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A Repeatable Collaboration Process for Exploring Business Process Improvement Alternatives

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Abstract

The dynamic nature of organisations has increased demand for business process agility leading to the adoption of continuous Business Process Improvement (BPI). Success of BPI projects calls for continuous process analysis and exploration of several improvement alternatives. These activities are knowledge intensive requiring multi-disciplinary skills. Coupled with the cross-cutting nature of business processes attainment of one's business goal necessitates collaboration among stakeholders in many business process improvement efforts. However the existing tools provide limited to no support for this kind of collaboration, especially in the decision processes involved. In light of this, we designed a repeatable collaboration process (CP) for BPI alternative exploration. The CP consists of two modules aimed at the generation of BPI alternatives and the selection of a BPI alternative respectively. Evaluation results from testing sessions at two organisations show that the CP provides support for the BPI generation and selection process, and is useful for BPI alternative exploration.

1. Introduction

The dynamic nature of an organisation's business environment i.e. factors that affect its operations, has increased their demand for business process agility. Business Process Agility (BPA) is defined as "the ability to 'swiftly' and appropriately adjust a set of related activities performed to achieve a given business goal in response to unpredictable internal and external changes that occur in a business environment, beyond the normal level of flexibility [1]. BPA is thus paramount for organisations to remain competitive in an ever changing business environment. As a result, Business Process Management (BPM) has drifted its main focus from the configuration and enactment phases, to the evaluation, and design and analysis phases of the business process lifecycle. In addition it has shifted from the one-off radical changes

technologies related to Business Process Re-engineering to technologies and approaches that increase agility through continuous business process improvement [1, 7, 6, 11].

To achieve continuous business process improvement (CBPI), continuous analysis of the business process and exploration of business process improvement (BPI) alternatives [5] is mandatory. In executing and analyzing business processes and exploring improvement alternatives, stakeholders engage in number of interactions, discussions, evaluations and amongst them to share information and knowledge and make decisions. Collaborative BPM thus began focusing on the support of collaborative interactions that may take place during the execution of business processes [8]. Collaborative BPM describes coordinated initiatives that involve actors from the inside or outside of an organisation [2]. Initially, collaborative BPM as an approach for achieving BPA had not received much attention [8]. However considering the growing importance attached to stakeholder involvement and collaboration for the success of CBPI projects [4, 2] and BPA, collaborative BPM has become a fast rising research area [2]. This is attributed to the cross-cutting nature of business processes; several people take part at different stages of the business process and thus any changes in the business process would have effect on the various stakeholders [5]. Furthermore, coordinating the BPI process to continuously adapt to new conditions needs to be carefully managed to avoid chaos [5].

BPM collaboration thus remains a key challenge in BPM research and is commonly manifested as poor stakeholder involvement [4]. This stakeholder involvement may also be reflected as insufficient participation of top management [4] and/or operational users, as seen from the exploratory findings in [1]. Involving these people in decision making process in business process management would increase their commitment and acceptability of business process adjustments/modifications. We therefore seek to answer the research question: *How can stakeholders be supported to work together to generate and select*

business process improvement alternatives? To this end, this research sought to design a repeatable collaboration process to support collaboration among stakeholders in BPI alternative exploration. As such we needed to first understand the concept of BPM and agility and their relationship to collaboration. We then analyzed the collaborative concerns in the continuous BPI using an exploratory study. Requirements were then identified that we used to design the collaboration process for the Business Process Improvement Alternatives. The collaboration process was evaluated against the requirements in two (2) case organizations.

2. Business Process Improvement and Collaboration Support

Currently in organisations BPM focuses on the achievement of agility through constant evaluation of their business processes and environment, and business process modification or improvement [6]. Business Process Management (BPM) can be summarized as being both a methodology and a toolset [8] for enabling CBPI in response to frequent changes in the business environment.

In CBPI, design and redesign are important steps that are carried out repeatedly. In addition, there exists a variety of possible improvement ways for a business process and the most suitable or the best BPI alternative needs to be selected to replace the current one [11]. However, considering the highly cross-organisational and/or interdepartmental nature of business processes [2], it is important to involve stakeholders and multi-skilled personnel from within and without one's organisation in the generation and selection of such a BPI [2, 4]. Effective CBPI is thus greatly attributed to collaboration and involvement of teams made up of stakeholders from within and outside an organisation [10, 4].

