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A Quantitative Analysis of Business Process Reengineering and Impacting Factors: The Case of Uganda

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ABSTRACT

Many organizations in African countries need to reengineer their business processes to improve on efficiency. The general objective of this study was to identify the impact of different factors, including organizational resistance to change on Business Process Reengineering (BPR). The study showed that only 30.4% of BPR projects in Uganda have delivered the intended usable Information Systems. The researchers have identified the factors impacting on BPR and possible causes of BPR failures. The identified emotional response of the users towards the BPR implementation ranges from Acceptance to Testing, Indifference and Anger. Based upon the study findings, the researchers have formulated the set of recommendations for organizations implementing BPR. This paper will be of interest to the organizational managers, BPR implementers and the future researchers in a related area of study.

Keywords

Information Systems, organizations, Business Process, Business Process Reengineering, Organizational Resistance to Change, developing countries.

INTRODUCTION

Business Process Reengineering (BPR) is the analysis and redesign of workflow within and between enterprises (Hammer and Champy, 1990). After the global recession of early 1980s, many organizations and firms across the world made attempts to revitalize their performances. Most firms called for 'downsizing', so governments designed policies including retrenchment of working staff to cut public spending. But the extent, to which these reforms provided the changes needed, remained difficult to determine. With the integration of Information Communication and Technology (ICT), business reforms became much easier. The early 1990s saw many companies around the world, especially in the United States, implementing Business Process Reengineering (Chan and Land, 1999; Hammer and Champy, 1990). Since then BPR has been found to be effective in replacing the numerous brands of desktop systems, network operating systems and application development tools into a more manageable number of vendors and technology platforms.

Justification of this study is as follows. While BPR is of vital importance to organizations, its roll out many times has not been successful. Many organizations that have attempted to reengineer their processes have ended up burying the organizational resources. The BPR teams often have drawn up implementation plans with the focus on technical and financial issues while little or no concern is shown to the organizational issues like Organizational Resistance to Change. This has led to the teams rigorously implementing the projects that eventually would fail despite their effort. Many Information and Communications Technology (ICT) projects in Uganda have not been as successful as planned. A survey, conducted by KPMG (as cited in Ogwang, 2006), noted that only 2% of the government ICT projects in Uganda have worked successfully. The Information Technology (IT) use in Uganda is limited with only 9.6% of Ugandans having access to the Internet as of June 2010 (ITU, as cited in Internet World Stats, 2011). Because of the lack of IT and its incompetent use in most of the production lines, it is difficult for organizations to carry out BPR which in most cases relies on IT. Thus, there is a need for the informed recommendations to the organizational managers and the BPR implementers to manage the soft issues of BPR during its inception and implementation. These recommendations are to be derived from rigorous research of the factors contributing to the success (or, otherwise, a failure) of the BPR project.

Some researchers are inclined to attribute BPR failures to the technological and financial inability. Nonetheless, as the practice shows, in many cases they may not be the most pressing reasons for the failures. The reasons for the failure of BPR include (1) failure to address technical issues because of inexperience in addressing their scope and complexity, (2) project management problems, and (3) organizational resistance to change. McNamara (2002) stated that organizational resistance to change is inherent for an unsuccessful BPR.

The general objective of this study was to identify the impact of different factors, including organizational resistance to change, on Business Process Reengineering. The study was guided by the following specific objectives:

i. To determine the factors impacting on the BPR implementation and the causes of BPR failure.

ii. To identify the level of completion of BPR initiatives in the selected organizations.

iii. To identify emotional response of the users towards the BPR implementation and use.

iv. To put forward the recommendations for organizations implementing BPR.

The paper begins with a review of the related literature in order to achieve better understanding of BPR and Organizational Resistance to Change and to identify extraneous variables that impact on the success of BPR. The methods to achieve the stated objectives are subsequently described in detail. Then the results of analysis of the factors that affect the BPR success are presented. The conclusion contains the recommendations on how to improve the BPR implementation. This paper will be of interest to (1) the organizational managers and the BPR implementers to accord the soft issues the relevant significance they deserve, and (2) the future researchers in a related area of study by appending to the pool of BPR knowledge.

LITERATURE REVIEW

The literature reviewed in this paper was obtained from the reputable published sources. The literature sources dated back to 1990s are mainly of the "fathers of BPR", the authors who promoted BPR awareness in the past. Their contributions were found fundamental and necessary to this paper. The more recent literature (2001-2012) deals with developments in the BPR theory of the last years.

Business Process

According to Ross and Moore (2006), a Business Process is simply all about how work is done in an organization. "Business Process is a set of logically related tasks performed to achieve a defined business outcome" (Dhillon and Hackney, 2003, p.163). A Business Process is designed to add value for the customers and therefore should not include unnecessary activities. It has a goal, specific inputs and outputs, uses the resources, has a number of activities that are performed in some order, may affect more than one organizational unit and creates value for the customer (Meyer *et al*. as cited in Muthu, Whitman and Cheraghi, 1999).

Business Process Reengineering

According to Hammer and Champy (1990), Business Process Reengineering (BPR) is the analysis and redesign of workflow within and between enterprises. Ovenden (1994, p.56) defined reengineering as "a fundamental re-appraisal of the purpose of the processes involved, with no holds barred, and putting in place what might be radically changed organization and operations". BPR can also be defined as a total transformation of a business, an unconstrained reshaping of all business processes, technologies and management systems, as well as organizational structure and values, to achieve quantum jumps in performance throughout the business (Crowe, Fong and Zayas-Castro, 2002). This involves throwing away the old processes and starting anew (Aalst and Hee, 1995; Hammer, 1990). Muthu *et al*. (1999) pointed out that organizations need to backtrack and reexamine their very roots before starting a BPR project. Stoica, Chawat and Shin (2004) stressed that BPR is the evaluation and amendment of strategy, process, technology, organization, and culture. This radical process includes plummeting organizational goals that are no longer valid.

Organizational Resistance to Change

The organizational issues are non-technical aspects of the system development, which might have an impact on the ultimate success or failure of a project, among them, organizational resistance to change (Clegg *et al*. 1997). George and Jones (2008) posited that change is necessary to maintain a competitive edge, but is not always a smooth process. Managing individual resistance is easier than organizational resistance because a tightly knit group may have an overdeveloped sense of cohesiveness that

encourages organizational inertia. Palmer (2004) concurred that the employees resist because of the uncertain future initiated by BPR changes among which are job loss, authority loss, and anxiety.

