The Importance of the Evolution of Organizational Perception in an Information System Project Management: A Theoretical Analysis and a Case-Study

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ABSTRACT

The purpose of this article is to highlight the importance of organizational perception in the understanding of decisional processes as an Information System project is being set up. In that case, "collective" perception plays a part in the success of information systems management.

KEYWORDS

Information Systems, Perception Evolution, Performance.

INTRODUCTION

The changes which currently take place in the socio-political environment urge the organizations to expand and alter the ways they manage their business. Therefore, it is continually necessary to study the act of decision-taking in this context. It is possible to contemplate different options of analysis. One of them concerns the way actors take decisions and accept certain organizational transformations. As far as information systems are concerned, transformations may induce various changes (from the most incremental to the most radical): the setting up of a new computer language, the creation of a new software, the realization of a new informational architecture, the conception of crowdsourcing ... So that these changes are successful, it is essential that they should be efficiently conducted by information systems managers. It has indeed been demonstrated that the perception the managers actually have of their information system has a strong impact on the way they are going to manage it, and on the way the projects in this field will be carried out. Puiseux (2008) suggests the following definition of the perception of information systems: "a complex mechanism bringing into play the whole range of sent out information concerning process and result, the way the information is received, and the way it is apprehended by the public." It is therefore a social construct which summons up both senses and knowledge. Whereas a great number of studies (Rayport and Sviokla, 1994, 1995, Puiseux, 2008, for example) highlight the fact that only the managers' individual perception is important, we intend to show, in this article, that "collective" perception also plays a part in the success of information systems management. By collective perception, we mean the perception of the team members, which depends on the relations they have with their managers, which is traditionally named leader-subordinate interactions.

Therefore, we have at first undertaken a presentation of the reference model about behavior and perception control (Powers, 1973, Powers and al., 2008) in order to assess the development of the concept, which evolves from managerial to collective perception of information systems. Secondly, we have carried out a case-study with a view to assessing this evolution.

1. FROM A MANAGERIAL TO COLLECTIVE PERCEPTION OF INFORMATION SYSTEMS

The management of information systems requires a thorough knowledge of the resources of the organization and of the expectations of the actors it is meant for. If decision models take these elements into account, they much less consider the behavior of the actors and particularly the perception managers and their team have of their information system. We actually think
that this aspect is essential with a view to an efficient management.

1.1 The reference model

W.T. Powers (1973, 1998, Powers and al., 2008) first introduced the notion of perceptual concept, as he pointed out that behavior is a function of perception. Perceptual control theory is a comprehensive model of the psychological processes. Powers identifies a hierarchy of at least 11 levels of control systems in the human mind and neural architecture: intensity, sensation, configuration, transition, event, relationship, category, sequence, program, principle and system concept. Perceptions are constructed and controlled according to a scale with levels organized into a hierarchy, so that reaching a superior level implies having reached all the levels below. This scale allows the reader to discover the hierarchy of perceptions and the attitudes that are associated with it. This reference model underscores the concept of control loop with multiple stages, which represents perceptual aims (or the way we wish to see, hear, smell... the world around us). The model was resumed and improved, for instance by Bourbon (1995) through a series of simulations, by Hendy and al. (2001) who revised Powers’s hierarchical scale in order to put forward an analysis of control system stability by linking up the classification of relational aims (internal and external) and the interactions (positive and negative). These authors contributed to the conception of intelligent adaptive interfaces in Artificial Intelligence in the case of four relational events: conflict, competition, coordination and overlap. A great number of applications derive from this model. In the military field, it was used by Hendy and al. (2001) to define decisional models. This model allowed them to analyze stability and to carry out “an analysis that looks at the upward flow of information in the system. Each goal is examined to see how information existing at the sub-goal flows up to the level above. Both analyses potentially identify new goals that must be accommodated by interface design”. It allows a regular comparison of the perception of the world around us (perception in the psychological sense) with desired goals and states. From the gap between the perceived and the desired state, it is possible to construct an action whose implementation aims at influencing reality, in order to make it evolve towards the intended target. For Hendy (2004), perceptual and decisional processes are based on memorized knowledge, in order to transform a sensation into a perception, and the gap between them into action. It is therefore essential to define the notions of managerial and collective perception as precisely as possible.

1.2 The evolution of the concept

The most famous conceptual model of perception was put forward by psychologist Egon Brunswik (1955) and later developed, for instance, by Tapp (1984), Dhami and al. (2004) and Elsbach (2006). It rests on a psychological theory allowing a study of perceptions. Egon Brunswik’s model, called "lens model" postulates that, in order to understand human perceptions, it is necessary to study the lens through which the person sees the stimulus. This model explains the constancy of perceptions as a multi-dimensional psychophysical form in which every concrete situation must be considered as a "variate package", that is to say a whole set containing all situational variables. Brunswik’s aim is to observe all the elements this lens is made of, and to decide whether the use of these elements is relevant when compared to the particular elements of a specific variable. He suggests a probabilistic correlation between the specific features of an element and the satisfaction it brings to an individual. The interest of this model lies in the fact that it is possible to generalize it, and that it applies to various fields; for, according to Brunswik, psychological processes are adapted to environmental characteristics and to the individual’s relations with environment. From this theory, it emerges that the perception managers have of a situation involves three factors at the same time: the senses, experience and time.