Furthermore, collaborative BPM's original focus was on the capture of interactions that took place during the execution of business processes or during the solving of process problems for example in case handling, exception handling and research process [8]. With time, it has become an important aspect of BPM and a fast growing field [2, 8]. This growth is mainly attributed to the cross-organizational nature of business process and thus the critical need to involve stakeholders in BPM [2] in order to increase innovation, an aspect important in agility.

Therefore, to support the interactions and encourage participation among the various stakeholders in any business process reengineering project, researchers have made use of Group Support Systems and simulation tools respectively [4].

However, technology alone seldom results in effective and efficient collaboration but produce the best results when they are supported by processes that have been designed to make good use of their capabilities [12]. This challenge is said to be overcome by use of collaboration support [13]. The support of collaboration can be in various ways from tools, processes, and services [13] to many other manners. Collaboration Engineering (CE) is an approach that can provide support in the quality of collaboration for a recurring mission critical task (in our case collaborative exploration of business process improvement alternatives) in the organisation [13].

CE is an approach "to the design of re-useable collaboration processes and technologies meant to engender predictable and success among practitioners of recurring mission-critical collaborative tasks" [3]. CE provides six patterns to facilitate collaboration among a group of people i.e. diverge, converge, clarify, organize, evaluate and build consensus thinking patterns [3]. These thinking patterns enable members in a group to *generate* more ideas, *reduce* the number of ideas to remain with those that are deemed to be very important that can be discussed to *Clarify* and gain a shared understanding of the ideas which they then *Organize* basing on the relationships of the ideas, and, *Evaluate* and *Build consensus* which moves a group from less to more willing members committing.

In the section that follows we describe the collaborative concerns that impede successful generation and selection of BPI alternatives from which requirements to design a collaboration process to support this problem are derived.

2.1. Collaboration Concerns in BPI Exploration

From the preceding discussion, it is clear that business process agility is about continuous business process improvement which is a recurring (repetitive) and a knowledge intensive activity that requires input from various stakeholders with varied skills and experience. Nonetheless, the involvement of more people tends to come with the need for good coordination and management to avoid time wastage.

In addition to these concerns BPM collaboration is faced with poor stakeholder involvement [4], the risk of poor communication among stakeholders as reiterated in [9], and poor dissemination of information [1]. More so there are no clearly set guidelines or a defined collaboration process to enable stakeholders to effectively explore business process improvement alternatives. Therefore collaboration in BPM and BPI initiatives remains a key challenge.

To affirm the concerns in the preceding discussions, an exploratory study (see [1]) was conducted at a case organization in Uganda to establish the actual collaborative concerns that affect effective generation and selection of BPI alternatives. Among these included: (i) limited stakeholder participation attributed to the lack of and/or insufficient clarity and understanding of improvement opportunities; and the failure to clearly envision the benefits associated with a given proposed improvement alternative. These factors reduce stakeholder participation in the BPI decision making process, hampering business process agility. (ii) The poor communication observed in literature manifested as failure to pass down BPI alternative decisions to responsible stakeholders that did not take part in the decision making process. This has contributed to slowing down implementation of selected BPI alternatives. (iii) Rigidity in the BPI alternative decision-making process brought about by the involvement of a small section of stakeholders causing a gap between management and junior employees. This concern has further aggravated communication problem and knowledge sharing. (iv) Lack of sufficient information for BPI alternative generation and selection as a result of the poor communication and limited knowledge sharing which greatly affect the identification of improvement areas and BPI alternative generation. (v) An increasing need for optimal use of the available resources (knowledge, skills, time) attributed to the rise in BPA demand.

Despite not having a clearly defined process for BPI exploration, we identified activities undertaken by stakeholders at the case organization to improve their business processes. These included; (i) Identification of an area that requires change in a given department; the responsible department prepares a presentation on the issue/problem with possible solutions, (ii) Formation of review committee of stakeholders (iii) Review of possible alternative solutions by review committee, (iv) Selection of a solution (v) Presentation of chosen solution to the executive committee comprising heads of departments, (vi) Adoption of approved solution, (vii) Sensitization of staff members on the change to be implemented and (viii) Implementation of the change.

The concerns and the BPI activities discussed above were used to identify the requirements and deliverables for the collaboration process respectively as detailed in section 4.

3. Research Approach

The collaboration process in figure 1 was designed following the design science (DS) approach specifically, the CE design approach. DS is a problem-solving paradigm that seeks to create innovations that

define the ideas, practices, technical capabilities, and products through which the analysis, design, implementation, and use of information systems can be effectively and efficiently accomplished [18].

