole care process.

3.2 Emergent coordination and the coordination of three care tasks

The following emphasises the visibility and familiarity that result from proximity and co-location. *Visibility* as means to update occur intra- and cross-departmental. The former, for example, occurs when the cardiac nurses—works to accomplish the task of diagnosing cardiac disease—meet each other in the hallway during the day and adjust task responsibilities by talking about the progress, delays or challenges. Another example is that the co-location of the manager and the group of coordinators make access and communication easy between the manager, doctors and coordinator.

The same type of updating also occurs across departments. For example, cardiac nurses can update or get updated by radiographers when they walk patients to get a scan performed. A similar example is when a doctor from the Radiology Department contacts the manager from the cardiac clinic to discuss a potential cancer patient. These examples ensure accountability, but also likely extend into predictability (cf. below).

Visibility as means to monitor is another example of lateral interactions that take place in emergent ways. To meet the task of diagnosing cardiac disease the nurse asks the doctor in the examination room if they have remembered or paid attention to this or that. The reverse also occurs when the doctor checks up on the work performed by nurses.

Familiarity as a result of proximity provides the opportunity to develop trust and thus accountability. For example, a cardiac nurse says that being familiar means that you know a colleague needs help if they act or say differently than usually. This type of trust building also occurs across departments when, e.g., nurses, doctors, coordinators and radiographers meet each other as part of the task of diagnosing cardiac disease.

Familiarity also makes it possible to anticipate and respond. For example, coordinators try to use their knowledge of individual doctors to plan the cancer pathway so that it fits the medical specialty of doctors. The cardiac nurses also use their familiarity with doctors to anticipate and respond during patient examination. The nurses, coordinators and doctors who diagnose cardiac disease, in fact, try to be visible and know where each other are.

3.3 Additional insights from data about attaining coordination

The analysis finds insights about attaining coordination that go beyond the integrative framework of coordination. It appears important to make the CP and yourself known in the hospital because this familiarity means that it becomes easier to, e.g., get appointments and coordinate CPs. The analysis also suggests that personal familiarity with persons or departments—having prior work experience or knowledge of the modus operandi—benefit coordination because it makes it easier to make contact when needed.

4. Discussion and conclusion

4.1 Care pathways as a bundle of coordination mechanisms

The analysis suggests that it is the combination of underlying coordination mechanisms that ensures CPs coordination potential. A CP is not simply a programmed mechanism with an espoused, formal function. On the contrary, CPs that aim to achieve a collective goal draws upon plans and rules, objects and representations, roles, routines and proximity because each play a coordinating role in order to achieve accountability, predictability and common understanding. This implies that a standardized care process is a bundle of coordination mechanisms rather than a coordination mechanism of its own.

This finding is promising because it: (a) becomes possible to strengthen the coordination potential by pushing on each or the most central underlying mechanisms. It looks like it is the combination of coordination mechanisms that ensure coordination; and (b) offers the opportunity to address uncertainties such as lack of common understanding of process that arise from dividing work into specialized functions/tasks. For example, meetings, proximity, using coordinators and/or objects and representations could—the analysis suggest—raise the possibility that the coordination mechanisms substitute/compensate for each other, thereby, e.g., fostering common understanding.

Importantly, Okhuysen and Bechky (2009) emphasise that the three integrating conditions overlap. From the analysis one such example is that planning meetings in the morning outline who is accountable for what parts, but also make the care process more predictable because those involved knows what will happen. The same relationship exists between predictability and common understanding. From the analysis, the EPR is used to create a common perspective by, e.g., keeping all information related to the CP in one place for all to see. It also fosters predictability because, e.g., the daily programme allows the Radiology Department to make resources available accordingly. This indicates that each coordination mechanism serves different coordinating purposes simultaneously.

4.2 Contributing empirical insights to theory of coordination

Standardized work routines have the potential to improve relations and communication between interdependent workers, thereby fostering relational coordination (Gittell, 2002). The present research, in comparison, suggests a link between standardized work processes and the underlying coordination mechanisms. This implies that to harness the full coordination potential it is necessary to consider standardized work processes as bundles where each underlying coordination mechanism plays a coordinating role. It appears that the bundle ensures task coordination, not the standardized work routine in itself.

