Building strategic supplier collaboration through gaming

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Abstract

Strategic supplier collaborations in inter-organizational environments have shown increasingly important. When building a strategic collaboration, such as It-implementations, difficult issues come to surface e.g. human and technical difficulties. The focus of this article is a game developed to visualize these human factors to students with a theoretical and practical background, and by this the students will be equipped to plan and handle such a process in reality. The game is developed as a participating role game and based on an empirical documented case. The article has a practical focus/contribution and therefore the case is described and discussed in detail.

Keywords

supplier relationship, IT implementation, Simulation game, Role game

Introduction

In this paper, the process and developing of a participating role game is presented. The game is aimed at coaching an organizational development process and facilitating the building of a shared understanding of inter-organizational issues in a cross-organizational collaborative IT implementation project. Senge [1994] describes the consequences of having a complex and dynamic system without having a shared systems view: The good intentions of the actors end up amplifying the deficiencies of the system rather than solving the problems. When designing and implementing a collaborative IT implementation solution the danger is similar to that as described by Senge in the "Beer game". The game developed in this article therefore focuses on rendering the strategic issues in a relationship between a buyer and supplier, in a pre-implementation phase of an IT system and is designed to address the critical decisions to be considered during this phase. The game is developed as a part of the IMERAS project (**Im**plementation of **ER**P and **A**PS **S**ystem). The overall purpose of the project is to develop methods and tools for the implementation of ERP and APS systems that will help Danish companies, before and during the implementation stage, minimize and/or solve the problems experienced in these contexts. Gaming and simulation are methods that are being used more and more for improving processes and have shown their usefulness in other areas [Forssén and Haho, 2001; Haho, 1995; Smeds, 2001]. Furthermore the game has shown powerful in

illustrating interactive decision situations and hereby making the shortcoming of strategic thinking in conflict situations more apparent [Wolters & Schuller, 1997]. It was consequently decided to explore the gaming method in educating a group within the above described topics.

This game is the first development step towards developing a game, which offered to a widespread of networking companies, can facilitate the process of implementing an ERP system within the network. This first step is then developed for teaching purposes and will further be developed for use within companies.

The purpose of this game is to:

- visualize the process of reaching a higher level of a strategic collaboration between two companies such as implementing an IT system in the relationship

- increase the understanding of conflicts, possibilities and limitations of such a process

The motive for this game is to teach a group of students an understanding for the above mentioned subjects and the idea behind using the gaming method is:

I hear- and I forget, I see- and I learn, I do- and I remember [Konfutse].

So visualization and doing, in a role game, increases not only learning but also understanding and will then create a bridge between theory and practice for the students, so they can relate theory to this session.

This game is based on actual empirical cases and conflicts acquired from a EU funded project named CO-IMPROVE. CO-IMPROVE evolves collaboration between buyers and a number of suppliers, for further information see [http://www.i2s.gr/coimprove/co-improve.html].

The purpose of this article is to present our thoughts before the game, present the actual game session, present the experience from the game session and present future research regarding further development of this game within IMERAS. We strive to contribute to theory in the area of game development, game experience and testing games.

The article will further discuss the reason game theory was chosen as the preferred learning-method and detail why a participative role game was chosen. The need for a framework for inter-organizational relationship before IT implementation is consequently discussed. The article will also describe the theoretical game and the actual game session experience, discuss findings and experiences from the game and finally discuss improvements and future plans for the game, and specifically how to incorporate these into IT-implementation, in specific ERP/2 implementation. The first topic to be discussed is thoughts on implementation in general and ERP implementation.

Implementation issues

According to Walsham [1993] there are to areas of implementation, the technical area and the human and social area. The technical area regards ensuring a complete system development and ensuring that the system function adequately in a technical sense. The human and social area focuses on the usefulness and usability of the system in personal work activities and tries to ensure that the system is frequently used by the organization members. This article is focused on the later of the two.