Al-Mashari and Zairi (1999, p.90) hypothesized the impact of organizational culture which fosters resistance to change in BPR. As mentioned by McNamara (2002), many people are affected by change, though some may not openly criticize their superiors, causing silent disgruntles within the company. An egalitarian culture, whereby all employees are treated equally, are informed and involved in projects, makes the positive changes take place with little resistance. The employees should therefore be assisted in the transition period to the new working environment (Crowe *et al.* 2002; Liu and Seddon, 2009).

Warne (2003) stated that managing the power, politics and organizational conflict inherent in Information Systems (IS) is increasingly recognized as being of critical importance to the successful IS development. Schniederjans and Kim (as cited in Abdolvand *et al.* 2008) concluded that organizational resistance is the most common impediment to the success of BPR.

It has been noted by Jeffcott (2006) that BPR in its attempt to overhaul the entire system of operations is often resented by the management. McNamara's model (2002) highlighted that people are afraid of the unknown and always contest change making the initiatives not come up to scratch. Doherty and King (1998a) underlined that BPR leads people to a feeling of job insecurity, marginality, exclusion, powerlessness, and cast-off from their organizations, being convinced that the new system does not require their input.

The failure to embrace these changes and enrichments in the operation of aspects of a firm fails the entire purpose of BPR. As organizations look at their corporate strategy and what inputs are required to be processed into outputs, they should embrace the role of BPR. This helps illustrate to hesitant firms and companies on the attitudes and cognitive distancing that may herald, accompany and eventually hinder BPR. Laudon and Laudon (2006) highlighted that this is imperative to identify carefully organizational changes needed to make BPR work and manage these changes in order to avoid channel conflict from all affected parties. Warne (2003) stressed that the BPR professionals had often been accused of ignoring issues such as ethics, human factors and social consequences. Al-Mashari and Zairi (1999, p.90) propounded that the "organization's culture influences the organization's ability to adopt to change". They put organization's culture forward as a determining factor in the success or failure of the BPR implementation.

The diligent literature review of the papers on resistance to organizational change had been undertaken by Sutevski (2012) who named 28 factors which cause resistance to organizational change previously identified by other researchers. Those include: threat of power on an individual or organizational level; losing, or, alternatively, increasing the control on the employees; economic factors; image, prestige and endangerment of reputation; threat of comfort, job security or interpersonal relations; reallocation of the resources; acquired interest to the new groups (as opposed to old ones); implication on personal plans; too much dependence on the others; misunderstanding the process; mistrust to initiators of change; different evaluation and perception; fear of the unknown; necessity to change habits; previous negative experience with BPR; weakness of the proposed changes; limited resources; bureaucratic inertia; selective information processing (ignoring undesirable information) by the employees; the uninformed employees; peer pressure; skepticism about the need of change; increasing workload; short time to performing change. Some of these or similar factors have been included in our research.

Examples of Impact of Organizational Resistance to Change on BPR in Uganda

Organizational Resistance to Change is one of the most crucial factors impacting BPR. There are two examples of BPR projects undertaken previously in Uganda to illustrate this statement.

The first example is the SocketWorks Project that was done in Makerere University Business School (MUBS). Management of Makerere University Business School (MUBS), the leading institution in Business and Management Studies in Uganda, undertook a BPR project facilitated by SocketWorks (Uganda) in 2007 to develop a university portal. The project was intended to automate all the processes ranging from applications, payment of tuition, registration, access of the results and access of the library materials among others. This seemingly a plausible venture failed with most of the phases not implemented although SocketWorks had undertaken to bear implementation costs. There has been a mixed conception on the actual inhibition to the success of this project (PPDA, 2011).

The other example is of the East African Development Bank in Uganda (EADBU) that ventured into Business Process Reengineering in 2008 by trying to implement a system called "Flexicube". The bank intended to implement a system that would interconnect the different departments and at the same time computerize processes in the bank's departments. While the system was to improve the services and ease work, it had been met with resistance from the employees. The system therefore was not fully implemented and was later abandoned despite the huge impact on the bank's coffers. This ultimately led to the devastating consequence of many of the top managers being asked to resign their jobs.

Comparison of BPR in Uganda with Other Developing Countries

The examples in the previous section as well as personal experience of the authors have shown that Uganda still lags behind developed countries when it comes to BPR. However, there are some examples of successful BPR undertaken in other developing countries.

Wrigley Company (East Africa) Limited is located in Kenya and supplies chewing gum throughout Africa and the Middle East. Its annual turnover is one billion Kenyan shillings (Magutu *et al.,* 2010). Due to competition with other companies, Wrigley Company undertook to implement BPR, known as WeBEsprit, globally by adopting the supply chain concept and the Enterprise Resource Planning (ERP) technology called Systems Applications and Products Release 3 (SAPR/3) as an enabler. The company contracted Deloitte International that came up with a BPR model known as the Global Reference Model. The BPR project started in 2001, and the implementation took place in the Kenya subsequently in 2004. The project was successfully completed in 2005 (Magutu *et al.,* 2010).

The Government of Ethiopia undertook BPR in most of its ministries to improve a service delivery. This was preceded by starting the Ministry of Capacity Building in 2001 (Debela, 2009). The Ministry conducted training to orient other ministries and civil service offices and develop capacity for the BPR initiatives that were to ensue. The first attempt of BPR in Ethiopia started in 2004, but was unsuccessful. Later, a new steering committee was created and trained in BPR. The committee saw the second BPR attempt in 2007 yielding the successful results (Debela, 2009). The most notable success story among the ministries was the Ministry of Trade and Industry that had improvements in its efficiency and service provision by reducing cycle time for registration and licensing service reduced from 43 days to 30 minutes, and the staff reduced from 120 to 90 (Debela, 2009; Mengesha and Common, 2007). Other success stories were: (1) Ministry of Agriculture and Rural Development that shortened cycle time for preparation of facilities for fieldwork teams from 10 days to two hours and the staff reduced from 970 to

300, (2) the Addis Ababa Transport Office that had the driving permit renewal cycle time reduced from two hours to 45 minutes, and (3) the Ethiopian Customs and Revenue Authority that had the cycle time for tax collection for cargo import/export goods reduced from 45 minutes to 13 minutes and a reduction of staff from 3000 to 600.

