

Chapter 2

Implementation of BPR at a Public University in Ethiopia: A Fashion or a Solution?

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Abstract This research evaluates the factors that influence the implementation and consequences of business process re-engineering (BPR). The study is based on a case of a university in Ethiopia. Using various individual and organizational change management theories, our study's findings can have implications for forming policy. The study used primary and secondary data sources, capturing both quantitative information and qualitative information. Our findings suggest that the management system at the university was non-participatory and inadequate attention was paid to employees' concerns in implementing BPR. In addition, lack of transparency in forming BPR teams, a discriminatory organizational culture, poor management commitments, centralization of resources, massive expansion, and external pressures overshadowed BPR's implementation. As a practical implication of our study, we suggest that top managers and BPR team members need to commence their BPR planning process by listening to the voices of the 'customers' (students, academics, and administrative staff), celebrating academic freedom and adopting mutual consent on change matters, and creating a conducive environment that nurtures trust, ignites initiation, and contributes to personal development.

Keywords BPR • Management system • Resistance • Organizational culture • ICT • Education • Training

1 Introduction

In today's global environment, change has become a widespread phenomenon, even reaching higher-education institutions (HEIs). The drivers for change come from different directions such as globalization, improving the quality of student

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learning, government initiatives, inside pressures, academic and support staff development, and learning experiences within institutions. Additionally, the pace of change is increasing making it essential to live with and manage change as an essential skill for all (ProSci 1997). HEIs are confronted with formidable challenges. Thus, undertaking radical reform programs, revisiting and invigorating the long-established teaching/learning modes of delivery, and redirecting research endeavors and service provision are of paramount importance.

Fundamental principles in higher education are seen in isolation as freedom of the academic faculty; the combined focus on research and teaching is pervasive. HEIs in the developing world are facing financial and structural crises. Hence, they need to find new methods and make better use of existing technologies to develop and transfer knowledge in more productive ways. Current developments such as virtual classrooms, digital libraries, computer simulations, and many other technologies affect the core of higher education, that is, developing and transferring knowledge (Tsichritzis 1999).

At the same time, reduced academic research budgets, questions being raised about the economic value of academic research and demanding only relevant research from the best or the cheapest (less-quality focused) universities add to HEIs' problems. Besides this, the number of students has increased significantly and professors are struggling to keep track of the impact of global changes on their topics. This demands a radical process redesign which is mainly driven by new technological possibilities and new learning environments (Tsichritzis 1999).

Over the past years, business process re-engineering (BPR) has been implemented in many public organizations with the hope of bringing about efficiency and effectiveness in organizational performance. However, different publications indicate that BPR frequently fails to deliver its promised results (Al-Mashari and Zairi 2000). According to Al-Mashari and Zairi (2000), one of the main reasons for BPR's failure is lack of an integrated approach in exploiting the process. Some indicators of poor implementation of BPR in Ethiopian universities are emerging. For example, many decisions are taken by circulating letters rather than according to well-documented procedural guidelines. These frequent top-down messages by top officials irritate employees. Besides, marginal attention is paid to pointing out the possible gains from the process to enable employees to own it as their responsibility. In addition, there is a tendency of rushing to implement changes without balanced remunerations for increased accountabilities. Thus, it seems that Ethiopian HEIs have embarked on BPR for fashion, as they are being ordered by the government to do so, rather than its being a trigger of self-internal motivation to increase academic excellence. This chapter investigates this claim through a case study of BPR's implementation at Jimma University.

For several reasons including neglect and inertia due to success in the past, Jimma University had been steadily losing its vitality and falling into a critical state of disrepair and dysfunction over the last few years. The symptoms of its condition were hard to miss even by a casual observer. The university's relationship with the government had been uneasy and cautious at best and contentious and antagonistic at worst. The university appeared to have lost its grip on a clear sense of direction.

Very few of the academic staff members were engaged in fruitful and relevant research, or taking their teaching roles with a satisfactory degree of seriousness. The academic curricula had not kept up with the times. The relationship between students and teachers was not as healthy as it should be. There was recurring discord among students. The libraries were poorly stocked, and the collections that they had were mostly made up of outdated books. Ill-maintained infrastructure, overcrowded classrooms and dormitories, and scarce recreational resources contributed to a rather lethargic academic environment. The administrative side of the university—finance, procurement, human resource management, etc.—was inefficient and overly bureaucratic. The minimal use of technology and automation on both the academic and administrative sides was undoubtedly a major factor in making the system inefficient.