Perception links the individual to environment mainly through his senses. According to Coghlan (2000), perception includes the classification the transformation has for managers and actors, the extent to which they can control it (information), and the level of trust in the actors involved in the transformation. Change can be positive or negative. It develops according to a continuum which includes: improvement, uncertainty (with a positive probability), uncertainty (with a negative probability), threat and destruction. The individual’s response depends on the evaluation of the impact: as he faces a specific situation, he can deny it, turn away from it, rebel against it, resist it, tolerate it, accept it, or support it. Armenakis and al.’s research work (2007) also interestingly illustrates perception through senses: it underscores some enlightening indicators – the authors call them “feelings” – which could later turn out to be ominous as regards performance issues. They indeed enumerate five categories of feelings: of discrepancy, of appropriateness, of efficiency, of valence, and behavioral integrity. Perception through senses often combines with perception through experience, for they are both individual approaches.

Perception through experience takes on a particular dimension, more dynamic and constructive. Time is significant, first because memory is involved, but also because the projects may be long-term ones. Senses, experience and time are therefore fundamental elements of the managers’ perception when facing their information system. Value creation originates in the essence of this perception. Thus Rayport and Sviokla (1994, 1995) "observed that companies adopt value-adding information processes in three stages: visibility, companies acquire an ability to see physical operations more effectively through information; mirroring capability, companies substitute virtual activities for physical ones; value matrix, managers draw on the flow of information in their virtual value chain to deliver value to customers in new ways”. Puiseux (2008) also points out that a "poor perception from them confines information system to a center of costs and risks".

It is possible to go deeper into the essence of this perception thanks to research work on the relations between managers and their team members, that is to say their subordinates, in order to underscore a "collective perception" of information system which, according to us, may influence value creation in different ways. As a matter of fact, Luthans and Martinko (1982), Harvey, Martinko and Gardner (2006)’s research works deal with the stimuli and the cognitive, motivational and emotional process which generate an alteration of organizational behavior during the setting up of an information system project. Indeed, a leader’s emotional displays potentially influence, to a large extent, his followers’ senses, thoughts and acts (George, 2000). For instance, Van Kleej and al. (2009)’s works analyze the influence of a leader’s emotional displays on the team’s performance, and, in fine, on the team’s own perception of information systems. According to their perception, the team members will organize their feelings, interpret them and complement them with their experience. These works highlight the fact that the effects of leader displays of anger or happiness depend on follower epistemic motivation, which is linked to their wish of a thorough understanding of the situation. Several writers (for example Rotundo and Sackett, 2002) show that the global performance of a team’s work does not only depend on the performance in the accomplishment of the tasks; it also depends on contextual behavior. Baron and Hannan (2002)’s fundamental
works put forward the concept of emotional attachment as a basis of individual adherence to and identification with the organization, which ensures the lowest likelihood of organizational failure. As a project is being carried out, positive emotion is a way to overcome personal, social and institutional barriers, in order to implement "good" strategies, for it increases the team’s belief that the performed task is significant. It is closely linked to motivation, and is a facilitating factor of organization transformation (Bierly and al., 2000).

2. A CASE-STUDY AND ITS RESULTS

We carried out a case-study in 2009 with an information system project team. The results of this study lead us to make suggestions in order to assess the evolution of the concept, from a managerial to a collective perception of information systems.

2.1 The case-study

The firm we submitted to our questions, that, for confidentiality reasons we shall call Alpha, is the French subsidiary in charge of the development of innovative projects, of an international company specialized in the realization of new business management software. This firm is about 10 years old, and has about 200 employees; in its organizational structure, projects are conducted transversally. Its role, in relation to its parent company, is to carry out three important missions: the development of new software, of customer advertising media, and of applied research. The branch of industry it works in is highly competitive. The actors questioned are the executives of a small team in this company; either they are qualified engineers, or they have a PhD; they have been in the company for about 5 years, and they have the same rank in it. They are 40 years old on the average, and they have different past professional experiences. The thematic questions we raised concerned manager perception and team perception, in the event of a major change to be brought in their information system.

The first issue we have approached concerns the manager’s style of management. The employees questioned consider that their manager has a rather "understanding" style, that he hardly lets his emotions play a part in his management¹, and that he does not use any specific indicators to evaluate his team’s job satisfaction and the atmosphere which prevails in his team. Therefore, there are no interferences with the yearly surveys².

¹ The role of the manager’s emotions in his management was given the low mark of 5 out of 20.