The ASSA ABLOY Southern Africa's Lean Implementation Project is another example of a successful BPR project in developing countries (Kruger, 2008). It was undertaken in 2006 to transform the Pin Tumbler Department production process and create a workflow that will facilitate improved production, quality and delivery performance. As a result of this BPR, (1) the efficiency and effectiveness rating of workplace organization was improved by 42%, (2) operating procedure for every cylinder was compiled and standardised, (3) production increased from 55 to 68 cylinders per employee per day, (4) the company achieved 8% reduction in office space, (5) cycle time was improved by 27%, (6) the number of operators was reduced from 10 to seven employees, (7) there was a 50% safety improvement, and (8) three out of 12 quality issues were solved giving a 25% improvement (Kruger, 2008).

BPR Critical Success and Failure Factors

Yahya (2002) put forward that most BPR endeavors fail because of a misunderstanding of BPR. Most managers rush in for BPR intuitively instead of approaching it as an engineering discipline. The author pointed out the other failure factors, such as (1) poor approach of BPR mistaking it with Total Quality Management (TQM), (2) unrealistic expectations, (3) lack of top management commitment, and (4) over reliance on IT.

Crowe *et al*. (2002) pointed out that the most outstanding cause of BPR failure is resistance to change. BPR is all about change, and innately human beings resist change (Crowe *et al*. 2002; Palmer, 2004). Abdolvand *et al*. (2009) underlined that BPR should be rolled out after the meticulous examination to ensure the positive readiness indicators to curtail failures. Al-Mashari and Zairi (1999, 100-101) listed the BPR failure factors related to change of management systems and culture as follows: problems in communication, organizational resistance, lack of organizational readiness for change, problems related to creating a culture for change, and lack of training and education.

Choi and Chan (1997) put forward some of the causes of BPR failure as (1) inability of the employees and the management to recognize the benefit of BPR in their organization, (2) overreliance on Information Technology to enable BPR, (3) depending heavily on outsiders to effect BPR and neglecting the employees, (4) lack of standard methodology, and (5) lack of an understanding BPR among others.

According to a study conducted by KPMG (as cited in McNamara, 2002), BPR failure is caused by technical issues, inexperience in scope and complexity of the challenge at hand, failure to define objectives, lack of communication systems that inform the management of the problems, project management failure to respond to challenges adequately, organizational resistance to change, lack of business ownership, significant cost overruns, significant schedule overruns, and package failure to meet expectations. Prosci (as cited in Stoica *et al*. 2004, p.8) highlighted top management mistakes during large-scale change as a major cause for failure; among them ignoring the impact of change on the employees. Malhotra (1998) established that 70% of BPR initiatives do not succeed because of unrelenting management binder and leadership, unrealistic scope and prospect and resistance to change.

The BPR success factors have been put forward as: (1) teamwork and quality culture, (2) quality management system and satisfactory rewards, (3) effective change management, (4) less bureaucracy

and more participation, (5) IT, (6) effective project management, and (7) adequate financial resources (Ahmad, Francis and Zairi, 2007; Al-Mashari and Zairi, 1999). Crabtree, Rouncefield and Tolme (2001, p.169) cited the proper and adequate requirement process as a very important factor that can lead to the BPR success. They accentuated the importance of ethnography study to a system design because the developed systems will work within the context of a peopled environment. Therefore, proper gathering and interpretation of user requirements is very crucial.

The success factors identified by Yahya (2002) include: (1) egalitarian leadership, one based on the principle that all people are equal and deserve equal rights and opportunities (Maul *et al.* 2003), (2) collaborative working environment to build team work and trust (Crowe *et al.* 2002; Marir and Mansar, 2004; Nah and Lau, 2001), (3) top management commitment and ability to comprehend BPR projects and their scope (Grant, as cited in Abdolvand, Albadvi and Ferdowsi, 2008), (4) change in the management system (Vakola and Rezqui, 2000), and (5) use of Information Technology (Attaran, 2003; Shin and Jemella, 2002; Vidovic and Vuhic, 2003).

Summary of the Established BPR Success Factors

Based on the literature review, as well as our own findings, we have established the list of the BPR success factors (Table 1). The BPR success factors are listed in the descending order starting from those with the most significance. We used a Logistic Model as an analytical tool to estimate the significance of each parameter for the BPR success.

Variable Name	Instantiation of Choice	Impact – Negative/ Positive	Significance	Source(s)
Emotional response	BPR is more successful if the users' emotional response is in the level of acceptance.	Both negative and positive, depending on the level of acceptance	0.000	Laudon and Laudon (2006); McNamara, (2002)
Implementation speed	The lower the implementation speed, the higher the success of BPR.	Negative	0.002	Authors' contribution
Time worked	The users who have worked for a shorter time in the organization are more likely to adopt BPR.	Negative	0.004	Authors' contribution
Technical competence of the implementers	BPR is more successful if the implementers have the technical competence to roll it out.	Positive	0.004	McNamara (2002)
Users' awareness of plans to reengineer business processes	When the users are aware of plans to reengineer, they accept and even own BPR.	Positive	0.008	Crowe *et al.* (2002); Laudon and Laudon (2006)
Users' Assurance	Assuring the users that the new BPR will not necessarily lead to staff layoffs or reduction reduces their resistance.	Positive	0.016	Crowe *et al.* (2002); Palmer (2004)

BPR ability to meet organizational goals	The users who think that the BPR will help to meet their organizational goals easily accept it.	Positive	0.021	Crowe *et al.* (2002)
Managing organizational resistance to change	Organizations that have made an effort by the BPR team to manage users' resistance to change have a higher chance of success.	Positive	0.022	Ahmad *et al.* (2007); Al-Mashari and Zairi (1999); Avgerou (2000); Avison and Wood-Herper (2003); Crowe *et al.* (2002); Laudon and Laudon (2006); McNamara, (2002)
Full elicitation and analysis of user requirements before BPR	Fully eliciting and analyzing user requirements before BPR increases BPR success.	Positive	0.024	Crabtree *et al.* (2002)
Proper estimation and understanding of the challenge at hand	The BPR implementers and the management with an understanding of the BPR challenge have a higher chance of success.	Positive	0.025	Malhotra (1998); Yahya (2002)
The user takes caution before adopting a new initiative	The users who take caution before adopting any new initiative normally resist BPR.	Negative	0.039	Authors' contribution
The respondent takes caution before adopting a new IT project	The users who take caution before adopting any new IT project normally resist BPR.	Negative	0.045	Authors' contribution
Redefinition of the organization mission prior to BPR	Mission redefinition improves on the alignment of the organizational mission with the BPR mission hence increasing the BPR success.	Positive	0.087	Liu and Seddon (2009); McNamara (2002)
Adequate management support for the project	Management support increases the BPR success in terms of opening communication between the users and the implementers and getting financial support.	Positive	0.090	Crowe *et al.* (2002); Jeffcott (2006); Laudon and Laudon (2006); Liu and Seddon (2009), Stoica *et al.* (2004)
Proper management of costs	BPR projects that overshoot their cost estimates have higher chances of being abandoned before completion.	Positive	0.099	Ahmad *et al.* (2007); McNamara (2002)
Clear and understandable organizational objectives	Understanding the organizational objectives enables better planning for BPR in line with the objectives.	Positive	0.124	Liu and Seddon (2009)
Proper time management	BPR projects that overshoot their time schedules have higher chances of being abandoned before completion.	Positive	0.147	McNamara (2002)
Open communication between the management, the implementers and the users	Open communication enables mutual understanding and therefore reduces resistance, both from the management and the users.	Positive	0.173	Ahmad *et al.* (2007); Al-Mashari and Zairi (1999); Crowe *et al.* (2002)