It was obvious to many that the situation was untenable, and the trend could not be allowed to continue if Jimma University were to remain a strong and positive force in moving the country forward. It needed to change. It was also obvious that the change had to be system-wide and a strategic shift and not a piecemeal fix. It was with this realization that the university set out to systematically assess its strengths—there are still many—and weaknesses with the aim of developing a viable strategy for transforming and revitalizing itself. Hence, the strategic plan and the business process re-engineering exercises were deemed crucial. Taking this existing reality into account, Jimma University embarked on a reform program. Priority areas for reform were clearly identified based on the impact that they had on the successful accomplishment of the university's vision and mission.

Yet, as a public HEI, Jimma¹ University appears to have implemented BPR without much awareness about its potential challenges. Its lessons learned indicate that most of the arguments in favor of BPR had been met with greater skepticism by the professionals. Even if the need for process change was undeniable, individuals at various levels of the university showed resistance to BPR's implementation. Nonetheless, the implementation was pushed forward by means of internal as well as external impositions (government sponsorship). Despite the propaganda in favor of BPR at the macro-level, it is evident that the working environment of a HEI such as Jimma University is affected by its implementation. As Jimma University is one of many HEIs in Ethiopia, the analysis of its BPR implementation processes can serve as learning for other HEIs in the country. The aim of this chapter was to provide such an analysis to contribute not only to practice by outlining challenges in BPR's implementation, but also to theory by adding to literature on BPR's implementation in non-business organizations. Our results suggest that timely communications, participation, and mutual sharing of the transformation agenda could turn the university's stakeholders into better re-engineering agents. But what was done was the opposite as most of the changes were imposed from top

¹**Jimma University (JU)** is a public research university located in Jimma, Ethiopia. It is recognized as a leading national university, as ranked first by the Federal Ministry of Education for four successive years (2009–2012).

administrators without the consent of faculties and colleges, departments, and other stakeholders such as academic and support staff members.

The central research question addressed in this chapter is: *What are the influences of a management system, organizational culture, resistance to change, and ICT and how do they contribute to the realization of a BPR initiative in a public university in Ethiopia?*

The remainder of this chapter is organized as follows: Section 2 gives a literature review while Sect. 3 explains the theoretical framework. Section 4 describes the methodology used, and the following section maps the results. The last section gives the conclusions and the way forward.

2 Literature Review

2.1 Concept of Business Process Re-engineering

According to Hammer and Champy (1993), BPR processes refer to rethinking and redesigning business processes to bring dramatic and sustainable improvements in quality, service, costs, lead times, outcomes, flexibility, and innovations. Watts (1995) calls for the need to establish an integrative and holistic view on BPR. Al-Mashari and Zairi (2000: 12) define holistic BPR as ‘a continuum of change initiatives with varying degrees of radicalness supported by IT means, at the heart of which is to deliver superior performance standards through establishing process sustainable capability.’

Along similar lines, Andreu et al. (1997) and Watts (1995) believe that a holistic approach to BPR should recognize the importance of processes and technology and their integration in a business’ vision, structure, relationships, resources, and culture. However, research studies that claim to adopt a holistic perspective still lack many critical constructs. As Deakins and Makgill (1997: 83) say, ‘there is limited evidence that broad implementation issues are now being addressed to the same extent as the previously dominant IT issues.’

Survey studies like those by Mitchell and Zmud (1995), Doherty and Horsted (1996), Braganza and Myers (1996), and Kohli and Hoadley (1997) do not address factors of BPR’s implementation from a holistic point of view. Even some large industry surveys (e.g., ProSci 1997) that have attempted to enhance an understanding of BPR fail to capture some of the dimensions that a holistic perspective demands such as costs, efficiency, time, and quality perspectives. Other work that has addressed BPR success factors has been largely anecdotal in nature or based on single organizations. Researching the challenges, practices, and outcomes of implementing BPR can be seen as crucial in using it as change management tool to achieve desired ends.