² The thematic questions in the survey concerned the following issues:

1/ staff’s commitment, defined as a combination of attitudes and behavioral intentions (concerning job-commitment, staff pride, loyalty, readiness to stand up for the organization)
2/ perception of the competitive position of the organization, and of the quality of its products and services
3/ inside relations between employees
4/ relations with the immediate superior
5/ level of responsibility given to employees
6/ possibility of job promotion
7/ assessment of individual and collective performance
8/ assessment of informational processes, and of the evolution of the organizational structure

considered particularly important by the parent company – conducted with the whole staff. The team judges that the manager’s emotional state (motivation, passion, hesitation…) during the major organizational change does not have any influence on his vision of the project management. In short, the team considers that this change – of programming language and technological environment (customer-server technology, web …) - was set up with a view to responding to a precise request: the creation and delivery of new software for a customer. To be more precise, the team judges this transformation as an evolution as far as structures are concerned, and as an innovation (or a regression) from a functional point of view. The resources raised for this transformation are mainly human and financial resources, and, to a lesser extent, technical and computer resources. As regards the manager, he perceives this transformation as an important step in the course of his career: if the implementation of the changes proves unsuccessful, he will not be in a position to lay claim to interesting projects in the future, or he might even, in the end, lose his job. However, this transformation only affects a part of the organization – it is a project to be carried out by a team of collaborators – and it was born on management initiative only. It has a deadline: it should be fulfilled within a period of three years, but it is not limited in terms of geographical situation, since small teams in foreign subsidiaries are also involved in this project. As we questioned the actors about the different indicators allowing them to assess their perception of the transformation at several stages (at the beginning, half-way through, and on the day of our interview), we noticed that their perception changed very little in the course of the project: at each stage, their perception concerning the success of the project was rated 80%, concerning the visibility of the available financial means, 50%, concerning the visibility of the allotted time, 100%, concerning the professional satisfaction they drew from their participation, 80%, concerning the informational control they held in the course of the project, 70%, concerning the level of trust they had in their hierarchy, 20%. This project is assessed with an “uncertain positive probability”, and the actors have all a "tolerant" response towards it. On the contrary, their words describing this transformation have evolved: it was described as important for the future, and moderately to highly risky. Although the actors questioned have already known similar circumstances – this can be explained by their organizational structure – they do not think that this fact influences their reaction towards this particular transformation, and uphold that no memory of past experiences interferes with their present judgment. However, they consider they have been influenced by certain interferences (such as false rumors, allegations, contradictory announcements …), by certain restraints in the transmission of the message stimulating the organizational transformation. These interferences and restraints have been present, to a reasonable extent, since the project started, but this fact has not troubled them. The result of this transformation is considered, by both team and manager positive from a short-term point of view, but only partly positive in the long run. This change was actually perceived positively because the task could be fulfilled under acceptable conditions, and the project was carried out within the allotted time. Nevertheless, some new technological changes are already scheduled for the near future.

9/ innovation
10/ customer services
11/ understanding of the management and organization’s strategy
12/ balance between working life and private life
2.2 Results

We have indeed obtained several results. Firstly, as we have established a link between the expression of the manager’s perception and the result following the setting up of their project (let us mention it again: a change of programming language and technological environment, in order to create and deliver a new software), we are able to evaluate its efficiency.

We have noticed that the perception of this project includes, to some extent, inertia and resignation, insofar as the transversal organizational structure of the firm brings about frequent changes. Indeed, the experience of frequent changes weakens the team’s reaction when confronted with a new project, but, indirectly, it more deeply influences the perception the team members have of their company in general. Both team and manager are concerned with the outcome of the project. Nothing diverts their motivation which is wholly directed towards the success of the project. This motivation actually creates value at the same time for the company, the customer and above all for the team members who hope, as well as the manager, to be rewarded with even more interesting projects and a productivity bonus.

Secondly, we have noticed that part of the results, following the change in the information systems is therefore correlated with the way the team members perceive the aim which has been assigned to them, and which requires a certain level of performance from them. Their behavior is contextual for their commitment is stronger if the project can bring them a significant individual and collective value creation. Another part of the results derives from the constancy of perception. Brunswik’s "lens", that is to say the constancy of a whole set of perceptual proximity signals, which, for example, allows the team to understand the same fact the same way, although the wording of the fact is different. This constancy improves the team members’ reaction and adaptation when facing change. Moreover, this collective perception is strengthened by the emotional attachment of all the employees toward their company. A strong organizational culture particularly prevails among managers of the same nationality as those of the parent company.

Thirdly, the impact of collective perception appears a key element of the team’s decisional choices since perception brings into play anticipation and adaptation processes which refer to the notion of perceptive actual experience. The team uses memorized information to reduce uncertainty. At the same time, intuitive knowledge, that of immediate comprehension, plays an important part in the elaboration of a vision of anticipation. Therefore, it seems that change and perception are closely linked, because of the deeply-rooted and evolutionary nature of perception structures when decisional models are contemplated (for example through decision trees …).

As a conclusion, the results of our research work show that collective perception certainly is a significant element of decisional models in information system project management. Therefore, it may impact value creation in different ways. In our case study, the manager’s emotional displays had little influence on how the team functioned, whose members coldly calculated the benefits they might obtain when this new information system project was over. However, the team members’ emotional attachment towards their organization and its role in the collective perception of an information system project open up the way for future research work.

Bibliography


