

2014

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## Recommended Citation

Li, Yuanyuan; Cheng, Xusen; and Yin, Guopeng, "COLLABORATION INFORMATION SYSTEM ADOPTION IN HOSPITALITY: A CASE STUDY IN CHINA" (2014). *PACIS 2014 Proceedings*. Paper 15.  
<http://aisel.aisnet.org/pacis2014/15>

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# COLLABORATION INFORMATION SYSTEM ADOPTION IN HOSPITALITY: A CASE STUDY IN CHINA

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## Abstract

*According to technology acceptance model (TAM), IT adoption is influenced by two perceptions: usefulness and ease-of-use. Researchers have discussed on what kind of IS applications offers opportunities for enhancing guest services to meet increasing customer expectations. However, little research has focused on IS adoption for collaboration IS in hospitality. Employees' working efficiency and creation are important in competitive advantages. Collaboration engineering (CE) is an effective method which can help group decision making, but there is little research about using the CE method in hotel information system (HIS) design. Therefore, in this study, we design a collaboration process and apply our self-developed CE based information system (CEIS) in a five-star hotel case in China. We find that although our design can be used in hospitality by the IT support, it cannot always enhance decision making effectiveness for this case. We also find some factors affecting the CEIS adoption in hospitality which could give clues to future research.*

*Keywords: Hospitality, Collaboration, IS design, IT adoption, Case study*

# 1. INTRODUCTION

It is widely accepted that a business that has ability to acquire and utilize updated information to assist its management has a promising future. Previous research shows that the adoption of information technology (IT) can improve the competitive advantage of a business (Eraqi, 2006). IT decisions play an important role in areas including productivity, revenue enhancement, and guest service. Nevertheless, they have been largely underutilized in the area of collaborative meeting support.

Research shows that under certain conditions, groups using collaboration technologies such as Group Support Systems (GSS) can gain substantial improvements in the effectiveness and efficiency of their work processes (Fjermestad and Hiltz, 1998). It is also stated by scholars that organizations that use collaboration technology require two kinds of support: technology support and process support (Kolfschoten *et al.*, 2012). Nevertheless, little attention has been paid to the collaboration technology in hospitality that contributes to improve decision making effectiveness.

After many years' research, researchers find that collaboration engineering (CE) is a useful approach to improve effectiveness and efficiency by designing repeatable collaboration processes, especially in IT industry (Briggs *et al.*, 2003; Briggs, *et al.*, 2006). CE system method can produce high quality outcomes for collaborative efforts in many industries and education field (Cheng *et al.*, 2013a; 2013b; Kolfschoten *et al.*, 2010; Azadegan *et al.* 2013; Cheng and Macaulay, 2014). Besides commercial and professional systems, some researchers have also started to design easy and simple collaboration system for experiments in education field (Cheng *et al.* 2014). However, there is little study that has explored how collaboration engineering based information system (CEIS) can be used in hospitality.

In view of the importance of IT applications to the hotel industry, our study is expected to answer following research questions: Firstly, whether CEIS can be used in the hospitality industry and how? Secondly, what factors will take effects in the IS adoption in hospitality? Therefore, in this paper we provide a real-world case study conducted with a five-star hotel in China and report on practical experiences.

This paper is structured as follows. Section 2 presents a more detailed description of the background of the IS application in hospitality and CE work. In Section 3 we present our collaborative planning process model for hospitality meetings. Section 4 reports practical experiences from an industrial case study we conducted to validate our approach. Section 5 discusses the use of CEIS and values in the presented approach. We end the paper with a conclusion and an outlook on future work.

## 2. LITERATURE REVIEW

### 2.1 IS application in hospitality

IS has become one of the most important tools for business, especially in the hospitality industry (Law *et al.*, 2013). Moreover, numerous studies show that hotel managers agree that IS can improve customer service quality and increase revenue (Law and Buhalis, 2009). Researchers also find that IS's role has changed from supporting operations, such as room reservation, marketing and assisting

strategic decision making (Leung and Law, 2011; Winata and Mia., 2005).

