KNOWLEDGE SHARING BETWEEN USERS AND INFORMATION SPECIALISTS: ROLE OF TRUST

UDC 316.776

Slavoljub Milovanović

Faculty of Economics, University of Niš, 18000 Niš, Serbia

Abstract. *Information system (IS) development is a very complex process. The process, except a technological one, has a very strong human dimension. The essence of the human dimension is communication and knowledge sharing between users and information specialists. Traditional ways of communication and knowledge sharing between users and information specialists are ineffective. The ways lack support in tacit knowledge sharing. New ways of knowledge sharing between users and information specialists are based on open and friendly communication that is ideal for socialisation and tacit knowledge sharing. Trust has the main role in socialisation and tacit knowledge sharing between users and information specialists and this is the topic of the paper.*

1. INTRODUCTION

In IS development two fields of knowledge are needed: knowledge on users' business processes and knowledge on information technology (IT), which is to support the processes. Users possess the first field of knowledge; information specialists possess the other one. Successful IS development depends on effective management and use of these knowledge fields. Business knowledge of users is important in system analysis where system analysts in cooperation with users must determine information needs and disadvantages of the existing IS. Technical knowledge of information specialists is important in later phases of development process when new IS must be designed and implemented.

Knowledge of users and information specialists can be in explicit and tacit form. Explicit knowledge is easy to express for being put in written documents and verbally transfer to the others. Again, tacit knowledge is hard to articulate, express and transfer and thus managing that type of knowledge is very difficult.

It is obviously clear that users will share only a part of their knowledge with system analysts through interview and questionnaire as the classical instruments of system analysis. Most of their knowledge, particularly in tacit form, will stay in their heads as an unar-

---

ticulated and unshared resource for information specialists. It is relatively easy to get knowledge about jobs and activities that a user undertakes on his workplace. However, it is hard to describe how the user works, makes decisions, which criteria he considers in making decisions, how he thinks and comprehends his activities and its environment.

In design phase information specialists must share their knowledge on new IS design with users. Graphical and narrative specification of new IS design as a classical method for new IS presentation is not effective enough. The great part of technical knowledge relating to new IS design is not shared with users because of its tacit nature and they cannot make suggestions for changes in the design. The changes are very important because IS should meet users' needs.

There is an obvious need to revise classical ways and methods for communication and knowledge sharing between users and information specialists. The ways and methods must go toward open and friendly exchange of information, knowledge, ideas, beliefs, attitudes and values relating to IS development. The base of the open and friendly communication between users and information specialists is trust. Also, there is need for revising classical process and methodology of IS development. Instead of mechanical, static and passive view on the process, we need to adopt dynamic approach to the process consisting of permanent knowledge exchanging, sharing and creation.

The first part of the paper is dedicated to modes of knowledge conversion, transfer and sharing between users and information specialists. The modes are adopted from Nonaka and Takeuchi (Nonaka and Takeuchi 1995). The second part of the paper focuses attention on types of trust between users and information specialists, on mechanisms influencing trusting beliefs and on recommendations for making trust higher than usual.

2. KNOWLEDGE SHARING IN IS DEVELOPMENT

Traditional opinion of IS development process supposes that it is enough to gather information on existing IS and its shortcomings, then explicitly and unequivocally propose solutions to these shortcomings, apropos to propose and implement new IS. This static and passive view of IS development process ignores dynamic knowledge creation in the process. IS development is not a mechanical process consisting of certain number of steps (phases) which are to be once realized in a right way and then they are to assure IS project success. Also, IS development methodology is not only a mechanism for processing information inherent to IS project, and project team is not only a group of people which will use the mechanism but an entity permanently creating and sharing knowledge through action and interaction. Therefore, IS development should be considered like a dynamic and permanent process of knowledge exchanging, sharing and creation.