Proper user training	Training reduces resistance because this reduces tension on the users who may think that the new system may be too hard to use, and this gives assurance that the users' input will still be needed, hence their need to be trained.	Positive	0.380	Al-Mashari and Zairi (1999)
Prompt response to BPR implementation delays	This helps to avoid abandonment of BPR due to schedule overruns, hence increasing the success of BPR.	Positive	0.722	Al-Mashari and Zairi (1999); Crowe *et al.* (2002)
Organizational ownership of the BPR	Ownership of BPR helps move the users' emotional response towards acceptance.	Positive	0.765	Ackermann, Walls, Meer and Borman, (1999); Crowe *et al.* (2002); Laudon and Laudon (2006); McNamara, (2002)

Table 1: Summary of the Identified BPR Success Factors

We used these parameters in our questionnaires to estimate their significance for the BPR success. Some of the parameters were adopted from the existing literature while others were proposed by the authors. The impact is *positive* if the higher level of the parameter leads to a higher level of the BPR success (or to a lower level of the organizational resistance). On the other hand, the impact is *negative* if the higher level of the parameter leads to a lower level of the BPR success (or to a higher level of the organizational resistance). We found that the most significant factors among those identified are (1) emotional response, (2) implementation speed, and (3) time worked. The BPR team should monitor emotional response of the users and find ways to propel response towards acceptance. The implementation speed should always be communicated adequately to the users. More emphasis to manage resistance should be focused on the members of staff who has worked longer in the organization, since they are usually more inclined to "stick" to legacy systems than their new counterparts. The most insignificant factor was organizational ownership of BPR. However, the implementers should still endeavor to promote ownership of BPR, as it can be seen in our recommendations.

METHODOLOGY

To achieve the general and specific objectives, stated in Introduction, the authors employed both quantitative and qualitative methods.

The quantitative methods were as follows:

    (1) cluster sampling technique for identifying the organizations;

    (2) pre-coded questionnaires and a self-administered survey for collecting the data from the respondents.

The qualitative methods were as follows:

    (1) purposive sampling technique for selecting the respondents within organizations;

    (2) observation for collecting the data;

(3) descriptive analysis of the collected data using statistical packages SPSS 17.0, EViews 3.0 and Microsoft Excel 2007;

(4) analysis of the secondary data on existing BPR models and practices.

Study Population

The respondents were identified within different organizations in Uganda using both probabilistic and non-probabilistic methods. A cluster sampling method was used on the first stage to identify the organizations. Thereafter, a purposive sampling method was employed to select the competent respondents from each of the organizations.

Five institutions were covered, namely: (1) Makerere University Business School (MUBS), (2) Ministry of Finance, Planning and Economic Development, (3) Ministry of Internal Affairs, (4) Uganda Communications Commission (UCC), and (5) Ministry of Information and Communication Technology.

Methods and Sources of the Data Collection

The data was mainly collected using semi-structured close-ended questionnaires (see Appendix A) administered to the BPR/IT staff, the management and the BPR users of the identified institutions. This instrument was chosen because of its ability to collect the primary data accurately. The questionnaire was checked for reliability and content validity before distribution to the respondents. According to Cavusgil and Das (1997, p.218), errors at the sampling design stage can jeopardize the resultant stages in the research design. If the errors are detected in time, they can be corrected.

Questionnaires were administered to ten respondents to check for validity and reliability, and their corrections on the questionnaire were factored in before making the final questionnaire. Cronbach's Alpha Coefficient was used to show reliability of categorical non-overlapping variables. It had values ranging from zero to one representing how well a set of variables measure a single uni-dimensional latent construct. This was used to check reliability of the factors extracted from multi-point formatted questionnaires or scales (Reynaldo and Santos, 1999). Cronbach's alpha coefficient is given by the following formula

$$\propto = \frac{N \cdot \bar{C}}{\bar{V} + (N-1)\bar{C}} \qquad (1)$$

where N is equal to the number of items, $\bar{C}$ is the average inter-item covariance among the items and $\bar{V}$ is the average variance.

The summary of the questionnaire pre-test results is shown in Table 2.

Study Variables	Cronbach's alpha
Human-related factors	.7423
Organization-related factors	.6112
Possible causes of organization's IT project delays or failure	.7900
IT project level of completion/ use	.7815

Table 2: Summary of the Questionnaire Pre-test Results

The results of the Cronbach's Alpha coefficient were above 0.6 for each study variable, meaning that the tool was reliable. According to Cronbach (1951), the results can range between zero and one, but results above 0.7 are the most appropriate to show reliability of the tool.

Sampling Procedure and Size

The issues of precision (how close the estimate is to the true population characteristics) and confidence (how certain the researcher is that the estimate will really hold true for the population) were addressed by calculating the sample size. The sample size was also influenced by the time available, the budget and the necessary degree of precision. The sample size needed was a function of the confidence interval of $\pm$ 5%, a confidence level of 95%, and the population size of 150 competent respondents from the five cases. The sample size was determined using the following formula (Bartlett *et al*. 2001; Cochran, 1977; Krejcie and Morgan, 1970):

$$SS = \frac{Z^2 \cdot X \cdot (1-X)}{C^2}, \qquad (2)$$

where *SS* – the required sample size; *Z* – the confidence level (e.g. 1.96 for 95% confidence interval); *X* – the percentage picking a choice expressed as decimal (0.5 for the required sample size); *C* – the confidence interval expressed as decimal (at 5% is equal to 0.05).

As it was calculated using (2), the survey required a sample size of 108 respondents.

