

The role of organizational culture in motivating innovative behaviour in construction firms

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Abstract: Motivation is the main force through which individuals allocate effort to generate and implement innovative ideas. However, employees are only motivated to go beyond their designated role and get involved in spontaneous and innovative activities if they have a strong identification with the organization. Organizational culture plays a critical role in motivating innovative behaviour, as it can create commitment among members of an organization in terms of believing in innovation as an organizational value and accepting innovation-related norms prevalent within the organization. The research this paper reports on addresses the motivational aspects of the relationship between culture and innovation in construction firms. Specifically, it focuses on those managerial actions through which the importance of innovation may be communicated and innovation-related behaviour may be induced and reinforced. An in-depth case study investigating the innovation activities of a Swiss contractor revealed that project constraints and regional separation may diminish the motivational effects of managerial actions in construction firms. It is concluded that a culture that motivates new solutions and innovative improvements in particular first of all prevents ideas from getting lost in daily business and within the organization. Giving immediate feedback, providing communication channels for implicit knowledge, allowing for autonomous work and task identity, initiating innovation projects and using a comprehensive reward and incentive system are appropriate managerial actions in this regard.

Key words: commitment; construction firm; innovation; motivation; organizational culture

Introduction

Nowadays the successful implementation of new products, services and processes has become a critical challenge for construction firms (Gann, 2000). Essential tasks of managing innovation involve the capitalization and reinforcement of the ability and willingness of an organization to innovate (Trommsdorf, 1990). Ability refers to the reservoir of physical and mental resources to be allocated for innovative activities (Erez, 1997), and creativity is seen to be the key resource in this regard (Wang and Horng, 2002). Willingness, on the other hand, refers to the forces that energize and regulate the allocation of resources to innovation-related activities (Erez, 1997). Here motivation is the main force through which individuals allocate effort to generate and implement new ideas.

Motivation is a multifaceted phenomenon that has attracted the interest of scholars since the end of the nineteenth century and has resulted in a range of theoretical models

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(see Steers *et al.*, 1996; Beck, 2004). Although there is no commonly accepted approach, existing models address more or less those motivational aspects that explain: 1) what drives individuals to behave in a certain manner, 2) what is the direction and focus of individual's behaviour, and 3) what maintains, reinforces or redirects the behaviour (Steers *et al.*, 1996; Ellemers *et al.*, 2004). Likewise, the main questions construction managers are confronted with today are: how to encourage employees to invest behavioural energy in innovative activities and how to sustain this behaviour over time. To find appropriate answers to these questions, one must take into account that employee behavior that should lead to organizational innovation also has to create a sense of self-worth and well-being (Erez, 1997). Employees are only motivated to go beyond their designated role and get involved in spontaneous and innovative activities if they experience this behaviour as being personally satisfying (Locke and Latham, 1990). As individuals use values of their social environment (beside personal values) to evaluate whether their sense of self-worth and well-being have been satisfied (Erez, 1997), organizational culture seems to play a critical role in developing and maintaining involvement in and dedication to innovation (Meglino *et al.*, 1989; O'Reilly, 1989).

Although it is acknowledged that organizational culture influences innovation processes in construction (Ling, 2003; Blayse and Manley, 2004; Steel and Murray, 2004), only a few studies have examined this relationship specifically. Tatum (1989) found that innovative firms in construction continuously strive for improved productivity, questioning everything and all team members, and seeking competitive advantages to win projects. Egbu *et al.* (1998) also found that the four innovative organizations they investigated showed certain culture characteristics including risk tolerance, communication flexibility and willingness to share knowledge. Similarly, Dulaimi *et al.* (2002) concluded that construction firms should create a 'no blame' culture to stimulate employees to develop and experiment with new ideas. Notwithstanding the importance that organizational culture seems to possess for construction innovation, a deeper understanding of how values and norms induce innovative behaviour of individuals and firms is still lacking. Moreover, the ways of creating a culture that is supportive to innovation and the circumstances within which these ways are appropriate remain vague. The research this paper reports on addresses this somewhat ambiguous link by focusing on the role of organizational culture in motivating innovative behaviour of individuals in construction firms. Specifically, it concentrates on the managerial actions through which innovation as organizational value may be expressed and individuals may be prompted to allocate resources for innovative activities. First, the paper briefly explains the concept of culture, its role in motivating innovation and the mechanisms that managerial actions should mobilize to foster innovative behaviour. Secondly, it presents findings from a case study that aimed to elucidate how organizational culture affects the extent to which innovative ideas are generated and implemented within a medium-sized Swiss contractor. Thirdly, it discusses the case study results and proposes some actions suitable to develop and reinforce a culture within construction firms that motivates people to innovate.