The analysis finds two insights that go beyond the integrative framework of coordination by Okhuysen and Bechky (2009). This shed additional light on how collective tasks are coordinated. First, the analysis points to the importance of being known in the organization through personal networks. This adds to the integrative framework where the focus is on transactive memory systems that concern how individuals obtain what others know by, e.g., training together, thereby improving group coordination. Second, the more loose interpretation of roles is interesting; i.e., helping out and doing small things that are not part of your role help task coordination. In professional bureaucracies like hospitals with strong professions (Mintzberg, 1989), being able to do this appears important to attain coordination.

4.3 Implications for practice

As regards the design of standardized processes, to realise the full coordination potential it is important to consider what the bundle of coordination mechanisms should look like and how they support standardized care processes. This means it is not necessarily enough just to implement lateral meetings where people can connect. Simultaneous use of appropriate plans and rules and roles are most likely just as important. This could

complicate replication, but the findings provide part of the answer by pointing to constituent parts.

References

- Adler, P. S., Riley, P., Kwon, S., Signer, J., Lee, B., & Satrasala, R. (2003). Performance improvement capability: Keys to accelerating performance improvement in hospitals. *California Management Review*, 45(2), 12-33.
- Argote, L. (1982). Input uncertainty and organizational coordination in hospital emergency units. *Administrative Science Quarterly*, 27(3), 420-434.
- Becker, M. C. (2004). Organizational routines: A review. *Industrial and Corporate Change*, 13(4), 643.
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs: Prentice-Hall.
- Faraj, S., & Xiao, Y. (2006). Coordination in fast-response organizations. *Management Science*, 52(8), 1155-1169.
- Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing organizational routines as a source of flexibility and change. *Administrative Science Quarterly*, 48(1), 94-118.
- Gittell, J. H. (2002). Coordinating mechanisms in care provider groups: Relational coordination as a mediator and input uncertainty as a moderator of performance effects. *Management Science*, 48(11), 1408-1426.
- Gittell, J. H. (2009). *High performance healthcare: Using the power of relationships to achieve quality, efficiency and resilience*. New York, NY: McGraw-Hill.
- Malone, T. W., & Crowston, K. (1990). What is coordination theory and how can it help design cooperative work systems? *Computer Supported Cooperative Work, Proceedings of the 1990 ACM Conference on Computer-Supported Cooperative Work*, 357-370.
- March, J. G., & Simon, H. A. (1958). *Organizations*. Cambridge, MA: Blackwell.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
- Mintzberg, H. (1989). *Mintzberg on management: Inside our strange world of organizations*. New York, NY: The Free Press.
- Okhuysen, G. A., & Bechky, B. A. (2009). Coordination in organizations: An integrative perspective. *The Academy of Management Annals*, 3(1), 463-502.
- Prætorius, T. (2013). A theoretical and empirical investigation of care pathways as an organizational phenomenon and the hospital as an organization. (PhD dissertation, University of Southern Denmark).
- Ramanujam, R., & Rousseau, D. M. (2006). The challenges are organizational not just clinical. *Journal of Organizational Behavior*, 27(7), 811-827.
- Rerup, C., & Feldman, M. S. (2011). Routines as a source of change in organizational schemata: The role of trial-and-error learning. *Academy of Management Journal*, 54(3), 577-610.
- Siggelkow, N. (2007). Persuasion with case studies. *Academy of Management Journal*, 50(1), 20-24.
- Thompson, J. D. (1967). *Organizations in action: Social science bases of administrative theory*. New Brunswick: Transaction Pub.
- Van de Ven, A. H., Delbecq, A. L., & Koenig Jr., R. (1976). Determinants of coordination modes within organizations. *American Sociological Review*, 41(2), 322-338.
- Vanhaecht, K., Panella, M., Van Zelm, R., & Sermeus, W. (2010). An overview on the history and concept of care pathways as complex interventions. *International Journal of Care Pathways*, 14(3), 117-123.
- Vos, L., Chalmers, S. E., Dückers, M. L., Groenewegen, P. P., Wagner, C. (2011). Towards an organisation-wide process-oriented organisation of care: A literature review. *Implementation Science*, 6(1).
- Yin, R. K. (2009). *Case study research: Design and methods*. London: Sage Publications.