Re-engineering concepts comprise of four dimensions: (1) *innovative rethinking*: It argues that most of what happens in successful innovations is not the occurrence of a flash of insight, but rather the careful implementation of an unspectacular but

systematic management discipline (Drucker 1993); (2) *process functions*: Taking a systematic perspective, Hammer and Champy (1993) describe process functions as a collection of activities that take one or more kinds of inputs and create an output that is of value to the customer. A typical process includes ordering the organizational structure, manufacturing, production, development, delivery, and invoicing; (3) *radical changes*: A key business process in radical changes is the transformation of organizational elements; it is essential for an organization's survival. Change leads to new ideas, technology, innovations, and improvements. Therefore, it is important that organizations recognize the need for change and learn to manage the process effectively (Pamela and Stephen 1995); and (4) *organizational development and performance*: It looks at a firm's level of efficiency and ways to improve its current activity level in order to meet standards and survive competitive pressures. One way to judge an organization's performance is by comparing it with another unit within the company. However, comparisons with outsiders can highlight the best industrial practices and promote their adoption. This technique is commonly termed 'benchmarking' (Roberts 1994).

Today, users' demands of efficiency and effectiveness of products and services is a driver in implementing BPR in an organization (Al-Mashari and Zairi 2000). Though organizational development is a continuous process, the pace of change has increased. This means that in this competitive environment, organizations will be able to enhance their competitive advantages if they effectively design and implement BPR.

2.2 BPR Success Factors

BPR does not only mean change, but also mean dramatic change. This dramatic and drastic change consists of an overhaul of organizational structures, management systems, employee responsibilities and performance measurements, incentive systems, skill development, and the use of IT. BPR can potentially impact every aspect of how a business is conducted today. A successful BPR can result in enormous reductions in costs or cycle times. It can also potentially create substantial improvements in quality, customer services, or other business objectives. BPR's promises are not empty as it can actually lead to drastic improvements in business operations. Re-engineering can help a company to stay on top or transform an organization on the verge of bankruptcy into an effective competitor (Davenport 1993).

According to Peppard and Fitzgerald (1997), ambitious objectives, creative teams, a process-based approach, and integration of IT are among BPR's main success factors. Ascari et al. (1995) add culture, processes, structure, and technology to these. For Al-Mashari and Zairi (1999), BPR's important dimensions include change management, competency and support in management, information infrastructure, and a project planning and management system. Since success factors may differ based on the type of organization, understanding the nature of the

organization is indispensable. Some important BPR success factors, which are discussed in detail later, include organization-wide commitments, the composition of a BPR team, business needs' analysis, adequate IT infrastructure, effective change management, and ongoing improvements.

2.3 BPR Failure Factors

Beside its success factors, authors have also highlighted some factors which lead to failure when implementing BPR. The seemingly high failure rate of BPR projects has been one of the major road blocks in convincing organizations to commit to BPR efforts. As per a 1995 study by the Standish Group International (USA) which dealt with 8380 BPR projects in 365 companies, 84% of the projects failed or at least experienced some major problems (Valimaki and Tissari 1997). Given this unusually high failure rate compared to other types of improvement efforts, finding critical failure factors becomes an important topic for research. Past research shows that there are two primary reasons for such incidents: employee resistance to change (Stanley et al. 2005) and a lack of resources for the BPR effort (Bashein et al. 1994).

Aggarwal and Samwick (1998) highlight managers' arrogance, resistance, crises, higher than expected costs, and a lack of vision as factors leading to BPR's failure. Hammer and Champy (1993) point out the lack of a process perspective. A fixed process is not flexible enough to be responsive to needs and requirements, does not involve employees (bottom-up) in decision making, and assigns someone who does not understand BPR to do the job. In addition, technological limitations, designing a project but with focus on cost reduction and downsizing, having a weak team and problems with communications are also seen as failure factors.

3 Theoretical Framework

For advocates of BPR, effective redesigning of business processes by removing unnecessary activities and replacing functional processes with cross-functional activities in combination with information technology as an enabler for this type of change will lead to significant gains in speed, productivity, service, quality, and innovation. Business re-engineering normally includes a fundamental analysis of an organization and a redesign of its organizational structure, job definitions, reward structures, and control processes. BPR was conceived by Simon (1994) as consisting of four elements that needed to be considered: strategies, processes, technology, and people. Strategies and processes build the ground for technologies and the redesigning of the human activity system (see Fig. 1).

