The effects of exogenous change on interaction patterns among members of organizational routines

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Abstract

The managerial influence on organizational routines is widely debated. The aim of this paper is to shed light on this issue by determining what effects has change introduced by managers on patterns of interaction among members off organizational routines. The field research of an organizational routine in the context of purposive changes revealed that the change of workflow and communication networks within routine has occurred. However, the more detailed analysis indicates that change of the networks was structure reinforcing. It is proposed that change of the interaction patterns within routines may be characterised by framework consisting of “occasions”, nature, and direction of structural change.

Keywords: Routines; networks; network change.

1. Introduction

Organizational routines or habits of organizations attract increasing interest among scholars of organization (Parmigiani and Howard-Greenville, 2011; Salvato and Rerup, 2011). They promise unique opportunity to explain how organizations change (Nelson and Winter, 1982) and why certain organizations outdo others (Abell et al., 2008). Following practice perspective, organizational routines may be defined as recognizable, repetitive patterns of action performed by group of people (Feldman and Pentland, 2003). Organizational routines are collective phenomena. They emerge from the interrelation of individual action. Routines sometimes are defined as patterns of interaction because interaction defines routines better than behaviour or action (Becker, 2004). The perception of

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members of routine about their interaction patterns is one of the key elements of ostensive aspect of routines together with shared knowledge, collective action dispositions and scripts (Dyonisiou and Tsoukas, 2013). While acknowledging that there is important gap of understanding how endogenous and exogenous change impact the inter-personal interaction patterns within routine.

Implementation of planned change in terms of new templates of organizing, technologies (Barley, 1986) provides exogenous shocks that may serve as occasions for structuring. However, scholars studying routines emphasize that “it is the actual behaviour patterns that constitute the routine, not the managerially desired patterns of behaviour” (Becker et al. 2005, p. 5). Different empirical studies showed that deliberately introduced rules and other structures are used as resources for interpretation (Reynaud, 2005; Feldman, 2003) making managerial influence limited. The objective of the paper is to reveal the effects of exogenous change on interaction patterns among members of organizational routines.

The social network analysis and practice perspective serves as major perspectives for this inquiry. Interviews and survey has been used to in order to reveal the impact of exogenous changes for interaction patterns among participants of a routine. Single organizational routine, specifically the routine for purchasing goods, was analysed in the organization implementing organization-wide planned changes. A scope of change, experiences about adoption of planned structures and boundaries of a routine were identified during interviews with members of the routine. The sociometric data on interaction patterns of the routine in terms of the communication and workflow networks among participants of the routine was collected by surveying the members of the selected routine.

Following Madhavan et al. (1998) it is suggested that changes of interaction patterns within routines may be characterized by the “occasions”, nature, and direction of structural change. It is proposed that endogenous and exogenous events provide “occasions” for structuring. The nature of change is characterized in terms of shifts in size and numbers of sub-groups and centrality measures. Finally, it is proposed that shifts in centrality measures indicate if the event was followed by structure reinforcing or structure loosening network change. The empirical analysis revealed that the deliberately planned change constituted the occasion for structuring of patterns of interaction among members of Purchasing routine. The change of workflow and communication networks has occurred as indicates the change of centrality indexes and the change of the number and size of cliques within workflow and communication networks. However, the centrality measures signal that change of the networks was structure reinforcing.

### 2. Theoretical background

Madhavan et al. (1998) suggested that changes of networks may be characterized by the nature, “occasions” and direction of structural change while trying to explain an evolution of inter-organizational networks. They characterized nature of structural change in terms of shifts of inter-organizational network characteristics. “Occasions” of structural change were characterized in terms of key industry events which provided opportunities for the restructuring of networks. Finally, direction of structural change was conceptualized as being structure-reinforcing or structure-loosening. In this article I adopt the framework proposed by Madhavan et al. (1998) to explain the change of the interaction patterns among members of routines.

The nature of structural change. Madhavan et al. (1998) proposed that structural change may be evaluated in terms shifts of centrality, centralization and relationships between contextually equivalent technology blocks. These characteristics provide adequate framework to evaluate change of inter-organizational networks. It is suggested to characterize the structural changes of interaction patterns in organizational routines in terms of shifts in centrality and in sub-structural measures. The shifts of centrality will signal that power distributions within routine have been changed. Routines usually are conceptualized as “truce” (Nelson and Winter, 1982). The shifts in centrality measures indicate that power distributions have altered and new leaders may promote different vision of what constitute the routine. Change in sub-structures of the networks such as cliques indicates about shifts in collaboration and joint tasks’ execution patterns.