Theoretical background

Organizational culture

Despite having aroused much interest since the 1980s, organizational culture has remained a controversial topic. Particularly the question whether organizational culture can be managed

has resulted in opposing views (Ogbonna and Harris, 1998; De Witte and van Muijen, 1999). Organizational culture is here defined as a pattern of taken-for granted, underlying and mostly unconscious assumptions, values and beliefs that are shared by members of an organization (Kotter and Heskett, 1992; Schein, 2004). However, they manifest themselves in norms and thus may also be observed at a more visible level, in rituals, languages and actions (O'Reilly and Chatman, 1996; Martins and Terblanche, 2003). Organizational culture emerges from the interaction and learning of individuals within an organization (Schein, 1990; Jassawalla and Sashittal, 2002). It enables these individuals to understand the functioning of the organization (Deshpande and Webster, 1989) and shapes their behaviour and the character of the organization (Schwartz and Davis, 1981; Boxx *et al.*, 1991).

Motivation through commitment

The role organizational culture plays in facilitating innovation stems from the commitment that culture can create among members of an organization in terms of believing in innovation as an organizational value and accepting the innovation-related norms prevalent within the organization (Figure 1). Committed individuals are willing to exert extra and creative effort on behalf of the organization, as the organization stands for something they personally value (Boxx *et al.*, 1991; Erez, 1997). This value appreciation is vital, because values are 'what people want or consider beneficial to their welfare' (Locke, 1991, p. 291) and, thus, guide their behaviour (Erez, 1997). O'Reilly and Chatman (1986) suggest that creating commitment is a three-stage process involving compliance, identification and internalization. Which stage of commitment individuals show depends, apart from their individual needs and values, on the degree to which the organization is able to convey and express to its members what is important and what constitutes appropriate behaviour (O'Reilly, 1989; Caldwell *et al.*, 1990).

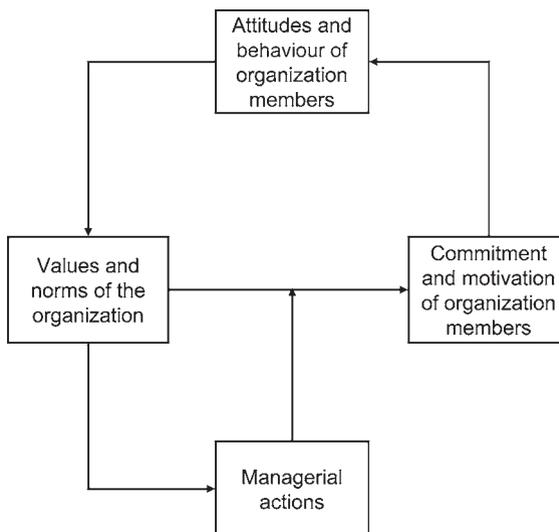


Figure 1 The link between organizational culture and motivation

The influence on individuals by organizational culture acknowledges that individuals ‘are very susceptible to the informational and normative influence of others’ and ‘pay attention to the actions of others and learn from them’ (O’Reilly, 1989, p. 19).