Strategies—The strategy dimension has to do with strategies—organization strategy, technology strategy, and human resources strategy. All the strategies should be determined with respect to the dynamic marketplaces that the



Fig. 1 BPR elements. *Source* Adapted from Simon (1994)

organization is acting in and are not to be focused on internalities, but on external presumptions for successful acting in the market. Further, strategies should be current and relevant to an organization's vision and to internal and external constraints. This implies that a reconsideration and redefinition of strategies might be a presumption for further change. The strategies should be defined in a way that enables understanding and motivation of employees in order to align the workforce to the strategies.

Processes—Processes can be defined on different levels within an organization. The issue is to identify core processes—satisfying customers' needs and adding value for them. It is important to point out that processes are not determined by internal organizational requirements but by customer requirements even though organizational constraints should be taken into account. A shift from functional departments to inter-functional processes includes a redesign of the entire organizational structure and the human activity system and implies process optimization instead of task optimization.

Technology—Information technology is considered a major enabler for processes spanning functional and organizational boundaries and supporting process-driven organizations. However, the point is not to use IT for improving existing activities, as it has often been conceived, but as an enabler for a new organization. This includes using new technologies such as groupware and new methods for using them. It requires acceptance of technological changes and the fact that information technology will be shaping the future.

People—The human activity system within an organization is the most critical factor in re-engineering. While the top management's support for re-engineering efforts is simple to ensure the real change agents—the middle management—are far harder to win over since they have to identify change opportunities and perform them, while they are also the group facing the most threats as BPR is often used for cutting hierarchies and reducing workforces. The other crucial factor is aligning the workforce with the strategies defined and addressing the variables of cultural and environmental contexts within an organization. Finally, flattening hierarchies implies that decision making should be moved down in the organization for which the employees who will be taking the decisions need to be empowered. This requires training and education as well as motivation and trust from the top management so that people are able and willing to take on responsibilities; this contradicts the common 'trust is good, control is better' way of thinking.

Based on the literature review and the theoretical framework, the following hypotheses and constructs were developed for this study:

Hypothesis 1 *A poorly designed and orchestrated management system is more likely to negatively affect the performance of individuals during BPR's implementation.*

Hypothesis 2 *Employees' change resistance is more likely to act against unwanted BPR implementation.*

Hypothesis 3 *A positive organizational culture is more likely to pave the way for BPR.*

Hypothesis 4 *A poor ICT infrastructure is more likely to impede BPR's implementation.*

The constructs include user participation, restructuring, processes re-engineering, organizational culture, ICT, communication, change resistance, teamwork, management system, incentives and rewards, and education and training.

4 Methodology

Our research applied a survey methodology to evaluate BPR's implementation and its consequences in one of Ethiopia's HEI's, Jimma University. In this study, primary as well as secondary data were obtained from relevant sources (organizational customers, online sources, and university archives). Primary data were on the pre-and post-implementation of BPR in the university was collected through a survey questionnaire.

A structured questionnaire included two major components, comprising of 35 questions. The first part consisted of questions relevant to respondents' demographic information. The second section comprised of questions used for evaluating 12 constructs—user participation, restructuring, processes re-engineering, organizational culture, ICT, communication, change resistance, teamwork, management system, incentives and rewards, and education and training. All items for measuring the constructs were developed taking into account the context as well as previous studies. These questions were all based on the 6-point Likert scale, ranging from 1 = *strongly agree* to 6 = *strongly disagree* (1—strongly agree; 2—agree; 3—inclined to agree; 4—inclined to disagree; 5—disagree; and 6—strongly disagree). Organizational performance was operationalized as a dependent variable and was measured using a 2-point scale as 'positive' if good or 'negative' if poor. Accordingly, for a logical analysis and simplicity of understanding, the Likert scales were converted into binary codes (agree or disagree). To ensure the validity of the content in the questionnaires used, each construct was cautiously rephrased to fit BPR's pre-and post-implementation period in the Ethiopian higher education context.

The questionnaires were distributed among students, academicians, and administrative staff members at Jimma University. Stratified random sampling was used to ensure that representatives from every employee category (academicians and supporting staff members) and students from the available colleges were included in the sample. The selection of sampled elements was done using simple random sampling within each stratum. The maximum sample size included in the study was 400 comprising of 150 employees (100 academic staff members and 50 administrative staff members) and 250 students. Student respondents were selected starting from year 3 since senior students are familiar with the management and implementation of BPR in the university. The sub-sample size from each stratum (employees and students) was determined based on their population proportion. Lastly, SPSS, version 16.0, was used for a statistical analysis. Specifically, the binary logistic regression technique available in the tool for the Windows statistical package was employed.