Unfortunately, the empirical findings in China indicate that hotel decision makers do not seem to realize the importance of IS for the purpose of developing business strategies (Law and Jogaratnam, 2005). Therefore IS is generally not used in hotels for high-level business decision-making. Likewise, other countries findings indicate that the hospitality industry has generally been conservative in adopting new technologies and has lagged behind in terms of IS adoption (Leung and Law, 2013). What' more, although hotels have adopted many kinds of systems such as costing and accounting systems and electronic customer relationship management, etc. (Fuchs *et al.*, 2009) , there are still rarely research indicate they are using Group Support Systems (GSS) to support collaborative meeting.

## 2.2 Collaboration engineering method

Though literature review, we find that there are little research in hospitality indicates the facilitated collaboration or CE method. However, facilitation method has been widely accepted in other industry since it is useful to improve the effectiveness and efficiency of the collaboration (Briggs *et al.*, 2006).

Collaboration engineering (CE) could be considered as a combination of facilitation, and design that aims to create collaboration processes that can be supported with collaboration support tools such as GSS (Kolfshoten *et al.*, 2006). Studies show that usage of GSS can substantially improve group effectiveness and efficiency (Ackermann, 1996; Fjermestad and Hiltz, 1998). CE designs a reusable and predictable collaboration process for practitioners in a group to execute for themselves without the ongoing intervention of group process professionals (Briggs *et al.*, 2013; Kolfshoten *et al.*, 2012).

The design patterns used in Collaboration engineering is called thinkLets, which is a named, scripted, and well-tested facilitation technique that collaboration engineers can incorporate into process designs and it creates a predictable, repeatable pattern of collaboration among people working towards a goal (Briggs *et al.*, 2001; De Vreede *et al.*, 2006). For example, *Onepage* (one kind of brainstorming method that could generate many new ideas in a page) and *PopcornSort* (one kind of classification method in short time) belong to thinkLets.

## 3. RESEARCH MODEL

We follow the Design Science Research (DSR) approach (Hevner *et al.*, 2004) and collaboration process design method (Kolfshoten and Vreede, 2009) to design a hospitality meeting process based on literature research and then do the experiment and evaluation. The whole CE design process has been used successfully in IT industry (Kolfshoten *et al.*, 2010; Kolfshoten and de Vreede, 2007). However, there is little application in other industry, let alone hospitality industry. In this research, we try to find out if the process could be used in hospitality and improve the effectiveness.

Kolfshoten and de Vreede (2007)conclude that the CE design should follow five stages: *Task diagnosis*, *Activity decomposition*, *Task-thinkLet choice*, *Agenda building* and *Design validation*. At the first stage (*Task diagnosis*), we can use interviews with the relevant stakeholders to find out the goal and task. When the goal, deliverables and task are clear, we move to the second stage (*Activity decomposition*) in which basic process needs to be determined. After active decomposition stage, the

activities can be matched with thinkLets (*Task-thinkLet choice*). To select an optimal choice of ThinkLets, we use the six steps model: generate, reduce, clarity, organize, evaluate, and consensus building (Briggs *et al.*, 2006). At the fourth stage (*Agenda building*), a specific agenda is built. Figure 1 shows the details of the designed process. Finally, the designed agenda will be tested in really situation (*Design validation*). Therefore, we choose a case in China five-star hotel to make verification.