Within implementation there are a number of phases [Markus & Taines, 2000]:

1. <u>project chartering</u>; decisions defining the business case and solution constraints.
2. <u>the project</u>; getting system and end user "up and running"
3. <u>shake-Down</u>; stabilizing, eliminating "bugs", getting to normal operations
4. <u>on-ward and up-ward</u>; maintaining system, supporting users, getting results, upgrading

This article focuses on first phase and the further development of the game will likewise focus on phase one.

As mentioned this game is the first step towards facilitating ERP implementation, so focus is therefore also to consider factors that are likely to have a positive influence on ERP implementation such as:

- project planning, dedicated resources, qualified people, just-in-time knowledge transfer [Cameron & Meyer, 1998].

- commitment from top management, reengineering of the existing processes, selection and management of consultants and employees [Bingi et al, 1999]

- training, not just in the new system but also in the new processes and how one's work influences the possibilities of action for others [Kræmmergaard & Møller, 2000]

Not all of these matters are taken into account in this game, but the game does illustrate a useful way of planning a project, dedicating resources, finding, selecting and training qualified people.

Inter-organizational relationship

The battlefield of competition has changed from:
- 1980's: vertically aligned operations with business strategy [Hayes & Wheelwright, 1984]
- 1990's: horizontally aligned operations across process [Ghoshal & Bartlett, 1995]
- today: link between their internal processes and external suppliers and customers in unique supply chains [Frohlich & Westbrook, 2001]

So this change to inter-organizational relationships raises issues and problems companies has to be aware of and deal with. Some of the better understood and theoretical well documented factors are:

- Sense of direction [DiBella and Nevis 1998]
- Commitment [Monczka *et al*. 1998, Mohr and Spekman 1994, Moore, 1998]
- (Relative) power [Buchanan and Badham 1999, Cook 1977]
- Trust [McCutcheon and Stuart, 2000, Sako 1992]

Implementation of an IT system between two companies is regarded as a strategic change process and this process requires certain level of trust before two companies is willing to open up to their existing ERP systems to other companies. The two companies also needs a certain level of belief in the future together, else why would you invest in an IT link/bridge between the two companies. This IT link/bridge would to some extent force the two companies to collaborate and learn how to collaborate. That is the reason why this game is focused on the collaboration of a change process, such as IT implementation, and issues most likely to occur when such a process is commenced

Methodology

A simulation game combines the features of the simulation (incorporation of the critical features of the reality into the model) with those of a game (players, rules, competition, and cooperation) [Saunders, 1998].

According to Ments [1989] it is a simplified version of reality that provides techniques aimed at supplying the participants with a highly simplified reproduction or part of a real or imaginary world. The simulation is used to simplify reality but in a smaller and more accessible span, which means that e.g. time is accelerated, number of participants is reduced and rules are made simpler. There exist a variety of simulation methods, some computer supported, some manual and some focused on technical systems, some focused on social systems [Smeds & Riis, 1997]. This simulation is focusing on the social aspects and is a manual simulation. The reason for the social aspects is described above and the reason for the latter is forthcoming. In conclusion a simulation is modeling reality while a game is a set of rules to be followed by a number of actors. [Forssén and Haho, 2001]. The rules have to be very considered and are supposed to be as realistic and relevant as possible, but only in relevant aspects. So the players/participants should respect the rules but still have freedom enough to make realistic decisions and actions [Smeds, 2001].

From the different types of game options such as brainstorming, board games we have chosen to make use of role gaming. In its simplest form, role games requests someone to imaging that they are either themselves or another person in a particularly situation. They are then asked to behave exactly as they feel that person would behave. Result: learn something about the person and/or situation. In essence, each player acts as part of the social environment of the others and provides a framework in which they can test out their repertoire of behavior or study interacting behavior of the group [Ments, 1998]. One of the obvious advantages is that role games are flexible, easy and cheap devices for instruction [Ments, 1989]. Another important issue is that implementation of an IT system has many social aspects (interaction of human beings) and we have only few resources and can therefore not develop a computer supported game. So role game is therefore suitable within the few resources and for the purpose of covering social aspects [Smeds, 2001].