Managerial actions to motivate innovative behaviour

In order to generate commitment and motivation to innovation, one has to be, first of all, aware of those behaviour and attitudes promoting innovation. In innovative organizations people widely share the expectations that (O’Reilly, 1989; Martins and Terblanche, 2003):

- innovative behaviour is encouraged and supported;
- challenging the status quo is part of the job;
- focusing on the long term ensures the survival of the organization;
- risks are inevitable and are taken;
- failures are acceptable and represent chances for learning;
- members of the organization have the freedom to act, to try new things and to be creative;
- information is shared between all levels and units of the organization without being hampered;
- people are treated as the most valuable capital of the organization.

Attaining commitment and motivation requires furthermore suitable managerial actions to induce and reinforce the above norms, and to stress that generating and implementing new ideas is an expected and prevalent way of behaving within the organization (Figure 1). Four mechanisms are seen to underlie such actions: communication, recognition, participation and symbolism (O’Reilly and Chatman, 1996) (Table 1).

Communication. The mechanism of communication relies on the impact of information exchange between people on an individual’s beliefs. Behaviour and managerial actions should aim at fostering communication that ensures consistent understanding of what is valued and

Table 1 Managerial actions to mobilize mechanisms inducing commitment and motivation

Mechanisms	Communication	Recognition	Participation	Symbolism
Mobilization	<ul style="list-style-type: none"> • Enabling information permeability • Enabling dialogue 	<ul style="list-style-type: none"> • Enabling intrinsic rewards • Giving extrinsic rewards 	<ul style="list-style-type: none"> • Enabling incremental choices • Enabling personal responsibility 	<ul style="list-style-type: none"> • Showing consistent behaviour • Enabling understanding of work impact
Managerial actions	<ul style="list-style-type: none"> • Open work places • Public spaces • Workshops • Hotlines • Information days • Excursions • Etc. 	<ul style="list-style-type: none"> • Goal setting • Feedback • Pay raises • Fringe benefits • Flexible and pleasant working conditions • Etc. 	<ul style="list-style-type: none"> • Work autonomy • Task identity • Job enrichment • Job enlargement • Quality circle • Suggestion schemes • Etc. 	<ul style="list-style-type: none"> • Providing time and financial resources • Enforcing the realization of new ideas generated • Overcoming volition barriers • Etc.

that minimizes contradictory interpretations within an organization in this regard (O'Reilly and Chatman, 1996). For motivating innovation, the information permeability of an organization is seen to be vital (Di Renzo, 2000). The unhampered access to problem-related information does not only allow knowledge gaps to be filled but also reduces the psychological costs of gathering information (Meissner, 1989). Here, information orally and informally communicated is specifically suited to adhere in someone's mind and to foster learning and behaviour changing, as direct dialogues between people can take place (Kobi, 1994; Doppler and Lauterburg, 2005). Moreover, complexity and uncertainty which is inherent to innovation might lead to antagonism of interests and distrust. Here dialogues can promote acceptance of innovative activities and can prevent misunderstandings and prejudices (Boehnisch, 1991). Managerial actions that particularly support dialogue encompass, for example, the implementation of workshops, hotlines, information days and excursions and the provision of open work places and public spaces (Reiss, 1997).

Recognition. Another mechanism which may reinforce the motivational effect of the above actions is recognition, and giving rewards is the managerial action which recognizes the individual's compliance with innovation-related norms. Intrinsic rewards are provided by the individuals themselves (eg, feeling of meaningfulness) and arise from 'appraisals which individuals make of themselves by comparing their performance to their internal goals and standards' (Locke and Latham, 1990, p. 243). Setting goals represents a managerial action that can particularly affect intrinsically motivated behaviour (Locke and Latham, 1990). Goals are seen to strongly influence task performance through directing effort toward goal-relevant activities, energizing and persisting effort to the attainment of particularly high goals, and leading to knowledge and strategies about how to achieve goals (Locke and Latham, 2002). Extrinsic rewards are external to an individual and provided by others, for example, by giving feedback. Feedback is a message that contains information about the effectiveness of an individual's performance (Hackman and Oldham, 1980) and allows people to adjust the level or direction of their effort or to adjust their task performing strategies to comply with what the job requires (Locke and Latham, 2002). Particularly, where tasks are innovative, feedback from the supervisor is consciously processed because it becomes the main source for this adjustment (Taylor *et al.*, 1984; Harackiewicz and Larson, 1986). Personal values directly determine what is rewarding to individuals and what satisfies them (Locke, 1991). Individuals receiving rewards for their performed actions that correspond to their personal wants and values are more satisfied with their job and, thus, are more likely to engage in extra-role behaviour than those who are dissatisfied (Locke and Latham, 1990). That is, innovation can be motivated with different types of reward (Lawler, 1987; Meissner, 1989). The motivating effect of rewards such as pay raises, fringe benefits, flexible and pleasant working conditions results not only from their value they possess for an individual but also from the individual's expectation that they are granted on similar occasions in the future (Locke, 1991). Rewards may work as incentives, too.