We followed the steps defined and described in [19]. To evaluate the collaboration process, we followed one of the evaluation methods for DS, that is, Action research (AR). AR was chosen for this research because, first, it enabled us to ask a 'how to' research question (how to support generation and selection of BPI alternatives). Secondly, action research allowed us to test the collaboration process by applying it in a real life setting. Moreover, it has been successfully used in other similar research studies [16, 17, 15].

In using the AR, we followed the four phases described by [14]; planning, acting, observing, and reflection that can be carried out over several iterations (in our case two). The planning phase involved preparation of the testing session sites. In the second phase, act, the actual collaboration sessions were conducted by the researcher and case site stakeholders, while we kept observing (using data collection instruments) whatever transpired in the sessions with respect to the validation criteria set forward in the observe phase. Finally, in the reflection phase we analyzed the collected data (that is, what did and did not work in terms of the process) to form conclusions that we used to refine the next testing collaboration session. The sessions were supported by MeetingWorks, a group support technology.

Case 1: The business process for improvement was the Student Registration Process at Makerere University (Mak.), Uganda. The collaboration sessions involved five (5) participants, two (2) observers and a facilitator who was also the chauffeur.

Case 2: The Uganda Revenue Authority (URA) responsible for collecting taxes from individuals, companies and other organisations on behalf of the government of Uganda. The process considered at the second organisation for improvement was the e-Tax registration processes. Seven (7) participants were involved in the collaboration sessions; staff members from the Business Process Reengineering (BPR) team, representatives from the service desk, two (2) observers and a facilitator who was also the chauffeur.

4. Designing of the BPI Exploration CP

4.1. Requirements of the CP

The requirements of the CP were derived from the identified collaborative concerns in CBPI (see section 2.1). These included:

- (i) The collaboration process should facilitate understanding of improvement opportunities, and generated and selected BPI alternatives.
- (ii) The collaboration process should promote stakeholder participation in the generation and selection of BPI alternatives.
- (iii) The collaboration process should enable stakeholders to share information and knowledge in order to generate and select BPI alternatives.
- (iv) The collaboration process should provide an optimal way of using resources available in generating and selecting BPI alternatives.

4.2. Design Criteria

The designing of the collaboration process was done through few iterations basing on a design criteria founded in the requirements in BPI exploration mentioned in section 4.1. The design criteria included:

- (i) *Ease of understanding*: This refers to the extent to which the stakeholders share meaning of improvement opportunities and, generated and selected BPI alternatives.
- (ii) *Stakes accommodation in generated and selected BPI alternatives*: This refers to the extent to which the resulting BPI alternatives reflect each stakeholder's contribution or perception. A BPI alternative is affected by a stakeholder's willingness to share information and knowledge which in turn affects the number of contributions made per stakeholder.
- (iii) *Ease of sharing of information and knowledge*: This refers to the extent to which stakeholders are willing to share information and knowledge that can be used to generate and select BPI alternatives.
- (iv) *Efficiency*; we define efficiency as the degree to which there is saving in the resources used to generate and select BPI alternatives. Efficiency in our case is restricted to the time resource.
- (v) *Usefulness*; This refers to the ability of the collaboration process to enable stakeholders to achieve the goal (generation and selection of BPI alternatives).

4.3. Collaboration Process design

Global Goal and Deliverables

The Global goal of the collaboration process is *to explore and agree upon a Business Process Improvement (BPI) alternative in response to identified change*. Basing on this, global variables were identified and these included, (i) List of Aspect(s) of business

process that need improvement (identified change), (ii) List of BPI alternatives, (iii) An evaluation of various BPI alternatives based on a list of mitigation or control measure recommendations and list of performance indicators of a business process with their corresponding results for each alternative, and finally (iv) an agreed upon prioritized BPI alternative.

Modular design

Basing on the preceding section, the deliverables were then broken down into a sequence of activities or tasks for the repeatable collaboration process to explore BPI alternatives, in the task decomposition stage. For each of the tasks, collaboration patterns and thinklets, using examples in [20, 3], were identified in the thinkLet choice stage.

The initial process design was subjected to a dry run with non-experts. The results from the dry run were used to refine it to come up with the modularized collaboration process presented in Figures 1 and 2. In the initial module, the collaboration process was conducted as one whole process which proved to be too long and tedious and thus the need to break it down into modules. The collaboration process was then broken down into four modules corresponding to each global deliverable; however its implementation was not feasible considering the busy schedules of stakeholders in the case organisations. This led to the current process design which consists of two modules namely; the BPI alternative generation module, and the BPI alternative selection module.