Data Analysis and Presentation

The researchers analyzed the data collected from the respondents to determine their views on the subject matter of this research. Data coding, entry, editing and analysis were done with a Quality Assurance Review (QAR) process with logical edits to eliminate the incorrect data at the data processing stage and to assess the validity of the reported data in terms of logic flow. The collected data was processed using statistical packages SPSS 17.0, EViews 3.0 and MS-Excel 2007. A cross tabulation descriptive data analysis was carried out. The results of this analysis were presented using frequency tables, histograms and pie charts.

Determination of Factors impacting on the BPR implementation and Possible Causes of BPR Failure

To achieve the first specific objective of this study, the authors used the following methods: (1) review of the relevant literature, (2) delivering questionnaires in order to collect the data from the respondents on the factors that may have led to the failure of their BPR efforts, and (3) observation.

The respondents were asked to rank possible causes of organization's BPR delays or failure on a five-point Likert scale (see Appendix A). The questionnaire was divided into two sections: (i) human-related factors, and (ii) organization-related factors that may have affected the completion and the use of BPR. The observation method was also employed to collect the primary data, because two of the researchers were the users of BPR in one of the cases under study. A cross tabulation descriptive analysis was carried out. The results of this analysis were presented using frequency tables.

Identification of the Level of Completion of BPR Initiatives

The second specific objective of this study has been achieved through questionnaire delivery, data collection and analysis. The primary data on the level of the BPR completion/ use was collected from the respondents using the questionnaire found in Appendix A. The respondents were requested to indicate the level of the BPR project completion/ use in their organizations on a five-point Likert scale. A descriptive analysis was carried out. The results of this analysis were presented in a histogram.

Identification of Emotional Response of the Users towards the BPR Implementation and Use

The main tool used to achieve the third specific objective was the questionnaire. The constructs of this section of the questionnaire (see Appendix A) were adopted from McNamara's (2002) Bad News Curve. A five-point Likert scale was designed to evaluate emotional response to BPR. Cross tabulation was carried out, and the results were presented using a pie chart.

RESULTS

This section presents the main findings of the study, namely (1) identified human- and organization-related factors impacting on the BPR implementation, (2) identified possible causes of BPR failure, (3) the level of completion of the BPR projects in selected organizations in Uganda, and (4) identified emotional response of the users towards the BPR implementation and use.

Identified Factors Impacting on the BPR Implementation and the Possible Causes of the BPR Failure

The first specific objective of this study was to determine the factors impacting on the BPR implementation and the possible causes of the BPR failure. The findings were categorized as (1) human-related factors impacting on the BPR implementation, and (2) organizational related factors impacting on BPR implementation and the possible causes of BPR failure, as described subsequently.

Human-Related Factors

This study evaluated the human-related factors that may impact on the BPR implementation. The findings were as shown in Table 3.

Human-related factors	1	%	2	%	3	%	4	%	5	%
Competence in adoption of an IT project	0	0	3	4.4	6	8.7	41	59.4	19	27.5
The respondent takes caution before adopting any new initiative	0	0	3	4.3	1	1.4	40	58.0	25	36.2
The respondent takes caution before	1	1.4	3	4.3	7	10.1	36	52.2	22	31.9

adopting any new IT project									
The new IT project may lead to staff layoffs/reduction	4	5.8	16	23.2	15	21.7	28	40.6	6	8.7
The respondent's input is no longer needed with a new IT project	22	31.9	32	46.4	8	11.6	4	5.8	2	2.9
The old business process is satisfactory	10	14.5	28	40.6	11	15.9	11	15.9	9	13.0

Table 3: Human-Related Factors Causing Resistance

Codes used:

1- Strongly Disagree

2- Disagree

3- Not Sure

4- Agree

5- Strongly Agree

According to the results presented in Table 3, 86.9% of the respondents responded that they can adopt any IT project (BPR initiative) competently, 8.7% were not sure, and 4.4% of the respondents admitted that they could not adopt IT projects competently. Therefore, inferring from the data, competent adoption of BPR projects by the respondents does not have a significant impact on the BPR implementation. This question was posed in order to evaluate the competence levels of the respondents.

Most of the respondents (94.2%) would take precautionary measures before adopting any new initiative, 1.4% of respondents were not sure, and 4.3% disagreed. This may cause a slow response when adopting BPR. 84.1% of the respondents agreed that they take caution before adopting a new IT project, 10.1% were not sure, and 5.7% disagreed. By this question, the users' inherent habit of adopting to an IT project that may constrict his/her willingness to accept and adopt BPR was revealed. According to the analyzed data, it can be said that users' adoptability to new initiatives has a major impact on the success of BPR. This, however, is a difficult factor to control since this may be caused by many extraneous factors, such as, the users' culture and previous experience with information systems. The "sins of the predecessors" can heavily influence on how the users adopt a system according to their prior experience. If the previous system to which they were exposed was a failure or led to staff layoffs, then the employees would receive BPR with resistance.

The results show that 49.3% of the respondents agreed that they thought that BPR would lead to staff layoffs or reduction, 21.7% were not sure, 29% disagreed. This question was posed to devise the possible roots of resistance to BPR. It was also noted by other researchers that the feeling of marginalization evoked by BPR leads to resistance and therefore failure (Doherty and King, 1998b; Palmer, 2004). Only 8.7% of the respondents agreed that their input would no longer be necessary upon the BPR implementation, 11.6% were not sure, and 78.3% disagreed. This means that most of the respondents thought they may not be personally laid off but the system would probably lead to some staff members being laid off. This surmises to conclude that the employees may therefore resist BPR on the account of their colleagues loosing the jobs. This is supported by George and Jones (2008) who wrote that a tightly knit group may have an overdeveloped sense of cohesiveness that encourages

organizational inertia.

The majority (55.1%) of the respondents agreed that the old BP was not satisfactory and therefore they saw need for BPR. 28.9% disagreed that there was need for BPR because they thought the old BP was satisfactory, while 15.9% were not sure. Even though logically it seems that the acceptance is a first step towards the success of BPR, users' agreeing that there is need for BPR does not necessarily translate to their acceptance of BPR (George and Jones, 2008; McNamara, 2002).

Organization-Related Factors

The study also identified the organization-related factors that may cause resistance to change and thereby impact on the BPR implementation. The findings are summarized below in Table 4.