In conclusion we have chosen to use the role game to create an understanding of the two organizations, by simulating decision making, the strategic process and decision making towards the implementation of an It system in a inter-organizational relationship.

The Game session

As previously mentioned this game was developed for educational use at MBA level, so the students attending have practical experience and theoretical interest. The game session it self is the testing of the game. The overall purpose of the game was to give the participants an understanding of strategic buyer/supplier collaboration. In detail following issues was to be elaborated:

- What is strategic buyer/supplier collaboration?

- What are the pre-requisites to strategic supplier collaboration?

- Which potential benefits and complications exist when engaging in extended supplier collaboration?

- How this process is initiated?

Before the actual role game started, the participants were introduced to a variety of information to be used in the game. The game participants were introduced to history and vision of the two companies called Motor (buyer) and Component (supplier). This was done to give the participants a sense of the business, difference in size (turnover, employees etc.) and power relation between the buyer and the supplier. The conclusion to be made from the history and vision is that Motor is a global company, a much larger company than Components, about to reduce number of supplier to 50 %, has a high demand regarding quality, delivery, price and flexibility and has chosen Component as one of the strategic suppliers. Component has just replaced the management, Motor accounts for 1/3 of the overall turnover. Motor has addition decided to implement a new ERP system within the near future.

The participants where then given a job position within the two companies, and these positions where primarily within the top management of both companies, Motor's purchasing department and Component's sales department. By this each participants would then focus on a certain area during the rest of the game, e.g. an IT manager would primarily focus on IT issues and not on the relationship towards the supplier. Two participants where given the job as external consultants for the purpose of observing each company. The focus of the observations was given by the facilitators and the focus changed during the game period. At specific periods within the game, the consultant would in plenum give their evaluation of the process so far, level of collaboration, change in attitude etc.

Each participant where also given a personality to adapt to. This was first and foremost done to create internal conflicts and relationships in each company but also to create conflicts and bias towards the other company beyond the usual negotiation conflict that exist in such a business relationship.

Next the history of the collaboration was presented and the conclusion to be made from this was that the two companies had experienced complications in the past, Component does not fully trust Motor since they have been suppressive, they have not had a high level of collaboration in the past, but turn-over to Motor has increased the last five years. Component has signed a contract with Motor, that oblige component to a annual cost reduction of 5%, and if Component does not succeed they have to reduce the price accordingly. This history was presented to give the participants a sense of the level and atmosphere of the collaboration.

An illustration of the information and material flow was presented because the two companies at a later state in the game period would have to implement an IT system to handle the information and material flow.

After this presentation, the actual game and case assignments commence. Between each case assignment there was a presentation from the facilitators. Each case assignment was discussed within the company and either presented in plenum or formed a foundation for a negotiation between the two companies.

Case 1
The game would commence by assigning the participants in each company to consider and discuss the prerequisites of a strategic collaboration. This was partly done to force the participants to think in terms of a strategic alliance. Our hypothesis was also that the participants would discuss a theoretical and ideal view of a strategic collaboration, so the primary reason for this case was to evaluate the ideal and theoretical view of a strategic collaboration compared to the actual course of events. The participants would after a short discussion present in plenum the result of this discussion. The observers/consultants where given the assignment of closely monitor the internal discussions and alliances of each company. The intention was to track changes in behavior on inter- and intra company levels.

Case 2

The next case consists of two parts. Part 1 focused on improving the present collaboration and considering how this could be done using IT to support the improvements. This was based on the presentations of the collaboration and also the information- and material-flow. Part 2 would focus on possible conflicts regarding the implementation of the proposed business potentials and solutions to these conflicts. Each company would again discuss this and present in plenum. The purpose of part 1 was to improve the collaboration based on the various presentations given and based on the theoretical knowledge of the participants. These improvement suggestions, and therefore the theoretical knowledge of the participants would then, at a later state of the game, be challenged by actually asking them to implement the ideas between the two companies. The purpose was equally for the participants to consider IT solutions in terms of improving the information- and material-flow. Both companies came up with a Vendor Managed Inventory (VMI) solution which coincidently was coherent with the next assignment planned.