Module One: Business Process Improvement (BPI) Alternatives Generation

The aim of this collaboration process module is to support stakeholders in the generation of ideas based on process analysis, risk assessment reports of the current process aware information system and any other relevant information from the business environment e.g. customer complaints, emerging technologies such as mobile money.

This collaboration process involves eight (8) steps as shown in Figure 1. The aim of task one (*introduction*) is to bring about a common understanding of the business process performance, risks and the changes/issues arising from and in the business environment.

Basing on the information provided and participant's experience and knowledge, stakeholders identify improvement opportunities through a brainstorming activity guided by the DirectedBrainstorm thinkLet.

The list of improvement areas/aspects generated from the brainstorming activity is then discussed following the FastFocus thinkLet to eliminate redundancy and to refine the ideas.

Using the StrawPoll thinkLet, the refined list of improvement areas are ranked according to criticality, that is, the need for immediate attention. Basing on the results and the amount of time available for the session, the area(s) that needs immediate attention is/are selected for improvement.

Ways of improving the most critical areas are solicited in a brainstorming activity guided by the DirectedBrainstorming thinkLet.

Guided by the FastFocus thinkLet, the generated BPI alternatives are discussed and refined to remain with the key or most feasible alternatives.

Through a StrawPoll thinkLet activity, the BPI alternatives in the refined list are then evaluated to select key BPI alternatives for the respective improvement areas. However it should be noted that in cases where less than three BPI alternatives have been generated, this activity can be skipped upon the participants' agreement.

The selected key BPI alternatives are then submitted for analysis such as simulation experiments, workflow analysis and risk assessment.

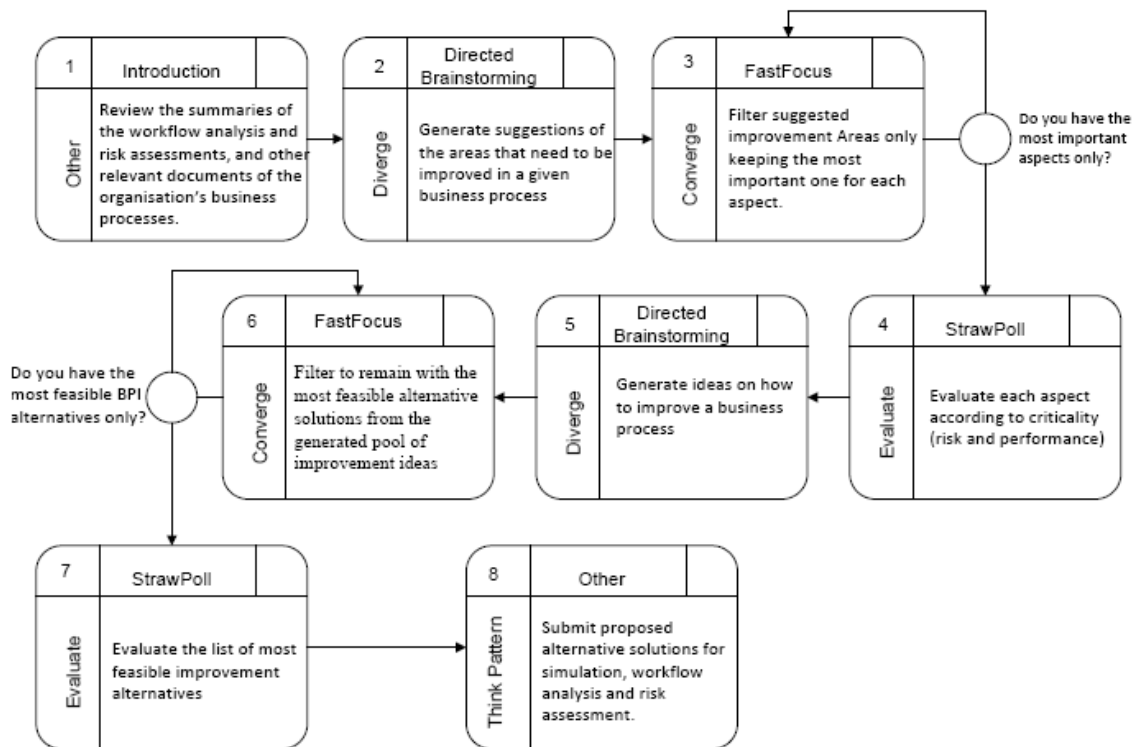


Figure 1. Facilitation Process Model for BPI Alternative Generation

Module Two: Business Process Improvement (BPI) Alternative Selection

Through this collaboration process module, a facilitator guides stakeholders in the selection of a BPI alternative based on simulation results, workflow analysis, risk evaluation report and/or any other form of analysis of the proposed business process improvement (BPI) alternatives for current process aware information system. The collaboration process module consists of four activities as shown in Figure 2.