Organization-related factors	1	%	2	%	3	%	4	%	5	%	Total Frequency	%
The organization mission was redefined prior to BPR	4	5.8	13	18.8	17	24.6	24	34.8	11	15.9	69	100
The IT project intended to serve clients better	0	0.0	0	0.0	1	1.4	36	52.2	32	46.4	69	100
The users were aware of plans to reengineer processes	2	2.9	12	17.4	10	14.5	37	53.6	8	11.6	69	100
User requirements on the new project were fully collected	3	4.3	16	23.2	16	23.2	25	36.2	9	13.0	69	100
The users were involved during the BPR development	4	5.8	16	23.2	14	20.3	27	39.1	8	11.6	69	100
The users were trained on the new IT project	4	5.8	8	11.6	6	8.7	35	50.7	16	23.2	69	100
Adequate management support for the project was provided	1	1.4	7	10.1	12	17.4	37	53.6	12	17.4	69	100
The implementation speed was too high	5	7.2	18	26.1	15	21.7	22	31.9	9	13.0	69	100

Table 4: Organization-related factors

Codes used:

1- Strongly Disagree

2- Disagree

3- Not Sure

4- Agree

5- Strongly Agree

According to the results in Table 4, 50.7% of the respondents admitted that the organizational mission was redefined, 24.6% were not sure, 24.6% disagreed. This means that the propagators of BPR in these organizations took the initiative to redefine the organizational mission, a factor of which is important to ensure a better alignment of BPR with the mission. Most of the respondents (98.6%) agreed that the BPR initiative was meant to better serve customers, thereby agreeing that it was necessary despite the

resistance. This had been also supported by George and Jones (2008). This paradox may be explained by the employees thinking that they or their colleagues may lose their jobs due to BPR and therefore looking out for their own over customer satisfaction.

Only 20.3% of the respondents were not aware of the BPR initiative before its development. This may have also contributed to resistance as supported by Crowe *et al*. (2002). 27.5% of the respondents disagreed that their (user) requirements were fully gathered before the implementation of BPR. This may have led to the developers building a project that may not have suited to the users' needs. While 29% of the users admitted they were not involved in the BPR, 20.3% were not sure while 50.7% were involved. Most of the respondents (73.9%) agreed that they were trained on the use of the project. These questions were posed to detect user involvement and training during BPR. For BPR to be able to succeed, it is prudent to involve the users into creating ownership at the earliest start of BPR. Also 44.9% of the respondents agreed that the speed at which the project was being implemented was too high, 21.7% were not sure. This factor may have threatened the respondents and led them to presume that the project may eventually lead to staff layoffs and reduction thereby developing organizational resistance.

Possible Causes of Failure

The study also tried to shed more light on the possible causes of BPR failure, in particular, those that might have led to organizational resistance. The findings in this category are summarized in Table 5.

Possible causes of organization's IT project delays or failure	1	*%*	2	*%*	3	*%*	4	*%*	5	*%*	Total Fre-quency	*%*
Technical incompetence of the implementers	6	8.7	16	23.2	20	29.0	20	29.0	7	10.1	69	100
Underestimation of the challenge at hand	2	2.9	6	8.7	12	17.4	34	49.3	15	21.7	69	100
Failure to define organizational objectives	3	4.3	18	26.1	8	11.6	28	40.6	12	17.4	69	100
Poor communication to inform the management of challenges	2	2.9	11	15.9	5	7.2	42	60.9	9	13.0	69	100
Project management failure to respond to delays adequately	2	2.9	10	14.5	8	11.6	37	53.6	12	17.4	69	100
Organizational resistance to change	5	7.2	17	24.6	10	14.5	21	30.4	16	23.2	69	100
Lack of organizational ownership of the project	9	13.0	12	17.4	12	17.4	21	30.4	15	21.7	69	100
Significant cost overruns	1	1.4	16	23.2	12	17.4	28	40.6	12	17.4	69	100
Significant time schedule overruns	1	1.4	18	26.1	10	14.5	32	46.4	8	11.6	69	100
Failure of management to create awareness of the project	1	1.4	20	29.0	8	11.6	25	36.2	15	21.7	69	100
Poor user requirement collection and analysis	5	7.2	13	18.8	13	18.8	17	24.6	21	30.4	69	100
Failure to train the users	4	5.8	27	39.1	1	1.4	24	34.8	13	18.8	69	100
Project failure to meet organizational goals	3	4.3	19	27.5	5	7.2	25	36.2	17	24.6	69	100

Table 5: Possible Causes of Organization's IT Project Delays or Failure

Codes used:

1- Strongly Disagree

2- Disagree

3- Not Sure

4- Agree

5- Strongly Agree

As it is shown in Table 5, 39.1% of the respondents agreed that a possible cause of the failure of the BPR initiative in their organization was technical incompetence, 29% were not sure, and 31.9% disagreed. The majority (71%) of the respondents agreed that the underestimation of the project at hand could have led to the project failure, while 17.4% were not sure. This underestimation can easily lead to the scope creep because the employees and the management can continue demanding for applications that were not initially meant to be part of the system. Underestimation of the project also leads to time and cost overruns. 58% of the respondents agreed that the failure to define organizational objectives clearly also contributed to the BPR failure, despite the fact that only 26% of the respondents had said that the organizational mission was not redefined. 73.9% agreed that during the implementation there was poor communication between the implementers and the management. According to Crowe *et al*. (2002), it is very important to have open communication in order to successfully implement BPR. Communication resistance can be detected at its early stages and settled before this gets out of hand. 71% of the respondents agreed that there was a project management failure to respond adequately to delays which could have led to failure too. This delay can also be attributed to the poor communication between the management, the implementers and the users.

53.6% of the respondents agreed that organizational resistance to change also impacted on the success of BPR, 14.5% were not sure, and 31.8% disagreed. McNamara (2002) noted that some people are not aware of their resistance while Palmer (2004) discoursed that the source of resistance may be from a fear of job or authority loss. 52.1% of the respondents agreed that lack of organizational ownership of BPR can lead to failure, 17.4% were not sure, and 30.4% disagreed.

The study established that 58% of the respondents agreed that there were significant cost overruns during the implementation. 58% of the respondents also agreed that another cause of failure was due to significant time overruns. 58% of the respondents blamed the management for not being able to ensure organizational awareness of the project which led to BPR letdown. 55% of the respondents agreed that poor user requirement elicitation led to BPR failure as opposed to only 27% who had earlier said that user requirements were not adequately collected. This may have either stemmed from not adequately eliciting for the requirements, not understanding the user requirements and/or not clearly interpreting the requirements.