Case 3

The assignment in case 3 asked the participants to discuss the advantages and disadvantages for each company and then compose a project group to attend a meeting with the other company. At this meeting the two companies should have a dialog about these topics and discuss the cost division compared to the cost benefits. The two partners where engaged in the dialog in a very negotiable manner and experienced problems in finding a solution. Our experience from the case at which the role game is based on, tells us that this dialogue was very realistic. At the same time the dialogue form was very different of the intentions described under case one and two. After this session, the participants where given a presentation of the advantages and disadvantages for both a buyer and a supplier described in theory.

Before Case 4, Motor and Component where separately told that they respectively would strive for a minimum and maximum stock level. The reason for Motor is to reduce cost while the reason for Components is to avoid fines when stock levels are to low. Additionally Motor is only interested in an old data exchange solution for now (because they already have this solution implemented with others) but may consider a new solution in a year's time. While Component is only interested in a new data exchange solution. The purpose of this information is to create a realistic dilemma between two solutions and also create a time issue in regards to the implementation of the solution.

Case 4

The assignment in case four was to initiate the implementation project and specify:

- Who from each company will engage in this project?
- How should the cost be divided between each company?
- How will the information- and material-diagram look like?
- Which IT technologies are needed for a VMI solution?

The goal of this assignment is for each company to discuss how an IT implementation project would look like and solve implications such as different visions preferably in a constructive way. Again unlike the intentions described during case one and two, the dialogue was not in any way constructive, but can be characterized as very negotiating and Motor took charge of the project and bargaining in a dominating way. They especially had problems in sharing costs and benefits. Components thought only fair of getting an annual cost reduction when implementing VMI (Components has to reduce cost of 5% annually) but Motor attempted to leave the annual cost reduction out of this discussion. The two companies had no problems in

creating the new information- and material-diagram. They did however experience great difficulties in agreeing on a specific VMI solution, but after extensive discussion Motor got their way which was the older data exchange solution. When the companies had agreed on a specific solution, they had no problems in identifying the technologies for this.

These disputes were expected according to the case study the game was based upon and according to the obliquity created in terms of visions and position towards technologies and solutions. The negotiation lasted for about 30 minutes and the two companies where pressured by the facilitators to reach a solution. The observers/consultants where asked to present their perception of the intra and inter company discussions. They thought that Components very easily and quickly gave into Motor's demands compared to the plan Component had developed before the meeting between the two companies. In Motor's internally discussion the observers noticed that IT manager was very dominating even outside his field of responsibilities such as supplier relations and visions. In Component the owner was the dominating individual but this same individual was the one who easily gave into Motor's demands.

Case 5
The final assignment had reflection purposes. The assignment asked the facilitators to reflect upon the process they have just gone through and in specific the pitfalls of implementing VMI and extended supplier collaboration. Issues that arose were such as obliquity in visions, the division of costs and benefits plus difficulties agreeing on which VMI solution to use. The issues that arose were reflected back to the issues raised in the first two cases.

Reflections on game purpose

This paragraph reflects on the purpose of the game described under Introduction.

Conflicts: Conflict issues had a great part in the design of the game, which is partly because the game is based on a case but primarily because the game focuses on the human aspects of implementation. Equally theory described under Implementation issues claims that conflicts is inevitable in such a process. The question is then if the game has achieved its goals within the conflict focus. Conflict in this game has two dimensions: business conflicts and personal conflicts. In terms of business conflicts the game session shows that the participants identified themselves with the role given to them and engaged in intense discussions and conflicts revolving such as IT-, financial-, contractual- issues. Clearly the participants had reflected upon these conflicts and had learned from this. But in regards to personal conflicts the participants engaged in these types of conflicts but it never really became clear to them to what extend these existed. A way to increase focus on this would be to intensify the focus of the observers/consultants to these conflicts.