5 Results and Discussion

Of the 400 questionnaires distributed to students, academicians, and administrative staff members of Jimma University, 326 were returned. To increase the response rate, data collectors frequently reminded the respondents through telephone calls, SMSes, and self-visits to respond to the questionnaire. This effort raised the usable response rate to 81.5% which was functional for further analysis after the incomplete questionnaires were discarded. Thereafter, the demographic characteristics of the respondents were collated using descriptive statistics (Table 1).

5.1 *Demographic Characteristics of the Respondents*

As shown in Table 1, the descriptive analysis indicates that a majority of the respondents were academic staff members (87%), while the rest (13.0%) were administrative staff members. The other category of respondents in this research was students. The demographic distribution of these respondents is given in Table 2.

5.2 *Participation in BPR's Implementation*

We assessed user involvement in the BPR implementation process in the university from its inception to adoption. As shown in Table 3, 88% of the employee respondents said 'No,' while 12% of the respondents said 'Yes' to the question

Table 1 Demographic characteristics of employees

	Number of valid responses	Percent
Academic staff members	80	87.0
Administrative staff members	12	13.0
Total	92	100.0
<i>Service year</i>		
<5 years	59	64.1
5–10 years	23	25.0
10–15 years	5	5.4
>15 years	5	5.4
Total	92	100.0
<i>Education level of employees</i>		
12th Complete	1	1.1
Diploma	12	13.0
BA	42	45.7
Master's	28	30.4
PhD	9	9.8
Total	92	100.0

Source Administered Questionnaire, 2014

Table 2 Demographic characteristics of students

	Number of valid responses	Percent
<i>College where students study</i>		
Business and Economics	35	18.8
Jimma Institute of Technology	35	18.8
Public Health and Medical Science	31	16.7
Agriculture and Veterinary Medicine	29	15.6
Social Science and Law	30	16.1
Natural Science	26	14.0
Total	186	100.0
<i>Class year of students</i>		
Year 3	118	63.4
Year 4	51	27.4
Year 5	14	7.5
Above Year 5	3	1.6
Total	186	100.0

Source Administered Questionnaire, 2014

about participation in BPR's implementation. In connection with this, 51.6% student respondents said 'No,' while 48.4% respondents said 'Yes' (see Table 3).

As shown in Table 3, 63.7% of the respondents said that they were not involved in the process, while 36.3% of the respondents said that they had participated in BPR's implementation in the university.

Table 3 Respondents' awareness about BPR implementation in the university

	Employees		Students		Total	
	Number of valid responses	Valid percent	Number of valid responses	Valid percent	Number of valid responses	Valid percent
<i>Participation in BPR's implementation</i>						
Yes	11	12.0	90	48.4	101	36.3
No	81	88.0	96	51.6	177	63.7
Total	92	100.0	186	100.0	278	100.0
<i>Training in implementing BPR</i>						
Yes	26	28.3	65	34.9	91	32.7
No	34	37.0	63	33.9	97	34.9
I don't know	32	34.8	58	31.2	90	32.4
Total	92	100.0	186	100.0	278	100.0
<i>Knowledge about criteria for BPR team formation and composition</i>						
Yes	22	23.9	86	46.2	108	38.8
No	21	22.8	32	17.2	53	19.1
I don't know	49	53.3	68	36.6	117	42.1
Total	92	100.0	186	100.0	278	100.0

Source Administered Questionnaire, 2014

The use of users' (employees' and students') feedback is a major imperative for the BPR team to consider when redesigning processes. Our quantitative analysis revealed that only 36.3% of the users participated in the process (see Table 3). This shows that a major part of the university's community did not participate and inadequate attention was paid to employees' concerns in the BPR implementation process, especially the voices of students and academicians. A failure to re-engineer from a customer's perspective has been blamed for disappointing BPR results (e.g., Terziovski et al. 2003).