Using the StrawPoll thinkLet, the BPI alternatives are then ranked by the participants (stakeholders)

depending on the tradeoffs between the possible risks and the expected improvement, basing on experience, individual knowledge and the availed information.

The next activity is an evaluation of the ranking results to assess the level of consensus among stakeholders. In cases where there is minimal or lack of a consensus, further discussions of the alternatives are conducted and another ranking activity is carried out guided by the CrowBar thinkLet.

Finally, the BPI with the highest average ranking is selected for adoption and implementation.

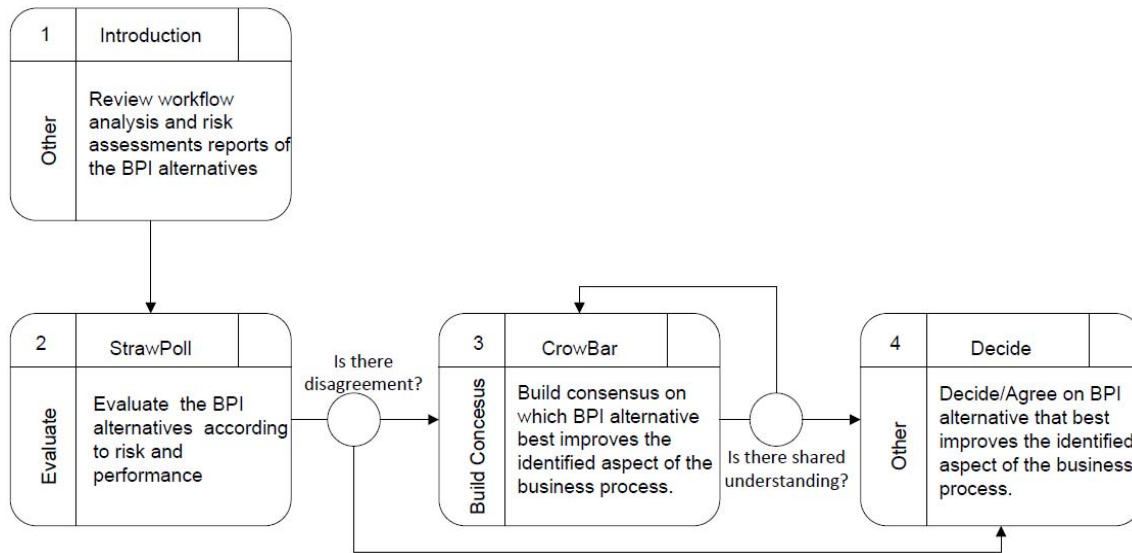


Figure 2. FPM for Selection of BPI Alternative

5. Evaluation and Measurement

The designed collaboration process was evaluated through collaboration sessions carried out at two case organisations. At the case organisations, each participant except the observers was provided with a computer through which they interacted with the GSS as they followed the activities of the collaboration process. Participants reviewed the results from the interviews and prior business process analysis. Basing on the information they explored BPI alternatives for one business process aspect as guided by the facilitator.

Questionnaires were administered to the participants after the sessions at both cases to get their feedback on the evaluated aspects. Furthermore, an observation guide was used during the testing sessions to gather information on experiences with the collaboration process. Interviews were also carried out to verify the responses got from the questionnaires.

In evaluating the collaboration process, the design criteria in section 4.2 were used. The metrics used for the different aspects included:

Ease of understanding; This was assessed using different viewpoints. First, by comparing stakeholder contributions versus the expected output. Secondly, by measuring the number of clarifications sought for by individuals during the execution of the CP.

Stakes accommodation in generated and selected BPI alternatives; This was measured by monitoring stakeholder interaction with the GSS as well as their verbal and non verbal communication. Furthermore, assessment can be done by measuring the number of contributions per stakeholder versus the total number of contributions.

Efficiency; The criterion was used to assess whether the CP provided an optimal way of using the available time to generate and select BPI alternatives. In other words, whether the CP reduced the time spent in generating and selecting BPI alternatives. This was assessed by measuring the time taken to complete an individual task as well as the whole process in comparison to the amount taken using the current method in the case organisations.