Possibilities and limitations: The participants could effortlessly identify the possibilities of a strategic collaboration such as increased performance, improved quality, delivery etc which was due to the theoretical and practical background of the participants. But it did not appear to us that they had a deeper understanding most likely because they had studied these issues but never experienced them. Equally they could identify overall limitations but not on a deeper level. The game did not give the participants this deeper understanding of possibilities but it did help them identify new limitations such as difficulties in regards to the design and completion of a process at this level.

Visualization: The participant's view of visualization where divided in two; some thought that the game was very realistic and some did not see the game as realistic. Some of the issues raised by the participants who did not recognize the game as realistic claimed were that the game did not reflect reality, decisions of e.g. IT are not made from top level in the

organization amongst other issues, but they were not able to pinpoint exactly why and how the game was found unrealistic. Others however disagreed and found the game realistic and recognized the issues from theory and more importantly from practical experience and could identify the same conflicts, decision dilemmas etc.

IT: The focus of the game was on the human factors of a change process. These factors are regarded as similar for IT processes as well as other change process and therefore covered within this game. ERP implementation not only focuses on isolated issues, but implementation must also be considered in relation to the entire complexity of the company and the context in which it operates [Kræmmergaard & Møller, 2001]. This game does not take this into account, but further development will focus on involving a more complex part of the company. The further development will also involve a more complex IT implementation which brings new difficulties into reality:
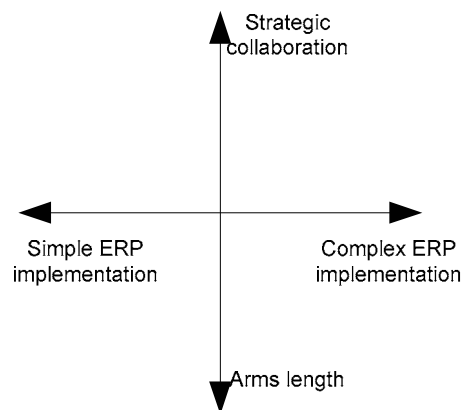

Figure 1: Complexity of ERP implementation.

With the figure we try to illustrate that the level of collaboration and ERP complexity has great impact on the implementation process. Example: a complex ERP implementation in a successful running strategic relationship will encounter much few problems that the same complexity of ERP implementation in an arm's length relationship. Arm's length meaning focused only on price reductions and short term relationship [Kerrin, 2001]. Our hypothesis is that a successful running relationship already has high level of trust, commitment and long term visions, factors not existing with an arm's length supplier, but factors which are a necessity for a complex ERP implementation between two companies. These factors needs further research within the IMERAS project before the final game can be developed.

Conclusion

The purpose of the game described and discussed in this article is to:

- visualize the process of reaching a higher level of a strategic collaboration between two companies such as implementing an IT system in the relationship

- increase the understanding of conflicts, possibilities and limitations of such a process

The game consists of 5 cases in which the game participants are introduced to a buyer and its supplier and the history, relationship and visions. The participants have to consider what a strategic collaboration is, what the limitation and benefits of such is and then the participants have to start collaborating about implementing an IT system between the two. The collaboration process throughout the game is reflected back upon the ideal intentions the participants had from the beginning. According to the purpose of the game, the participants

will after completion have a better understanding of a strategic collaboration process. The participants will through the game have experienced and increased their understanding of possible conflicts, possibilities and limitations in a strategic collaboration. Some of the participants claimed that the game did not reflect reality, while others have seen the exact same issues in reality. So the game needs further research to create an environment that appears realistic to a greater part of the participants, which can be achieved by introducing richer case material of history, relationship and vision but also each case assignment.

This game is the first development step towards developing a game, which offered to a widespread of networking companies, can facilitate the process of implementing an ERP system within the network. This first step is then developed for teaching purposes and will further be developed for use within companies. Facilitating a ERP implementation is much more complex than presenting is this game, so further research needs to be done to specify this complexity.

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