Participation. Managerial actions based on participation encourage people to make incremental choices and develop a feeling of personal responsibility (O'Reilly and Chatman, 1996). If people do something due to their own choice, they feel responsible and, thus, more committed. Work autonomy is an example that can activate participation. It is understood as the degree of freedom and independence an individual holds in setting goals, finding

strategies for performing tasks and making decisions (Hackman and Oldham, 1980). A greater autonomy is seen to be supportive to the motivation of innovation, as it allows individuals to explore unknown areas and to detect and solve problems independently, which in turn foster work identification and competence development (Meissner, 1989). Another example is task identity. It is defined as the degree to which the completion of a whole and identifiable piece of work is required (Hackman and Oldham, 1980). Here, broadening tasks (job enrichment and job enlargement) enhances the individual's possibilities to try new things and to newly combine or develop task-performing strategies but also offers work that allows individuals to acquire expertise in a certain field, enabling them to interact socially. It is argued that, as a result, individuals experience their work as more meaningful, valuable and worthwhile (Hackman and Oldham, 1976; Hill *et al.*, 1994). Besides work design, other managerial actions such as quality circle or suggestion schemes use participation as a mechanism to motivate innovative behaviour (O'Reilly, 1989).

Symbolism. Symbolism is a final mechanism for promoting innovative behaviour. If the management sends clear and visible messages about what is important, it 'may shape interpretations and enhance the intrinsic importance attached to specific attitudes and behaviors' (O'Reilly and Chatman, 1996, p. 173). More than saying that something is important, these messages come from consistent behaviour on the part of management. For example, if more autonomy is granted for innovative activities, time and financial resources that go beyond what a job requires should be also provided (Martins and Terblanche, 2003). Moreover, innovative activities require persons that help to overcome volition barriers prevalent in organizations. Here, particularly, the hierarchical potential of management allows new ideas to be shielded from the forces aiming to preserve the status quo. Thus, the explicit enforcement of new ideas reveals the relevance of innovative activities and creates an understanding of their impact. As employees understand that the results of such activities may have crucial consequences on the work of other people or the well-being of an organization, the meaningfulness that the individuals experience increases (Hackman and Oldham, 1976).

Research design

An in-depth case study was conducted concerning Frutiger AG, a Swiss contractor with approximately 1500 employees. The work Frutiger offers encompasses building construction, construction of tunnels, road construction, bridge construction, maintenance of buildings and special services like deep drilling and demolition work. As typical for contractors of this size, the organization is subdivided in technical and regional business units. The reason for selecting Frutiger AG as a suitable candidate for this research was the continuous growth and business success of the firm over the last 140 years, which suggest the capability to renew and adapt to market changes.

The rationale for choosing a single-case approach was to be able to highlight the different motivational facets of the relationship between culture and innovation. There is a comprehensive knowledge of organizational culture and a number of propositions has been made on appropriate managerial actions to motivate innovative behavior (see discussion above). However, until now little is known about the extent to which these propositions are valid within the context of construction. A single case is suitable to test the proposition's relevance

(Yin, 1994). It may reveal the circumstances within which culture affects innovation in construction and provide an answer to the question: what are appropriate managerial actions to communicate the importance of innovation, to induce and reinforce appropriate innovation-related behaviour, and to gain commitment and motivation to innovation within construction firms?