Taking into account the model of dynamic knowledge creation that is presented by Nonaka, Toyama and Konno (Nonaka et al. 2000), IS development process represents context for knowledge sharing between users and information specialists. The knowledge sharing, as well as new knowledge creation runs through interaction and conversion of tacit and explicit knowledge of users and information specialists in process of socialisation, externalisation, combination and internalisation (SECI process). The four modes of knowledge conversion and some activities by which the conversion has been realized are

presented by Apostolou and Mentzas, but in context of IT support to the modes (Apostolou and Mentzas 1998).

By using existing knowledge on business and IT, users and information specialists create new knowledge through SECI process. The new knowledge becomes the base for new spiral of knowledge creation in IS development context. The model of knowledge creation is consistent to iterative approach to IS development where IS is to be improved through many iterations. Every new iteration presents a new spiral of knowledge creation and sharing. Whereas IS development process could be partitioned on system analysis, design, implementation and postimplementation phase, SECI process is presented on figure 1, which is adapted according to Milovanovic's previous paper (Milovanovic 2001).
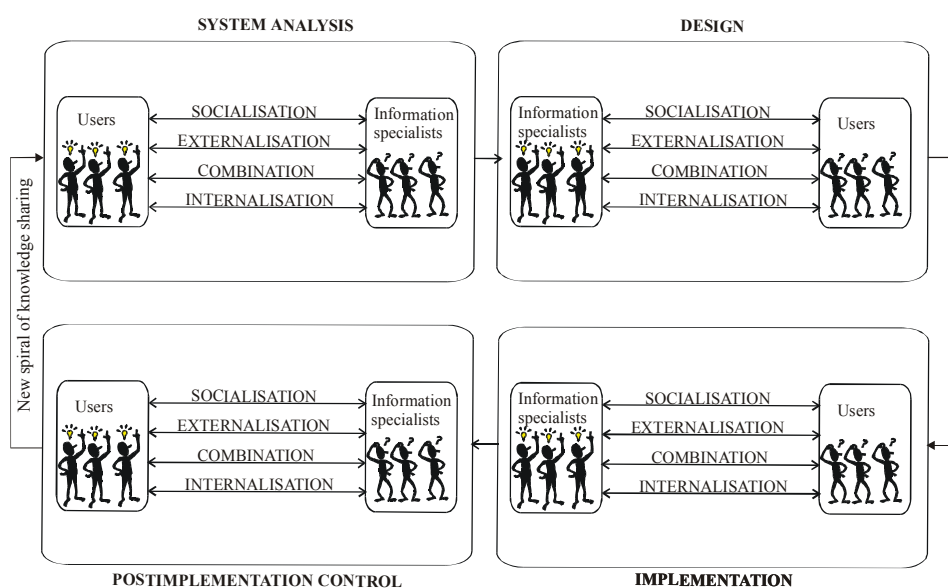

Fig. 1. Knowledge sharing in IS development process

Socialisation and externalisation are processes by which tacit knowledge is to be transferred. In socialisation process, knowledge owner transfers the knowledge to knowledge user who also converts it to implicit form. In externalisation process, tacit knowledge owner transfers the knowledge to knowledge user who converts it to explicit form. By socialisation, tacit knowledge retains implicit nature during its transfer, while by extenalisation tacit knowledge is converted to explicit knowledge.

Internalisation is process of conversion of explicit knowledge to tacit knowledge (explicit knowledge transfer and its conversion to tacit knowledge). Combination process consists of combining explicit knowledge for creating a new explicit knowledge (explicit knowledge transfer and retaining its explicit form). Table 1 presents examples for knowledge transfer, creating and sharing in some IS development phases.