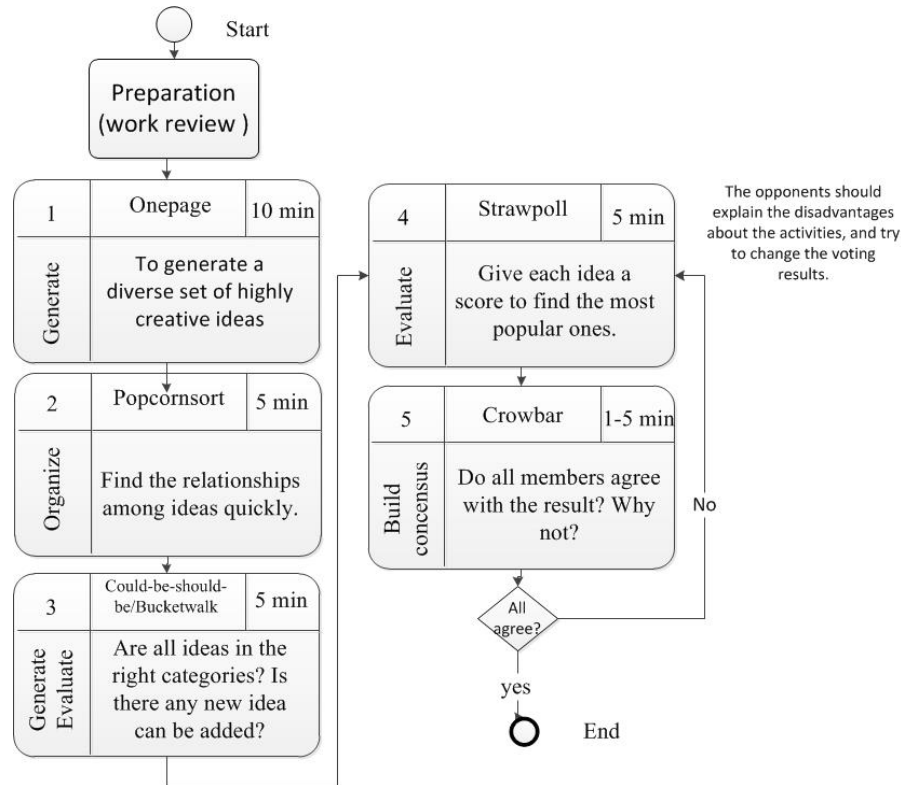


Figure 1. The new collaboration process

## 4. CASE STUDY

Researcher argued that as hospitality is an emerging field, it is more useful to use case studies as a qualitative research method to understand complex IT phenomena (Connolly, 2005). We use the case study method because we wanted to understand a real-life phenomenon in depth (Yin, 2009; Yin and Davis, 2007). A case study, meeting all of the conditions for testing the theory, can confirm, challenge, or extend the theory. Such a study can even help to refocus future investigations in an entire field. Research would use DSR method to do the case study (Chau and Xu, 2012). Therefore, we can use a case study to answer research questions, explore if CE can be used in hospitality and explain how CE can enhance decision making effectiveness. Our research used an in-depth interview approach.

Managers in a five-star hotel in China were interviewed after a process test to seek their views on the CEIS. The questions used in the interviews were performed in Kolfshoten and de Vreede (2007; 2009) 's, Standaert *et al.* (2013) 's and Azadegan *et al.* (2013)'s research. These questions cover the decision-making effectiveness of the designed process and the adoption of the CEIS in the hotel meetings.

## 4.1 Case background

Over the past 30 years and more since reform and opening-up, Chinese hospitality industry has made remarkable achievements in its development. To further enhance tourism development, Chinese government has made several strategies including Hainan International Tourism Island. Hainan Island is one of most popular tourism destination in China (Stone and Wall, 2004).

In our case study, we choose Ocean Sonic Resort in Hainan as a representative five-star hotel to explore whether the CE can be used to enhance decision making effectiveness of the hospitality meetings. In order to deliver its specific culture to the tourists and enhance customer experience, the hotel launches a project to organize Friday Night activities for its customers and employees. The important task falls on the Customer Service department and the Human Resource department. Since Friday Night activities require changing over the time, the managers and employees in two departments have to collaborate frequently. Therefore, it is a good case for us to apply the designed CE. Five managers come from the Customer Service department and the Human Resource department participated in the workshops. The project manager is in charge of running the process and served as facilitator and scribe. Before we introduce the CEIS, team members only have face to face meeting.

## 4.2 Experiment and interview

This is the first time they try to use the CEIS to assist decision making. Participants are managers from Customer Service department and the Human Resource department.

Before the meeting, a facilitator is chosen to create a meeting room in the CEIS and send the room ID and passwords to the project members. The facilitator has to think about the meeting schedule and make it on the CEIS. When the meeting begins, the facilitator asks managers in Customer Service department and the Human Resource department about their opinions about the last Friday Night activity. Since it is a face to face meeting, they can just talk directly. Then, he concludes everyone's opinion and set up the goal for the next coming activity.

Stage 1(Onepage stage): All participants try their best the list some the activities about the Friday Night. After the time is over, the time keeper will give the message that the stage has finished. We find that there are over 40 items are created into the database in this stage, such as Beach Treasure hunt, Beach Volleyball, Bikini Show, Family banana boating Competition, A Wedding Anniversary, Cocktail Night, Barbecue Party, Swimsuit Masquerade, Single party, Photo contest and Musician Festival.

Stage 2 (PopcornSort stage): The facilitator creates seven categories including Activities on the beach, Water Sport, Catering Activities, Parties, Funny Games, Films and Musical and Arts Exhibitions. When the time keeper begins to work, participants require moving the unclassified items into the seven categories. In this stage, if the item has been move out the unclassified category, participants can't move them from one category into the other until the next stage.