Various methods of data gathering were applied to obtain satisfactory answers to the above question. The intention was that some facets that are insufficiently taken into account by one method will be included in the examination by applying another method. A document analysis aimed at uncovering those innovation-related norms that are communicated by the firm's management. The focus was on finding out what part innovations play as organizational value within Frutiger. The analysed documents were the firm's newspaper, the firm's vision, the general strategy and the strategies of the departments. All documents were examined for statements that refer to expectations of the management about innovative behaviour. Interviews with staff members were intended to give a detailed description of the innovation processes going on in the company, to find out what norms regarding innovation are actually shared within the firm or rather what motivates people to generate new ideas. In view of these aims the survey took the different hierarchies and business areas into consideration. Sixteen single interviews in two rounds were carried out including one member from the top management, three department managers, six project managers and six site managers. Additionally, regular group discussions with four project managers who did not take part in the interviews took place in order to reconstruct and validate findings from the interviews and the analysed documents.

Results

Innovation strategy and organizational culture

Frutiger considers innovations to be important in successfully responding to changes in the firm's project environment. In particular, they are meant to contribute to achieving a higher extent of satisfaction of the client's demands and to securing the quality of the services offered. More generally, they are seen to provide the possibility to obtain advantages in competition. Novel changes can affect the whole range of services offered, the operating processes or the organization of the firm. Being open to changes or rather adapting the firm's services, processes and corresponding markets to new conditions is one component of the firm's innovation strategy. Innovation processes are mainly initiated when changes in the environment have occurred or are still occurring. That is, innovations are normally created in connection with ongoing or upcoming projects. Service innovations arise from acquiring orders, whereas process innovations appear while offering the service or after the contract is awarded. Designing variants makes it possible to innovate at the tender phase.

However, most of the interviewees state that there is little preparedness to take risks in connection with new ideas. The main tendency is to implement innovations that have already proved themselves on the market. The management does not object to innovations, but applies a strict standard when assessing them. It is of great importance to them that the financial risks are restricted to a minimum. The precondition for implementing a new idea is a reasonable balance between financial and time expenditures that have to be made and the usefulness of the new solution. As second component of its innovation strategy Frutiger typically strives for

innovations that are on the one hand more incremental improvements rather than radical breakthroughs and on the other hand more mature technologies rather than completely new developments.

The top management tries to support the execution of its strategy by strongly emphasizing the necessity to achieve a constant increase in the efficiency and effectiveness of construction projects. It considers generating and implementing new ideas as a task that every staff member has to pursue in an active and extensive way, while the quality and professionalism of the management on all levels is viewed as a precondition for it. That is, the management primarily values permanent technical and organizational improvements in all business areas and regards them to be most important for the success of the firm. The way novelties are looked at and dealt with is rooted in Frutiger's long tradition as family-owned company with very strong general values such as confidence, modesty, respectability and the ability to know one's limitation. However, the belief of the top management that innovative improvement is vital does not mean that this value is internalized by firm members of other levels and units nor that norms enforcing this value are commonly shared and held within the firm. In the following, the extent to which the management succeeds in communicating the importance of innovative improvements and motivating employees to continuously generate and implement new ideas is presented.