Although 73.9% of the respondents had said that they were trained to use the project, 53.6% of them attributed the BPR failure to poor training. This probably means that training was not adequate. The majority of the respondents (60.8%) agreed that the project had failed to meet organizational goals, despite the fact that 98.6% of them agreed that the project was meant to better serve clients. So the

majority of employees shared the opinion that the systems were not serving the clients adequately and therefore did not make the connection with its initial goal.

Evaluating the Level of Completion

The second specific objective of this study was to identify the level of completion of BPR initiatives in the selected organizations. To achieve this objective, a survey was conducted on the level of completion of the BPR projects that were implemented or attempted to be implemented. The findings are presented in Figure 1.
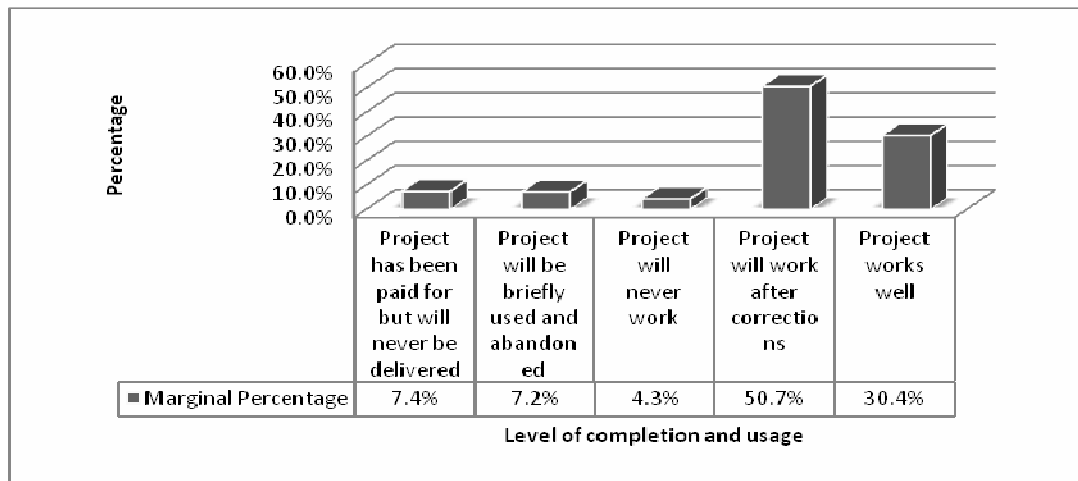

Figure 1: Histogram Showing the Level of Completion and Use of the BPR Projects in Uganda

According to Figure 1, the largest percentage of the respondents (50.7%) admitted that the projects would have worked with some corrections, 30.4% said the project was being used, 7.4% said the project was paid for but would never be delivered, 7.2% said the project would be used briefly then abandoned, while only 4.3% said the project would never work. Obviously, only 30.4% of the projects had been successful in completion, and the enterprises benefited from their use. The remaining 69.6% of the respondents indicated that the projects had not yet come up to scratch, and they had not noticed any enterprise benefit from their use.

Evaluating Emotional Response

The authors also conducted a survey to determine the level of emotional response during and after the BPR implementation to investigate its effect on the BPR completion and use (to achieve the third specific objective of the study). These responses were drawn out on scales ranging from Acceptance to Testing, Indifference and Anger. The findings of the survey are summarized in the Figure 2.
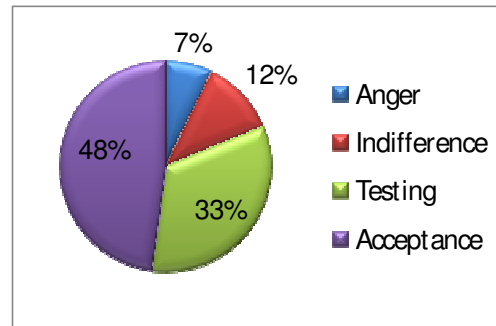

Figure 2: Evaluating Emotional Response to BPR and Organizational Resistance

The response scale is as follows:

(1) Acceptance – for the respondents who have accepted the use of the new system

(2) Testing – for the respondents who just have started to use the new system and therefore may accept it

(3) Indifference - for the respondents who are not sure of their response

(4) Anger - for resistance of the BPR initiative (McNamara, 2002).

As it is shown in Figure 2, 48% of the respondents had accepted the projects, 33% were testing and may probably accept it, 12% were indifferent or not sure of whether they like or dislike the system while only 7% were still angry. However, McNamara (2002) hypothesized that some people are not aware of their own resistance, therefore these findings cannot be considered conclusive.

RECOMMENDATIONS

The last specific objective of the study was to develop the recommendations for organizations implementing BPR. The study has identified the strongly negative impact of organizational resistance to change on the success of the BPR implementation. It has been found that most BPR failures are due to resistance caused by divergent factors. Some of the identified factors (such as lack of users' involvement, poor communication, lack of organizational culture and low employees' ability to use IT, among others) can breed resistance. Therefore organizations intending to reengineer processes should put a lot of emphasis on soft issues of the BPR implementation.

Rigorous research undertaken has allowed us to formulate the recommendations on the actions to be performed throughout the implementation of BPR. We also related the recommendations deriving from our research to the recommendations given by other researchers. Some recommendations below are totally new and reflect our own contribution, while others are quite consistent with what has been done

before by other researchers. In the latter case references are included. Our recommendations are as follows:

i.   It is necessary to ensure users' involvement by

   ▪ Explaining organization mission, if redefined before BPR (also indicated by Al-Mashari and Zairi (1999))

   ▪ Running workshops on BPR in the organization to enable user involvement (also indicated by Ackermann *et al.* (1999)

   ▪ Explaining the concept of organizational resistance, identifying its main features and factors contributing to organizational resistance together with the users (preferably as a part of the workshop or/and training).

   ▪ Clarifying the need for BPR in this particular organization.

   ▪ Reassuring the employees that all necessary precautionary measures will be taken during BPR.

   ▪ Providing the employees with detailed explanation on how BPR will influence them and their colleagues and how the implementers and the management will minimize possible negative consequences (also indicated by Ahmad *et al.* (2007); Al-Mashari and Zairi (1999)).

   ▪ Improving organizational culture in general (also indicated by Ahmad *et al.* (2007).

ii. It is important to establish good and open communication between the implementers and the management (also indicated by Crowe *et al.* (2002); Maull and Tranfield (2003)).

iii. Improving employees' ability to use ICT and technical ability in general (through training, workshops, encouraging self-study). This we found helpful to reduce users' caution before adopting IT projects. This was also indicated by Al-Mashari and Zairi (1999); Crowe *et al.* (2002).

iv. Ensuring availability of all necessary resources (compiling resource checklists as a preparatory part of BPR).