Stage 3(Could-Be-Should-Be/BucketWalk stage): The facilitator asks participants from one category to another to find out if all ideas in the right categories and if there any new idea can be added or repeated idea can be canceled.

Stage 4(Stawpoll stage): When all categories have been cleaned up, the facilitator starts a ballot. All participants should give every activity a score range from 1 to 5. When facilitator sees everyone has submit their scores (summit number will show in the screen), he will click the button announce vote results. Then, everyone can see the items are ordered by mean and standard deviation.

Participants can talk about more details about the highest score items or items with highest standard deviation in this stage.

Stage 5 (Crowbar stage): Whoever has a disadvantage about the decision can make a speech now, if he can persuade others to change their mind, the process will go back to the Strawpoll stage.

The first meeting on CEIS costs the team about 40 minutes and creates many creative ideas which can also be used in many Friday Night activities. Participants can export the meeting report from the CEIS.

After experiments, we did several interview with managers. To adhere to the principle of contextualization, we started the interview with a set of contextual questions to understand the position of managers in the hotel. In the second part of the interview, we asked each respondent the feeling about the CEIS and the process.

## 5. RESULTS AND DISCUSSION

Generally, the five project team members are satisfied with the outcome about the Friday Night. But when we ask them about the 4 research questions according to their daily collaboration in hotels, not all questions get a positive reply.

*Result 1: the CEIS receive both positive and negative reply.*

Some managers agree that such platform can improve productivity, choose the best idea and help to do the decision making, especially in the requirements survey, some seminars and some activities like the election of talented employees. But some think the platform may ignore some effective communication in face to face meeting.

In hotel departments, there are basically two kinds of meeting, one of which is intra-departmental meetings which prefer face to face communication. Some managers believe that it will cause minimum communication barriers with tone, demeanor, etc. The second kind of meetings is decentralized meetings. For example, they may have a telephone conference or video conference if not all participants are in the same workplace, or if participants need to discuss together after work. In these cases, the platform can be more effectively to put everybody together.

However, some managers insist that the internal face communication is recommended in hotels, because it would be more effective in communication. But they also admit that some other companies, for example, IT companies with employees working at home, requiring the platform since this they can communicate more effectively, create new ideas and save time.

*Result 2: CE process can help managers to make decision.*

All participants agree that the CE process can help to make decision. For example, the voting can improve democracy, the brainstorming can enhance the results quality and creation, and the standard process can improve efficiency.

However, some managers also point out that making decision in high level is not a simple thing. Managers cannot simply expect to draw conclusions in a meeting, because there are many requirements to be balanced. The meetings results are only give a reference. What' more, since hotel industry has a long history, half meetings in hotels have ready-made processes. The regular meetings in hotels are not the same as other seminar meetings. The regular meetings (like work report, website evaluation, duty log, reception arrangement and VIP project) all have matured processes. Most meetings goals are to solve problems but not to discuss. For example, managers in meetings will discuss details after meetings. They will show a more complete solution in the meeting, but not just a

problem.

In general, the process has some support and help to make decision. But for hotel industry, there are not many chances to have the same kind of meetings to discuss the activities like Friday Night. Managers admit that if they have to do such seminars or workshop, this process will greatly improve efficiency and save time.

*Result 3: there are some factors take effects in the decision-making effectiveness of collaborate process.*

We find that there are some keywords which are mentioned many times. These managers think that preparation, leadership, clear goal, larger amount of ideas, participants and democracy will help decision making. We use a standard cognitive mapping method (Larsen *et al.*, 2007) to present the keywords in graphical form which shows the interconnections among precursor and effect variables (Figure 2).