Communication

To ensure innovativeness throughout the whole organization, the management expects the communication within the company to take place actively, which means that necessary information is always available and that everybody knows where to get specific information or where it is needed. Indeed, the interviewed people perceive the communication between departments concerning project issues to be unproblematic. The project-related work and the spatial closeness of some departments are seen to support the sharing of information. Short distances and the existence of public places (eg, cafeteria) particularly stimulate the informal exchange. A common channel to facilitate formal communication within the business units is the meeting of construction site managers, which takes place weekly and explicitly provides the opportunity to exchange new ideas or to discuss problems. If novelties represent explicit knowledge, such as a new machine, the ideas can easily be passed on. As soon as new ideas are connected with practical action or process-related issues, it is more difficult to spread them due to their tacit nature. Moreover, these meetings are mostly fully occupied with other topics that often restrict time for sharing of ideas to a minimum. Between departments that are active in the same business but located in different regions the information exchange is additionally hampered due to spatial division. This is why many interviewees think that a sufficient number of new ideas is created and problem-related information is available throughout the firm, but that there is an insufficient exchange of these ideas and information. As a consequence, frustration may arise if effort was made to find a solution that already exists within the firm or to find information elsewhere that is available in another department. Spending time on re-inventing the wheel is particularly frustrating, as innovative ideas are mostly generated and implemented within the narrow scope of a construction project.

Participation

Most of the interviewed people value the freedom they have to organize their project work, to make decisions independently and to take on responsibility within given project frameworks.

It became obvious that allowing for autonomous work stimulates employees to try and test new ideas, as they become responsible for the success of the project. Interestingly, resource constraints may have a positive as well as a negative effect in this regard. On the one hand, constraints may make project goals appear ambitious and, therefore, can serve as incentives to find new ways for meeting project requirements. On the other hand, they may diminish the chance of successfully putting a new idea into practice. A complementary signal to the delegation of responsibility is the way mistakes are dealt with. The interviewed staff members report that making mistakes in connection with new ideas is allowed. However, the tolerant attitude of the management towards failures may also be traced back to the low innovation degree that work autonomy confined to project conditions primarily brings about.

Recognition

Although it is possible for staff members to be creative, the willingness to do so is not explicitly rewarded. Existing rewards (premium bonuses) are not sufficiently taken advantage of and the interviews indicated that people value rewards differently. However, most of the interviewed employees indicated that they are particularly stimulated to find innovative solutions by a multifaceted, challenging and autonomous work that additionally allows them to work with interesting peers. Moreover, a strong motivator is also the success of a project and the employee's certainty of having largely contributed to it. Most notably, these people often face a lacking support and appreciation of their supervisor. They regard this support to be crucial for preventing the loss of ideas during daily business, as in all phases of construction projects there is never enough time to sufficiently look for new ideas. Moreover, often decisions have to be made within extremely short periods, and there is no time for clearing up further details. This restriction is partly due to external influences such as short periods for making large-scale offers, restricted time between contract award and beginning of construction work, or delays of detailed plans. However, the supervisor has to be behind an idea, he has to utter his support or justify its rejection clearly. Yet, most important is an immediate feedback on an innovative proposal, not only to verify the proposer's way of task fulfillment but also to make enough time and other resources available for developing the idea until an applicable solution is found. Some of the interviewees see a lack of this kind of feedback, resulting in dissatisfied people who no longer are able to take their ideas into consideration for the ongoing project. As one of the reasons for late or no feedback at all, it was found that the (department) management itself is occupied with an enormous workload that induces them to neglect innovative ideas of staff members.

Symbolism

The firm's strategy of being adaptive to changing conditions of projects leads to a strong project focus which seldom supports the taking up of unsolved problems or unrealized ideas to be preprocessed for future projects. Thus, people often have the feeling that innovative behaviour is not regarded to be essential for the well-being of the firm, especially if the effect of an idea on the outcomes of the ongoing project is not immediately visible. They believe that the chance of contributing to the long-term success of the firm is repeatedly wasted.

Continuous improvements require the ability to solve project-related problems and to make use of appropriate problem-solving methods. In order to meet these requirements, a highly skilled workforce and occasions to newly combine the knowledge available within the firm are needed. Thus, Frutiger follows an active policy of sustaining a high skill level and

improving the skill variety of all staff members. A professional development programme is established which includes not only several training courses given by experts from outside but also possibilities to learn from colleagues and to participate in their experience. For example, a training course on technical know-how regularly takes place. During this course staff members from different technical and regional units explain their way of conducting work processes and present interesting solutions and latest developments in their field of expertise. As employees from the entire organization take part, the course provides the opportunity to intensely learn from each other. Most of the interviewees clearly see the importance of their work for the firm to be reflected in these training courses, which in turn serve as motivator for generating new ideas.