Table 1. Examples of knowledge sharing in system analysis and design

Examples	IS development phases	Modes of knowledge sharing
Users share knowledge on information needs with information specialists	System analysis	Socialisation
Information specialists share knowledge on technical feasibility of new IS project with users	System analysis	Socialisation
Users interpret documentation on existing IS to information specialists	System analysis	Internalisation
Information specialists use documentation on existing IS to create data flaw diagrams, flowcharts, etc.	System analysis	Combination
Information specialists also use their tacit knowledge to create DFDs, flowcharts, etc.	System analysis	Externalisation
Information specialists interpret DFDs, flowcharts, etc. to users	System analysis	Internalisation
Information specialists use their tacit knowledge to create new IS design specifications	Design	Externalisation
Information specialists share knowledge on new IS design with users	Design	Socialisation
Users share knowledge on business changes concerning IS design with information specialists	Design	Socialisation
Information specialists interpret new IS design specifications to users	Design	Internalisation
Based on new IS design specifications users make proposal for change in the specifications	Design	Combination
Users also make proposal for change in new IS design specifications based on their tacit knowledge	Design	Externalisation
Users interpret proposal for change in new IS design specifications to information specialists	Design	Internalisation
Information specialists use their tacit knowledge to realize and present changes in new IS design specifications	Design	Externalisation

As we may see, SECI is not a mechanical process of information and knowledge transfer, but participants in IS development activities receive knowledge in some form (implicit and explicit) and use their tacit and explicit knowledge to create new knowledge, also in implicit and explicit form. Very often, the participants need additional communication for interpretation of received knowledge. Particularly in tacit knowledge sharing, participants need a higher level of communication then simple transfer of information and it is socialisation. That kind of communication is possible only if participants trust each other.

In next section we will focus attention on aspects of trust between users and information specialists, on mechanisms influencing trust formation and on practical recommendations for making trust higher than usual.

3. TRUST BETWEEN USERS AND INFORMATION SPECIALISTS

Trust between participants in IS development process is not a new topic in academic research. Dobing and his colleagues researched building trust between user and system analyst and role of trust in IS development user's participation (Dobing 1993, Dobing et al. 1996). According to the researches, a high level of trust between users and system analysts leads to high level of user's participation in IS development. Therefore, we may conclude that the participation means better chance for true or real knowledge sharing, while the participation does not always mean knowledge sharing particularly in the sense described in the paper. It has been already mentioned that knowledge sharing does not mean simple information transfer but sharing of ideas, beliefs, attitudes, values, fears, suspicions, assumptions and prejudices relating to IS development. Many of the items are very sensitive for every person (e.g. beliefs, suspicion, fears) and its sharing is not possible if climate of trust does not exist in relationship between users and information specialists.

McKnight, Cummings and Chervany give maybe the best and most complete researches on trust in business environment (McKnight et al. 1996, McKnight and Chervany 1996). Analysis of trust between participants in IS development process are based on the researches, but references used in the researches are not cited although are sometimes used in the paper.

There are many definitions of trust, some are too narrow, some are too broad and we give two commonly accepted definitions. These definitions are:

- Trust is a willingness to accept incomplete contracting on the assumption that other parties will behave within accepted norms.
- Trust is essentially a belief about another, a willingness to depend on that person, even in difficult situations, despite a lack of guarantees or the power to force the desired performance.

Usually users are in a position to trust or not to trust information specialists, because they have or do not have willingness to accept incomplete contracting considering IS project and to depend on information specialists despite a lack of guarantees or the power to force the desired performance of IS. However, trust is a reciprocal category and information specialists should also have trust in users. In an IS project there are many situations where information specialists depend on users (for example, reliability in giving promises about some information presentation).

In fact, clear understanding of trust is possible when we present many aspects or types of trust. Trust could be viewed over trusting intentions, trusting behaviors and trusting beliefs. Trusting intentions are given in the definitions through willingness to accept incomplete contracting and depend on somebody. However, main aspect (type) of trust is trusting beliefs, because users' cognitive and emotional beliefs about information specialists impact trust intentions and trust behaviors that may manifest through openness for knowledge sharing.

Trusting beliefs involve belief attributes. We may present broad list of the attributes: competence, expertness, dynamism, predictability, goodness/morality, good will/intentions, benevolent/care/concern, responsiveness, honesty, credibility, reliability, dependability, openness/minded, careful/safe, shared understanding and personal attraction. However, all attributes could be classified into four categories: benevolence, honesty, competence, and predictability.