A suitable BPR framework should be adopted after evaluating factors within the company (such as individual, group and organizational culture, availability of the resources and technical ability, among others). It is necessary to remember that the incorrect choice of the framework might lead to the overall failure of BPR. An attempt to create a framework for BPR and Organizational Resistance was undertaken by Mlay (2010). This framework puts the issue of organizational resistance to the foreground and, therefore, promotes user involvement and open communication throughout the different phases of BPR.

CONCLUSION AND FURTHER WORK

Many organizations in Uganda and elsewhere need to reengineer their processes to improve on efficiency. This need does not go unnoticed by the employees and other stakeholders (the users of the information systems), but due to many innate and extraneous factors, they tend to resist change. To increase on the possibility of the BPR success and benefit in the system use, user involvement and open communication should be paramount during the inception, design, development, implementation, and

ultimately use of the system.

The general objective of this study was to identify the impact of different factors, including organizational resistance to change, on Business Process Reengineering. To achieve this objective the researchers employed the following methods: cluster sampling technique for identifying the organizations; pre-coded questionnaires and self-administered survey for collecting the data from the respondents (quantitative); purposive sampling technique for selecting the respondents within organizations; observation for collecting the data; descriptive analysis of the collected data using statistical packages SPSS 17.0, EViews 3.0 and Microsoft Excel 2007; analysis of the secondary data on existing BPR models and practices (qualitative).

The study showed that only 30.4% of BPR projects in Uganda have delivered the intended usable systems.

The list of the identified human-related factors impacting on BPR includes: (1) user competence in adoption of an IT project, (2) the respondent's cautiousness before adopting any new initiative, (3) the respondent's cautiousness before adopting any new IT project, (4) possible staff layoffs/reduction as a result of an IT project, (5) the respondent's input becoming no longer needed with a new IT project, and (6) the old business process being considered satisfactory.

The list of the identified organization-related factors impacting on BPR includes: (1) redefining organizational mission prior to BPR, (2) intention to serve clients better, (3) users' awareness of plans to reengineer processes, (4) full collection of user requirements prior the new project, (5) involvement of the users during the BPR development, (6) training the users, (7) provision of adequate management support for the project, and (8) high implementation speed.

The researchers have identified possible causes of BPR failures: (1) technical incompetence of the implementers, (2) underestimation of the challenge at hand, (3) failure to define organizational objectives, (4) poor communication between the implementers and the management, thus inability to inform the management of arising challenges, (5) project management failure to respond to delays adequately, (6) organizational resistance to change, (7) lack of organizational ownership of the project, (8) significant cost overruns, (9) significant time schedule overruns, (10) project management failure to create awareness of the project, (11) poor users' requirements collection and analysis, (12) failure to train the users, and (13) project failure to meet organizational goals.

Identified emotional response of the users towards the BPR implementation and use is as follows: 48% of the respondents had accepted the projects, 33% were testing and may probably accept it, 12% were indifferent or not sure of whether they like or dislike the system while only 7% were still angry.

Based upon the study findings, the researchers have formulated the set of recommendations for organizations implementing BPR.

Due to time limitations, some important issues have been left outside the scope of this paper. In our further work we plan to focus more on organizational resistance to change due to its established importance. We also will work on developing a framework of BPR and organizational resistance linking components of a Business Project and impacting it factors. The other direction of future research is identifying the organizational benefit from the BPR implementation and use. We also plan including more case studies. The geographic scope of the study will be gradually extended to other East African

countries such as Rwanda and Tanzania.

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APPENDIX A

Questionnaire

Definition of key terms

- ▪ *Business Process (BP)* - how work is done in an organization designed to add value for the

customers and should not include unnecessary activities.

- *Business Process Reengineering* – Any project undertaken to change how business/work is conducted

- *IT project* – Any project undertaken to improve business processes supported by Information Technology.

We thank you in advance for your cooperation.

A. Background Information

1. Name of organization …………………………………………………………..

2. Department/Unit …………………………………………………………..

Tick where appropriate

3. Gender

   ☐ Male   ☐ Female

4. What is your highest Level of education

   ☐ Primary   ☐ Secondary   ☐ Tertiary/University

5. Age group

   ☐ Below 20   ☐ 20-30   ☐ 31-40   ☐ 41-50   ☐ Others Specify

6. For how long have you worked for this organization?

   ☐ Less than a year   ☐ 1-2 yrs   ☐ 3-5 yrs   ☐ 6-10 yrs   Others…………..

		5 Strongly Agree	4 Agree	3 Not Sure	2 Disagree	1 Strongly Disagree
B.	**Personal Related Factors**					
1	You can competently adopt any IT project					
2	You usually take caution before adopting any new initiative					
3	You usually take caution before adopting new IT projects					
4	The new IT project would/will lead to staff layoffs/reduction					

5	With the new IT project, your input in the organization would/will no longer be needed					
6	The old business process of the organization was/is satisfactory					
C.	**Organization Related Factors**					
1	The organization Mission was redefined prior to Business Process Reengineering					
2	The IT project intended to better serve clients					
3	The users were/are aware of plans to Reengineer processes					
4	User requirements regarding the new project were fully collected					
5	The users were/are involved during the development of the IT project					
6	The users were/are trained to use the IT project					
7	There was/is adequate management support for the project					
8	The speed at which the project was/is being implemented is too high					
D.	**Possible causes of organization's IT project delays or failure**					
1	There was/is a technical incompetence of the implementers					
2	Underestimation of the size and complexity of the challenge at hand					
3	Failure to define organizational objectives					
4	Poor communication systems to inform the management of challenges					
5	Project management failure to respond to delays adequately					
6	Organizational resistance to change					
7	Lack of organizational ownership of the project					
8	Significant cost overruns					
9	Significant time schedule overruns					
10	Project management failure to create awareness of the project					
11	Poor user requirement collection and analysis					
12	Failure to train the users					
13	Project failure to meet organizational expectations or intended use					

E. Evaluating Emotional Response to BPR

	5	**4**	**3**	**2**	**1**
	Acceptance	Testing	Indifference	Resistance	Anger
What level of emotional response towards the project were/are you?					

F. The IT Project level of completion/ use

	5	**4**	**3**	**2**	**1**
	The project worked/ will work successfully	The project could have worked/will work with some corrections	The project never worked/will not work at all	The project has been/will be briefly used and abandoned	The project has been paid for but never/will never be delivered
What level of completion/use was/is the ICT project?					

Thank you for your cooperation.