Ease of sharing of information and knowledge; This was evaluated by monitoring the number of contributions made by each stakeholder and their verbal communication.

Usefulness; The usefulness of the CP was assessed by measuring stakeholders' perception on whether the BPI alternative matched their improvement goal and whether the CP was good for BPI exploration.

In addition, we also evaluated the appropriateness of the activity/task sequence. *Appropriateness of the activity/task sequence* refers to the suitability of the ordering of the collaboration process tasks for BPI exploration (generation and selection of BPI alternatives). This was assessed by measuring stakeholders' judgment of their ease in performing the prescribed tasks to generate and select BPI alternatives.

6. Results

At each organization, two sessions were conducted and the questionnaires were administered at the end of the second session. In this section, we present and discuss the evaluation results (see table 1).

Table 1. Frequency of Evaluation Aspects and Responses from the two cases

EVALUATED ASPECT & CASE	Responses							
	1	2	3	4	5		Yes	No
<i>Ease of using tool</i>								
Case 1	0	0	2	2	1			
Case 2	0	0	1	4	1			
<i>Ease of carrying out tasks</i>								
Case 1	0	0	1	1	1			
Case 2	0	0	1	1	0			
<i>Usefulness of CP</i>								
Case 1	0	0	2	1	2			
Case 2	0	0	1	2	4			
<i>Appropriateness of task sequence</i>								
Case 1							5	0
Case 2							7	0
<i>Repeatability of CP</i>								
Case 1							3	0
Case 2							2	0
<i>Time Sufficiency</i>								
Case 1							5	0
Case 2							6	1

Ease of understanding: In measuring stakeholder contributions versus the expected output, the session logs recorded by the GSS were analyzed. From the logs it was observed that at Mak. participants took longer to understand the goal of the collaboration session as compared to those at the URA. For example, most contributions given by participants when brainstorming on improvement areas of the registration process, focused on making clarifications and giving information about the process rather than what needed to be improved. In the fastfocus step that followed, participants discussed and derived areas of improvement from the contributed information and clarifications. This boosted their understanding as was reflected in their reactions (such as nodding of their heads) and comments they made like “Yes that is an important area for improvement”, “that is what I meant to say”. This observation was confirmed by the comments made by the session observers who noted that a lot of time was spent on introduction the task. On the other hand, all the contributions in the list of improvement areas generated from the brainstorming task in module 1 of the CP at URA were in line with the expected output. In light of this, discussions were more tailored to how relevant or critical the suggested areas of improvement were rather than clarifications on what the contributions meant.

From this discussion, we can say that the CP enabled stakeholders to understand the improvement areas and alternatives through the discussions. This was affirmed by the minimal variations observed in the participants’ rankings of the different improvement

areas and BPI alternatives, during the CP evaluation activities.

Stakes accommodation in generated and selected BPI alternatives: In measuring stakes accommodation, the logs from the different sessions held at the case organisations were analyzed. Due to the limited time given to the brainstorming activities, we observed that at most ten improvement areas and BPI alternatives were identified at each organisation. When compared to the number of participants (five at Mak. and seven at URA), we can say that each participant was able to make an input using the group support system (GSS) reflecting interaction with the GSS. Additionally, it was noted that participants tended to revert to verbal communication from time to time to share more information about the generated BPI alternatives. However these kind contributions made could not be logged by the GSS. As a step to capture important points mentioned during the verbal discussions, the facilitator prompted them to type their views. From the observations made, we can say the generated and selected BPI alternatives included the stakeholders’ views because they were able to contribute improvement ideas and BPI alternatives, discuss and support their contributions both verbally and electronically, and come to agreement.

Ease of sharing of information and knowledge: In measuring this, we analyzed the logs recorded during the different sessions held at the case organisations. Additionally, we made observations of the participants’ verbal and non-verbal communication to assess their information and knowledge sharing. Considering the results on contributions per stakeholder as described in previous criterion, the low statistic could be attributed to the fact that the participants at both case organisations preferred to communicate verbally. It was also observed that during the sessions carried out at Mak., senior participants initially contributed more than others but as the session advanced all participants became active; sharing information and experiences. For instance, one participant dealing with graduate students’ registration shared an experience on how it is hard to enforce deadlines on graduate students. On the other hand it was observed that at URA, participants were willingly sharing ideas through the vibrant discussion set off by the CP.