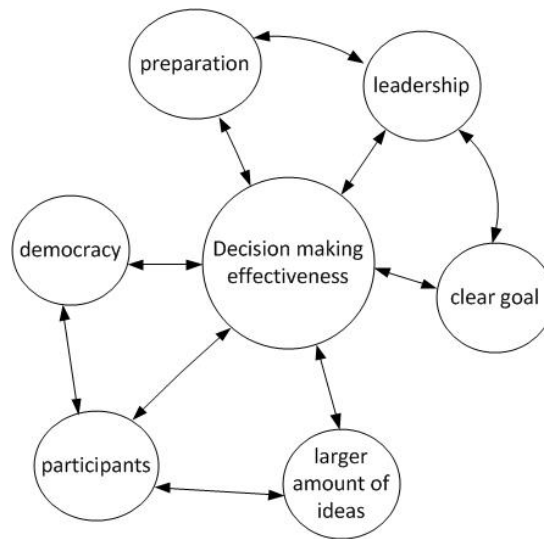


Figure 2. Influence factors relationship model

## 6. CONCLUSION

In this paper, we designed an easy and simple collaborative process and system to support decision making in hospitality meetings on the theoretical foundation of CE. We tested the process on the developed system and encouraged a five-star hotel team to use the collaboration engineering method in a case. Through analysis of our interview data, we found that although CE could be used in hospitality by the IT support, but it couldn't always enhance decision making effectiveness. We also found many factors which could influence decision making effectiveness. These factors should be taken into account to future system design and improvement/research.

### 6.1 Contribution

*Theoretical contribution: This study applies CE methods in hotel systems to find out whether hospitality can adopt CEIS.*

The main theoretical contribution of this paper lies in the application of CE design method (Kolfshoten *et al.*, 2009) in hospitality. Our research extends the CE research in a new industry. The whole CE design process has been used successfully in IT industry (Kolfshoten *et al.*, 2010;



Kolfschoten and de Vreede, 2007; Kolfschoten and Vreede, 2009). However, there is little application in hospitality industry. Therefore, our research can also serve as an example of how a design approach can be developed and evaluated within a design science framework.

Some researchers found a positive relationship between IT investment and company productivity and performance (Mahmood and Mann, 1993; Rai and Bajwa, 1997), but other rejected this conclusion (Barua *et al.*, 1995). Our research finds the similar conclusion that the relationship between IT investment and corporate performance is complex and multifaceted (Ham *et al.*, 2005). According to the interview feedback, one explanation for such situation is that the hospitality industry has a long history, they has a completed system which lead to difficulties to accept new things/tools.

Though decision makers widely accept that IT play important role in hospitality industry (Law and Buhalis, 2009), they seldom make good use of IT for business decision making support (Leung and Law, 2013), especially in China (Law and Jogaratnam, 2005). According to our case study, we find that the reason is that the decision making in hotels is by no means a simple thing. The meeting results cannot determine the ideas of higher authorities. The local hotels will prefer the face to face meeting to the remote meeting.

*Practical contribution: our research provides a practical method for the online group collaboration to managers in hotels.*

Though we find that CE method doesn't have positive feedback in our hospitality industry case, but we can still find some elements that can influent the decision making effectiveness, such as participants, democracy, leadership, preparation and clear goal, which would contribute to the experimental research in CE field. Additionally, managers in hotels can take actions to control these factors to enhance decision making effectiveness. The CE method can enhance the effectiveness of Friday Night meeting by improving democracy and enhancing the results quality and creation. We can find that such result is similar to the research in other industry (Kolfschoten *et al.*, 2012, Briggs *et al.*, 2013). However, as most of meetings in hospitality are regular meetings, the CEIS can only contribute to the little part of activities in hotels.

## **6.2 Limitation and future research**

This study is based on examination of the domain through interviews and literature analysis. We observed no systematic bias in the responses of interviewees. However, our study has several limitations that make it impossible to generalize the findings to the hotel industry as a whole.

The first limitation is that our case study is in a Chinese Five-star hotel. Therefore, the results of the study may not be directly applied to upscale hotels in other countries as well as other types of hotels. A natural extension of this study would be to include more hotels, both locally and internationally. Furthermore, the results of the case suggest a number of relationships based on the particular individuals and their experiences.

Following from the limitations of this study, we intended to conduct further studies on whether the CEIS can improve decision making effectiveness of collaborative meetings in more cases. Further analysis by quantitative method such as scale investigation is also recommended for future research. Collaboration engineering is a reusable way that has promising future. We do recommend other researchers try to apply the CE method in more other industries and try to further validate the results in different cultural and global contexts by conducting further experiments, interviews and surveys. Researchers can also combine the CE method with other IT techniques in the system design.

## Acknowledgement

This research thanks to the funding provider National Natural Science Foundation of China (Grant No. 71101029) and Program for Young Excellent Talents of UIBE(Grant No. 13YQ08) for providing funding for part of this research.

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