Discussion and implications

Context matters

The research aimed at providing a deeper understanding of the link between culture and innovation in construction. Based on theoretical propositions about the role of organizational culture in motivating innovative behaviour an in-depth case study on the innovation activities of a Swiss contractor was undertaken. The case study results suggest that three contextual factors affect the extent to which managerial actions succeed in inducing a culture conducive to innovation in construction firms: the firm's strategy, project constraints and the regional separation. The innovation practice at Frutiger revealed that the firm's management first of all values innovative improvements during the daily project work and uses different actions to transform its expectations into consistent and consensual behaviour of the firm's members. Here it became obvious that the values and norms of the firm play a critical role in executing the innovation strategy of the firm. A match between culture and strategy has to be achieved. Consequently, managerial actions have to be aligned with the firm's strategic orientation to be effective. The managerial actions at Frutiger only partly succeed in activating the motivation mechanisms in this regard. On the one hand, there is too little or no emphasis on certain actions (rewards and incentives) necessary to implement the components of Frutiger's innovation strategy. On the other hand, the motivational effect of a number of actions (autonomy, communication instruments, job feedback) is diminished through project constraints and the regional separation of business units. It was found that these two factors moderate the impact of managerial actions on commitment and motivation in the firm. As a consequence, the development and reinforcement of strong norms is impeded. Norms that focus employees' attention to the innovation activities the top management strives for, that signalize the importance of these activities and that provide guidance on how to behave appropriately to accomplish the activities are underdeveloped or hardly perceptible. But for Frutiger, such norms become all the more decisive, as generating and implementing new ideas are seen to be a task of every member within the firm. Although the firm's management constantly articulates the relevance of innovative improvements, it needs put more emphasis on visible managerial actions that support its messages and help implement the firm's strategy. Moreover, these actions must take the project-related work and the organizational structure of the firm into account. Employees will not be motivated to behave innovatively until they recognize clear and consistent signals and behavior on the part of management that communicate the importance of innovation.

Based on that, the case study points to a number of actions suitable to develop and reinforce a culture within construction firms that is consistent with a strategy of innovative improvements.

Using a comprehensive reward and incentive system

The case results show that different rewards and incentives motivate individuals to innovative and that particularly intrinsic motivation through task design plays an important role. Thus, instead of solely using monetary stimuli, construction management should revert to a comprehensive reward and incentive system. Such a system may include opportunities for advancement, allowance for professional training, participation in congresses, provision of additional resources, allocation of greater responsibility, or granting of performance-related payment. However, the case suggests that a powerful way to stimulate creative outputs is the creation of working conditions that allow employees to make choices and to bear responsibility. As these people get the possibility to work according to their skills and competences, exploit their potential for personal development and recognize the importance of their work, commitment and innovative efforts are expected to increase.

Allowing for autonomous work and task identity

Autonomous work and task identity are two of these job characteristics which the case shows to be essential for choice and responsibility. Depending on the complexity of the constructional task, activities should be integrated as far as possible, and one employee should hold responsibility for that. For example, a site manager may take on pricing, work preparation and execution in the case of a less complex project and should have the freedom to choose a task-performing strategy. This allows for the usage of advantages from specialization and interconnectedness of different knowledge at the same time. Moreover, the identification with the project and its success increases. However, attention has to be paid to the effect of project constraints on the attainability of project goals. If an employee is responsible for a comprehensive work package, it should be ensured that he or she looks upon difficult goals as being achievable and is not afraid of trying uncertain and risky activities. That is, failures should not be punished and activities should be rewarded even though goals have not been achieved 100%.

Providing professional qualification and training

Besides the job itself, professional qualification and training programmes can also provide for knowledge deepening as well as broadening. The case indicates that particularly training courses for staff members from different technical and regional departments represent opportunities to combine knowledge and to develop uncommon ideas. These courses may serve as signals for the significance of people's skills and capabilities for the firm. Moreover, they offer possibilities to learn from peers and to get to know the experts within the firm.