Efficiency: This variable was used to assess the sufficiency of the amount of time given to perform a task and thus the efficiency of the collaboration process in enabling BPI exploration. It was evaluated using Yes/No questions to get feedback as to whether the time was sufficient for the tasks or not, and whether participants observed that the CP increased efficiency. A complimenting open question seeking suggestions of appropriate time allocations was also used to gain

information. Most participants (see table 1) found the time to be sufficient. However the introduction step took a lot of time as participants spent time seeking clarifications. A participant in URA suggested that the appropriate time for the collaboration session should be 3hrs to permit them to exhaustively deliberate while another suggested that less time should be spent in discussion in order to speed up decision making. In comparison to the URA sessions, much more time was spent during the introduction steps at the Mak. case.

This could be attributed to a poor reading culture among participants considering that the input documentation was sent prior to the session. At URA most of the time was spent during the reducing and clarification steps, as participants discussed the contributions to identify what should be filtered out. It was also observed that tasks that were entirely performed using the GSS were completed faster and took less time than those where participants made verbal contributions. In light of these observations, the CP can be said to be efficient however, there is a need to carefully allocate time to each step in order to keep the sessions between 1 to 2hrs preferably 1.5hrs because it was observed that participants would lose concentration after 1.5hrs. Secondly, more time would defeat efforts to increase efficiency in BPI exploration.

Usefulness: Usefulness refers to the extent to which the CP enables BPI exploration. Participants were asked to rate the usefulness of the collaboration process in BPI alternative exploration by awarding a rank from a 1-5 Likert scale. In the scale 1 = very poor, 3= fairly good and 5= very good. Results in table 1 show that majority of the respondents found the collaboration process to be very useful for BPI exploration and it effectively enabled them to explore different improvement alternatives. Three (3) found it fairly useful and three (3) rated its usefulness as good. This is comparable to their response when asked whether it is suitable for BPI exploration. Five (5) said it was very suitable, six (6) said it was suitable and one (1) said it was fairly suitable. It was also observed that they appreciated the applicability of the collaboration process from the positive comments they made such as “by all means it is useful” and “the CP is very useful and with adjustments, the activities can be done over and over again to improve our processes”. Furthermore they were also willing to recommend it for use in the organisation.

Appropriateness of Collaboration Process (CP) task sequence; In measuring the stakeholder’s judgment of their ease in performing the prescribed tasks to generate and select BPI alternatives, two view points were used; understanding the tasks and executing them. A likert scale of 1-5 where 1= very hard and 5 = very easy was used to rate their judgment

on the effort they required to understand and perform the tasks. Results in table 1 show that the majority of the participants at both cases found the CP tasks relatively easy to understand. Two (2) out of the five (5) respondents who responded to the question found the tasks very easy to understand while the other three (3) found it easy to understand. This is supported by the affirmative comments given by the observers in both cases for example observers at the Mak Session said “Tasks to be done were fairly understood by all participants” and an observer at the URA sessions comment that “Good understanding reflected by the URA staff”.

These results imply that the guidelines provided in the thinkLets and the scripts used in directing the tasks are clear and enable stakeholders in discussing, sharing knowledge, building consensus and decision making during BPI exploration. Results in table 1 and other observations made on the stakeholders’ judgment of their ease in performing the prescribed tasks to generate and select BPI alternatives, show that a majority of the respondents found it easy to carry out the tasks using the collaboration tool availed. The minority who found it fairly easy, attributed the difficulty experienced to the group support system (GSS) used to support the session, MeetingWorks (V.7). Respondents reported that the continuous saving function triggered by pop-up confirmation windows at the end of each task, distracted them.

In addition, a Yes/No question that aimed at getting feedback as to whether the sequence of activities enabled the participants to effectively explore BPI alternatives, was used. More so, the observers monitored the session to see whether the sequence of the CP tasks enabled the participants to generate and select BPI alternatives. Out of the twelve (12) participants who filled out the questionnaire issued at the end of the session at the two organisations, twelve (12) gave YES as a response. The observers at Mak. noted that not only did the process start off discussion on how to improve the registration process, but it also stimulated participants to generate a number of ideas on what should be improved and how the selected area could be improved. They observed that initially senior managers participated more, but as the session advanced all participants became active; 50% were very active while the others were averagely active. In the case of URA, the observers commented that the collaboration process was appropriate and sparked off a candid discussion and consensus on what areas needed to be improved, what needed most attention, and how the selected one could be improved. They also observed that the CP encouraged participation among all participants right from the start of the session.