“Occasions”of structural change. Exogenous and endogenous events constitute “occasions” for change of patterns of interaction among members of a routine. There are several sources of endogenously induced change. The performances of routines are context depended. The change of the context may be followed by altered performances what may lead to change of patterns of interaction (Feldman and Pentland, 2003). While being attentive to present
circumstances, the prospective and retrospective capacity also may be source of endogenously induced change (Howard-Greenville, 2005). Becker et al. (2005) argue that patterns of interaction may change because routines comprise elements of tacit knowledge which is susceptible to influence by its bearer when it is applied and replicated. The interdependence among the participants in a routine and among several nested routines is also a source of endogenously induced change (Becker et al. 2005). In addition to endogenous change drivers, there are exogenous change drivers which provide the “occasions” for change of interaction patterns. Planned change in terms of introduction of new templates of organizing, technologies (Barley, 1986) may alter the configuration of networks within routines.

Direction of structural change. Direction of change characterizes the shifts in the networks characteristics. As proposed by Madhavan et al. (1998) the direction of change may be either structure reinforcing or structure loosening. The structure of the network is reinforced if the central actors increase their centrality. Structure reinforcing direction of network change means that more powerful and important members of a routine become even more powerful benefiting from change. On the other hand structure loosening direction of network change means that new leaders in terms of centrality emerge.

3. Method

Case study strategy is chosen in order to reveal the effects of exogenous change on interaction patterns among members of organizational routines. Survey of sociometric data and semi-structured interviews were used as data collection methods. Semi-structured interviews enabled to collect qualitative data on the experiences related with the nature, scope of planned structures. Sociometric data about communication and workflow networks bounded by the boundaries of the routine was collected.

The field research was conducted in organization called MapsLT. The MapsLT decided to adopt ISO 9000 certified management system. Organization devoted a year for the planning and implementing changes based on the requirements of ISO 9000 series standards. The research site was entered after a year of the beginning of the adoption. The Purchasing routine was selected for the purposes of evaluation of the effects of the planned change on interaction patterns within the routine. Adoption of ISO 9000 series standards provides a good opportunity for analysis of impact of planned changes for the interaction patterns within a routine. ISO 9000 standards promote process management practices (Benner and Tushman, 2003). Organizations identify, improve and adhere to improved routines while adopting of ISO 9000 series standards. A year after the beginning of the implementation was rather good timing for entering the site. First three months have been devoted for identification of the ecology of routines of MapsLT and matching it with organizational strategy. Only then specific routines have been analysed and specific planned structures for each have been proposed. Six months have been passed from the introduction of the particular planned structures for Purchasing routine and my entering into the site. Such period is rather short period and memories of patterns of interactions should not be heavily impacted. The period is also sufficient time for Purchasing routine to be implemented several dozen times. Whereas it was concentrated on the ostensive pattern of the routine, the repetitive performance of the routine is necessary. The ostensive aspect of routine emerges through repetitive performances (Feldman and Pentland, 2003; Dyonisiou and Tsoukas, 2013). The study of performative aspect of the routine was out of the scope of this inquiry.

A scope of change, experiences about adoption of planned structures and boundaries of the routine were identified during interviews with members of the routine. It was decided to interview the quality manager of the organization as well as participants of the routine which occupies different roles in the routine, specifically so called “Process owner”, “Leader of the group of goods” and “Logist”. The informants occupying different roles in the routine provide relatively more complete picture what constitutes a routine because knowledge about a routine is distributed unevenly (Feldman and Pentland, 2003).

The data was collected on complete communication networks among the participants of the routine. One member of routine left organization and one was included during 6 months period. All identified members of the routine were asked with whom they routinely talked on purchasing related topics before and after ISO 9000 implementation. Not reciprocated ties have been eliminated. The data was also collected on complete workflow networks. All identified members of the routine were asked for whom they routinely passed the results of the tasks related with
Purchasing and from whom they received such inputs before and after ISO 9000 implementation. All not reciprocated ties have been eliminated. Degree centrality was calculated for communication and workflow networks. The number and size of cliques was calculated only for workflow network. Ucinet 6 was used for calculation of network indexes and visualization of the networks. The collected empirical information allowed identifying the impact of the planned change for the interaction patterns of the routine.