Giving immediate feedback on innovative ideas

Construction projects constrain the possibilities to generate and implement new ideas, as projects only provide limited resources, but the implementation of innovative ideas is mostly connected with the need for additional resources. The research results indicate that this resource pressure on construction projects calls for specifically emphasizing supervisory feedback. Employees will be only motivated to engage in extra role behaviour if they perceive

innovative activities not as threat but as chance for attaining project objectives. A supervisor's feedback – quickly and clearly given – creates the necessary sense of being or not being on the right track, contributing or not contributing significantly to the success of project and firm, and wasting or not wasting resources. Moreover, the research results suggest that with sufficient support, project constraints become not barriers but incentives to innovation.

Giving general feedback on innovative behaviour

The immediate feedback on the proposal of innovative ideas to be implemented in ongoing projects should be complemented by a more general feedback on an employee's innovative activities. Bilateral talks between supervisor and employee that take place regularly (eg, once a year) may be particularly helpful to convey the importance and impact of being innovative by, for instance, evaluating and appreciating previous endeavors. Moreover, they may also give supervisors a better indication of rewards and incentives valued by employees.

Providing communication channels for implicit knowledge

Construction projects require an efficient usage of resources. The repeated development of already existing solutions is not only a waste of resources but also frustrating. Along with an open communication within construction firms for stimulating the generation of new ideas, particular attention has to be paid to communication channels allowing exchange of information about solutions of similar problems and detection of experts, especially peers from other business units. The case study was able to point out that communication platforms are needed which expressly facilitate the exchange of implicit knowledge throughout the organization. Open and public spaces strongly facilitate informal sharing of ideas and solutions between units close to each other. However, for knowledge exchange between units located in different regions, more formal occasions should be provided. The course on technical know-how and visits of construction sites are examples of communication channels from the examined firm that are helpful to spread many of those new ideas which are incremental in nature, to represent new combinations of existing solutions and to stress the importance of such ideas and solutions for the firm.

Initiating innovation projects

Restricted resources and work pressure in projects often prevent good ideas from being developed until they are applicable. This may cause frustration and discouragement if ideas get completely lost in daily business. The significance of innovations particularly for the long-term success of the firm would be more clearly communicated if ideas beneficial for future projects but not realizable in the ongoing project are transferred into innovative solutions independently of a specific construction project. That is, innovation projects are initiated which aim at novel solutions applicable in upcoming construction projects. Moreover, if the persons who generated the ideas are also responsible for the innovation projects and receive sufficient resources for developing the idea, a considerable motivational effect can be expected.

Conclusion

Motivated people are essential for the generation and implementation of new ideas, and organizational culture can foster motivation to innovate by stressing the importance of innovation

for an organization and defining the way to behave innovatively. Managerial actions help communicate innovation importance as well as induce and reinforce the norms which define innovative behaviour. The case of a Swiss contractor shows that within construction firms, managerial actions have to take the effects of project constraints and regional separation on the development of an innovation-supportive culture into account. Using a comprehensive reward and incentive system, allowing for autonomous work and task identity, providing professional qualification and training, giving general and immediate feedback, providing communication channels for implicit knowledge and initiating innovation projects are proposed actions that directly respond to this requirement. However, as there should be a fit between organizational culture and strategy, managerial actions should also reflect the strategic orientation of a firm. Here lies a limitation of the study. The examined contractor pursues a strategy that emphasizes continuous improvements and creative behavior throughout the entire organization. Consequently, the findings are first of all related to the execution of such a strategy. Future research should therefore focus on different strategic orientations of construction firms and try to determine which managerial actions are suitable to create a culture that motivates innovative behaviour according to these strategic preferences. Moreover, due to the single-case design it is worth exploring whether there are other contextual factors that may have an influence on the emergence of an innovation culture in construction firms. This includes the implications for managerial actions aimed at stimulating innovative behaviour in these firms.

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