The results thus imply that the sequence of the collaboration tasks was appropriate for BPI exploration because it enabled stakeholders to make contributions at the same time, discuss them and jointly come up with BPI alternatives. Therefore, the CP enabled stakeholders to jointly work together to generate, evaluate and decide on which BPI alternative to select.

Repeatability of the collaboration Process: Besides the aspects considered when designing the CP, during its evaluation we also observed that the CP was repeatable. *Repeatability of CP* refers to the ability of the collaboration process to be used for exploring improvements for various business processes and stakeholders. It was achieved by examining the CP's potentials when subjected to different instances of the same kind of business process at two different case organisations and to different stakeholders.

At the case organisations, the collaboration process was used to explore (generate and select) BPI alternatives their registration process. The corresponding registration processes at the two case organisations, comprised different activities and thus presented two instances of the registration process for the CP evaluation. The registration process at case one was a student registration process that is not supported by a workflow management system. Initially registration was only done manually. Recently, online registration was introduced to support the increased student population; particularly continuing students. However first year students in their first semester follow the manual registration process and continuing students with exceptional cases e.g. students with retakes. On the other hand, the registration process used in case two was an e-tax registration process. Originally tax registration and all related activities were carried out manually but at the time of this research, the development of a workflow management system to support this process was underway. The process consists of three activities; application, TIN approval and account creation, all of which were modeled into the new system.

It was also observed that participants in the two case organisations were able to identify areas for improvement in their respective business processes, generate BPI alternatives for a selected area and to finally select a BPI alternative for implementation.

Furthermore, repeatability was achieved the examination of stakeholder's opinions as to whether the CP could be done repeatedly for BPI exploration, and whether they could recommend it for adoption in their organization was solicited. As shown in table 1, all the respondents gave a positive response with regard to whether the CP can be used for exploring BPI alternatives for business processes.

Group Support System (GSS) Experience: We also evaluated stakeholder's experience with the GSS. The observers in both cases commented that the GSS facilitated participants in carrying out the tasks. However, participants who experienced difficulty in understanding and performing the CP activities mentioned that the navigation of GSS was not straight forward e.g. one of the participants who rated the GSS as fairly easy commented that "one needs IT skills to use it". Other issues highlighted included difficulty in accessing and editing contributions of a previous step that had already been saved. Regardless of the challenges faced in using the GSS, observers noted that with minimal training, the participants were able to use the tool to carry out the tasks in the collaboration process.

Furthermore, it was also observed that participants tended to revert to verbal communication than use of the GSS most likely because of minimal use of technology support during such collaboration meetings. This was more prominent at Mak. than at URA for instance, a participant at Mak. commented that "interacting with computers kills participants' liveliness". Nevertheless, participants at URA appreciated the capabilities (calculation of variances) of the GSS in facilitating resolving decision making problems arising from closely ranked BPI alternatives. Additionally, more exposure to the collaboration process and the supporting GSS led to a decrease in the time taken in performing the tasks.

7. Conclusion

It is clear that business process agility is about continuous business process improvement which is a recurring (repetitive) and a knowledge intensive activity that requires input from various stakeholders with varied skills and experience. This paper highlights the importance and relevance of stakeholder collaboration for the success of continuous business process improvement notwithstanding the complexity brought about by involving more people. It also discusses the collaboration concerns in continuous business process improvement. Some of the concerns included the lack of a clear set of guidelines or structured set of activities to enable stakeholders to effectively explore business process improvement alternatives, poor stakeholder involvement, participation and communication.

In light of this, a repeatable collaboration process for exploring business process improvement alternatives was designed and presented as a way of addressing the collaboration challenge in BPM. The CP was evaluated using two instances of a registration

process at two case organisations. From the results presented and discussed, it was observed that the CP was able to support the different groups of stakeholders in the generation, discussion, evaluation and selection of BPI alternatives. This demonstrated its repeatability.

In addition, stakeholders were supported to freely share knowledge, generate discuss, decide and build consensus while jointly exploring BPI alternatives demonstrating the CP's ability to ease of understanding, accommodate stakes, ease stakeholders' sharing of information and knowledge. Furthermore, participants were positive about the collaboration process's usefulness and were willing to recommend the used of the CP for BPI exploration at their organisations.

Nevertheless, further refinements on time utilization need to be made in order to find the most suitable time taking into consideration the feedback got from the participants. More so, more tests to assess the CP's its ability to increase stakeholder productivity as well as stakes accommodation would improve on the general success of the collaboration process.

8. References

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