4. Results

MapsLT provides services related to cartography. The objective of the Purchasing routine is to provide MapsLT with the resources needed for everyday functioning (office goods, furnishing, etc.). There is no department of provision of resources in MapsLT. Different people from different departments are responsible for provision of goods. Before changes they loosely coordinated their activities. The main changes planned for this routine constituted:
- clear definition of boundaries of groups of purchased goods, persons responsible for them (role called “leader of the group of goods”) and persons responsible for actual provision of these goods (role called “logist”);
- establishment, formalization and documentation rules governing implementation of this routine, for example, lower limits of the goods, deadlines for provision of specific goods and etc.;
- change of oral requests for goods into written requests;
- establishment of new activity for evaluation of suppliers of different goods (Vilkas, 2014).

The evaluation of the perceptions of the members of the routine considering usage of planned structures shows that in general planned structures are used by the members of the routine (Vilkas, 2014). The planned structures went through cyclical processes of negotiation, adaptation and resolution enabled by intense networking of the members of the routine (Vilkas, 2014).

The communication and workflow networks before and after the planned changes are provided below (Figure 1). The communication and workflow patterns are impacted by the planned changes. Before the planned changes David and Gabriel were absent from both communication and workflow networks. It doesn’t mean that they have not used to carry out tasks related to purchasing. But it does mean that they weren’t members of collective purchasing routine. Meanwhile after the purposive changes they are part of joint activities related to purchasing.

<table>
<thead>
<tr>
<th>Networks*</th>
<th>Before changes</th>
<th>After changes</th>
</tr>
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<tbody>
<tr>
<td>Communication</td>
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</tbody>
</table>

[Network diagrams showing before and after changes]
The changes introduced shifts in size and number of subgroups within workflow network. Before change within workflow network there were five cliques in size of 2. After change there were eight cliques, one of which was in size of 3 and seven were in size of 2. The clustering of communication network has also changed. There were seven cliques, one in size of 4, two in size of 3, four in size of 2 before changes. After changes there were seven cliques, two in size of 3, five in size of 2. The increased amount and size of clusters within the workflow and communication networks signals about increased collaboration and joint activities within the routine.

Table 1. The most central members of the networks measured by degree centrality

<table>
<thead>
<tr>
<th>Workflow network before changes</th>
<th>Workflow network after changes</th>
<th>Communication network before changes</th>
<th>Communication network after changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valery (2.0)</td>
<td>Valery (4.0)</td>
<td>Garry (4.0)</td>
<td>Valery (4.0)</td>
</tr>
<tr>
<td>Daniel (2.0)</td>
<td>Daniel (3.0)</td>
<td>Valery (3.0)</td>
<td>Garry (3.0)</td>
</tr>
<tr>
<td>Jane (2.0)</td>
<td>Marry (3.0)</td>
<td>Jane (3.0)</td>
<td>Marry (3.0)</td>
</tr>
<tr>
<td>Others less than (2.0)</td>
<td>Garry (3.0)</td>
<td>Anthony (3.0)</td>
<td>Loui (3.0)</td>
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<tr>
<td>---</td>
<td>Loui (2.0)</td>
<td>Others less than (3.0)</td>
<td>Others less than (3.0)</td>
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The centralization measures reveal that the effects of planned changes are more structure reinforcing effects than structure loosening. Valery and Daniel are central within workflow network before and after changes (Jane left the organization and Marry joined it in the middle of the change). Garry and Valery are central within communication network before and after changes. While the centralization measures of the communication and workflow networks indicate that Valery and Garry may have relatively higher power among the members of routine, the distribution of power is quite equal among members of the routine.

5. Discussion

Following Madhavan et al. (1998) it is suggested that the changes of interaction patterns within routines may be characterized by the “occasions”, nature, and direction of structural change. It is proposed that endogenous and exogenous events provide “occasions” for structuring. The nature of change is characterized in terms of shifts in size and numbers of sub-groups and centrality measures. Finally, it is proposed that the shifts in centrality measures indicate if the event was followed by structure reinforcing or structure loosening network change.

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The pilot research on the impact of exogenous change on the patterns of interaction among members of the routine shows that network analysis may be useful in deepening the knowledge related to organizational routines. The research revealed that planned change constitutes the “occasion” for structuring of patterns of interaction within organizational routines. Routines are collective entities and the patterns of interaction reported by members of routines constitute important part of the ostensive aspect of routines. In general, communication workflow, friendship, advice patterns and their characteristics may provide important insights on distribution of power, cohesion, and collaboration of members of the routine.

Madhavan’s et al. (1998) framework provides useful basis for analysis of the evolution of the inter-personal networks within organizational routines. It provides a background theorizing which techniques may be most appropriate for characterization of change of patterns of interaction within routines. Moreover it opens the question, which centrality measures may provide more complete picture on the direction of change. And what is especially intriguing, the framework provides opportunity to relate the characteristics of the “occasions” with the direction of change of the interaction patterns among members of routines.

References