Although the attributes are usually inherent to information specialists, users also should possess the attributes if they expect true knowledge sharing and effective IS. Following examples are related to information specialists' attributes. ***Benevolence*** means information specialists care about the welfare of users and are therefore motivated to act in users' interest. Users' interest is effective and efficient development of IS which gives them accurate, objective and timely information for decision making. ***Honesty*** means information specialists make good faith agreements about filling specific users' need, tells the truth about risk relates to IS project, and fulfills any promises relating deadlines. ***Competence*** means information specialists have the technical and managerial ability to implement IS design specifications for users who need that. So the essence of information specialists' competence is efficacy in IS implementation. ***Predictability*** means information specialists' actions are consistent enough that users can forecast what information specialists will do in a given situation. Information specialists' actions must be consistent with IS project which is accepted by users and users can forecast what information specialists will do. In general, if information specialists are consistently (predictably) proven to be willing (benevolent) and able (competent) to serve the users' needs in an (honest) manner, then information specialists are worthy of trust indeed.

Two mechanisms enabling trust are categorization and illusion. These mechanisms help form trust by their impact on trusting beliefs.

Categorization. Users and information specialists belong to two different groups (categories) of experts. There are many differences between them: education, language, jargon, tradition, culture, attitudes, values and behaviors. Participants in IS project must accept the fact that the differences exist, but it must not be a reason for distrust. Building IS project team means building natural cohesive partnership between users and information specialists sharing common goals, beliefs, values, assumptions, knowledge etc. People tend to alter some of their beliefs about the other party when they become part of the same team.

In trusting beliefs formation stereotyping or general bias, which users have about information specialists and vice versa, plays the main role. Users usually think about information specialists in the following way: They have technical language and jargon, which nobody understands. They know how to work with software programs and machines but not with people. They care of the programs and computers but do not care of users' problems. They are lonely people who do not like to communicate with users. Unfortunately the list is not exhausted.

The bias and prepossession could be corrected by building natural cohesive partnership between users and information specialists, but information specialists must make effort to break the stereotypes. They must take concrete actions and evince or express behaviors that increase trust. For example, information specialists build interpersonal skills, which they use in understandable communication with users, in solving users' problems, in explanation technical terms to users, etc.

Reputation categorization is also important in trusting beliefs formation. Reputation of information specialists may reflect professional competence. Users think of information specialists as a group of experts with technical competences. The belief that the competences are enough to solve users' problems by IS development have positive impact on trust. However, it is very difficult for users to evaluate technical competences of information specialists because the competences are based on tacit and procedural knowledge,

which is difficult to share. Very often information specialists are not willing to express their competence in an open manner because they feel vulnerability and loss of power.

Illusion. Trust is not always developed on rational mechanisms, but also on illusionary mechanisms. Users sometimes have illusion that IT has magic attributes, which could be used in solving their problems, and meet their needs (Markus and Benjamin 1997). According that illusion, they believe that information specialists have the attributes. Information specialists have obligations to explain real features and effects of IT and to decrease unrealistic expectations from IS project. When the expectations are not fulfilled users are frustrated and that causes total loss of trust in information specialists.

We here deal with micro or interpersonal (psychological) trust, but there is also macro or organizational (social) trust that is not the subject of the paper. In general, positive organizational atmosphere for trust building and high organizational trust have positive impact on trust between users and information specialists.

Although differences between users and information specialists must exist, they should accept each other with the differences. However, they should try to understand causes and bases for the differences and not to create stereotypes, biases and prepossessions about each other. They should try to talk openly about problems inherent to IS development process.

IS project manager is responsible for facilitation of communication process between users and information specialists. When he recognizes conflict and problem, he must organize meeting for solving the problem. Above all, he must take care about friendly and positive team atmosphere on the meetings, which have positive impact on solving problems with full knowledge sharing.

Informal meetings and conversation are maybe more effective in trust building between users and information specialists. In informal environment they are more ready to express trusting behaviors. IS project manager should inspire informal communications through joint lunches, picnics, celebrations (New Year, Christmas, birthday, etc.), vacations etc. Through the friendly intercourses people are more ready to share their ideas, beliefs, attitudes, values, fears, suspicions, assumptions and prejudices.

4. CONCLUSION

Old modes of information and knowledge exchange and sharing between users and information specialists are not enough for successful IS development process. New modes require higher level of communication than simple information presentation on classical manners provided by IS development methodology. The high level of communication goes toward tacit knowledge transfer and sharing and increasing trust between users and information specialists. In fact, trust is the main ingredient in the knowledge sharing. Also, old ways of trust building are not enough for true knowledge sharing. Regular formal meetings and meetings due to specific problems are irreplaceable but must be supplemented by informal meetings (lunches, celebrations, vacations etc.), which are more effective in trust building. IS project managers have particular responsibilities consisting of continual analysis of indicators of trust manifesting through trusting intentions, trusting behaviors and trusting beliefs. This research of trust refering to some types of trust and mechanisms for trust formation though theoretical, incomplete and brief, could support those people responsible for enabling knowledge sharing, trust building and effective IS implementation.

REFERENCES

1. Apostolou, D. and G. Mentzas (1998). Toward a Holistic Knowledge Leveraging Infrastructure: The KNOWNET Approach. In Proceedings of the Second International Conference on Practical Aspects of Knowledge Management (U. Reimer, ed.), pp. 3-1 - 3-3, Switzerland, Basel.
2. Dobing, B.R. (1993). Building trust in user-analyst relationships. Unpublished doctoral dissertation. Information and Decision Sciences Department, University of Minnesota, Minneapolis.
3. Dobing, B.R., N.L. Chervany and D. Goodhue (1996). User Participation: The Roles of Trust, Risk, and User Control. MISRC Working Paper, University of Minnesota, http://misrc.umn.edu/WorkingPaper/9602.pdf (accessed in december 1997).
4. Markus, L. M. and Benjamin, R. I. (1997). The Magic Bullet Theory in IT-Enabled Transformation. Sloan Management Review, No 2, pp. 55-68.
5. McKnight, D. H., L. L. Cummings and N. L. Chervany (1996). Trust Formation in New Organizational Relationships. MISRC Working Paper, University of Minnesota, http://misrc.umn.edu/WorkingPaper/9601.pdf (accessed in december 1997).
6. McKnight, D.H. and N.L.Chervany (1996). The Meanings of Trust, MISRC Working Paper, University of Minnesota, http://misrc.umn.edu/wpaper/wp96-04.htm (accessed in december 1997).
7. Milovanovic, S. (2001). Knowledge Sharing Between Users and Information Specialists in an Information System Development Process. In Proceedings of The Second European Conference on Knowledge Management (D. Remenyi, ed.), pp. 383-395., IEDC Bled School of Management, Slovenia, Bled.
8. Nonaka, I. and H. Takeuchi (1995). The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation. Oxford University Press, New York.
9. Nonaka, I., R. Toyama and N. Konno (2000). SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation. Long Range Planning, Volume 33, Issue 1, pp. 5-34.

RASPODELA ZNANJA IZMEĐU KORISNIKA I INFORMATIČKIH EKSPERATA: ZNAČAJ POVERENJA

Slavoljub Milovanović

Razvoj informacionih sistema (IS) je veoma složen proces. Taj proces, izuzev tehnološkog, ima veoma jaku ljudsku dimenziju. Značaj ljudske dimenzije je komunikacija i podela znanja između koristika i informatičkih eksperata. Klasični putevi komunikacije i podele znanja između korisnika i informatičkih eksperata su neefikasni. Novi putevi podele znanja bazirani su na otvorenoj i prijateljskoj komunikaciji koja je idealna za podruštvljavanje i podelu znanja. Poverenje ima glavnu ulogu u socijalizaciji i raspodeli znanja, što je i tema ovog rada.