5.3 Training in BPR's Implementation

Empowering people by giving them the ability to do their work with the right information, the right tools, the right training, the right environment, and the authority (power) that they need is vital for BPR's successful implementation. Accordingly, the training dimension in our research was used to assess whether users were trained in the BPR implementation process in the university—28.3% of the employees said that they had participated in training, while 37.0% had not. The remaining 34.8% of the employees did not know whether training in BPR was given or not. Likewise, 34.9% of the students responded that they had attended training, while 33.9% had not participated in the training; 31.2% of the students did not know whether training was given for BPR's implementation (see Table 3).

Hence, a large part of the university's customers (students and employees) did not get training about BPR's implementation. According to Abolo (1997) and Coulson-Thomas (1996) cited by Adeyemi and Aremu (2008), one of the essential elements or principles of re-engineering is encouraging training and development by building a creative working environment. Our quantitative analysis shows that only 32.7% of the employees and students had been a part of the process.

5.4 Knowledge About Criteria for Forming BPR Teams and Their Compositions

Knowledge about criteria for a BPR team formation and its composition measures employees' and students' familiarity about members' selection, formation, composition, and representativeness of colleges and departments. Among the 278 respondents, 38.8% were informed about the criteria (Table 3). Along with these respondents, 23.9% employees and 46.2% students were knowledgeable about the criteria for BPR's team formation and composition. The remaining 61.2% were not familiar with the criteria. Similarly, 76.1% of the employees and 53.8% of the students were not knowledgeable about the criteria for BPR's team formation and composition.

5.5 Problems in Implementing BPR

As shown in Table 4, 55.4% of the respondents said that there were problems in BPR's implementation in the university. Thus, a majority of the student and employee respondents stated that there were problems in BPR's implementation in the university.

These respondents were further asked to provide examples of problems that they had observed during implementation. They were able to mention specific gaps beyond the questions asked during the quantitative inquiry. They pointed out

Table 4 Problems in implementing BPR in the university

	Employees		Students		Total	
	Frequency	Valid percent	Frequency	Valid percent	Frequency	Valid percent
Yes	50	58.1	100	54.1	150	55.4
No	36	41.9	85	45.9	121	44.6
Total	86	100.0	185	100.0	271	100.0
No response	6		1		7	

Source Administered Questionnaire, 2014

problems related to users' involvement, competency of staff members, resistance to change, BPR team members' issues, lack of management's commitment, inappropriate staffing, lack of a collaborative working environment, and administrative and communication issues.

The following problems give the employees' and students' impressions about various situations which are grouped under common themes.

One employee stated:

I think it did not bring the change I expected from BPR. The main reasons are: lack of top management's commitment, resistance to change by stakeholders, lack of competent staff members, absence of pre-implementation (as well pre-designing) preparation and just rushing to meet deadlines for implementation given by superior bodies and misconceptions about the inputs required and using the new system appropriately in the university.

Another employee said:

The BPR team's composition has its own problems: most of the team members are amateurs and were selected from an agriculture and medical science background, no assessment was done about the needs of BPR from the university's perspective; most of the university community did not participate in the whole process of BPR implementation, the BPR team members lack basic knowhow about BPR, but did not get proper training. In general, there was lack of proper communication among university members about BPR.

One of the student respondents said:

I have seen various problems related to BPR's implementation in our university such as I don't see the effort made to create awareness about BPR among students; students are not participating and are not considered in its implementation and higher officials are not committed to implementing BPR.

Qualitative data from open-ended questions also supplemented the inquiry about training, participation, and knowledge about criteria for BPR's team composition and formation. Problems in BPR's implementation at Jimma University were related to users' involvement, competency of staff members, resistance to change, BPR team members' issues, management's commitment, inappropriate staffing, collaborative working environment, and administrative and communication issues.

When applying the BPR management technique to a business organization, the implementation team's effort should mainly be focused on the students as primary customers so that they can develop customer service-oriented processes aimed at eliminating customer complaints (Sheehy 1997). Although employee participation is perceived as one of the key success factors in BPR, in our case there was evidence of lack of employees' and students' participation in the entire process. In addition, our qualitative data showed a perceived lack of competence of staff members since the respondents pointed out that not enough training was given to create awareness about BPR among all stakeholders, not all workers had the same level of knowledge about BPR, training was not based on the level of the employees, and there was lack of expertise (knowledge and experience) about BPR. Hence, these findings explain part of the performance of BPR in the university, which failed to achieve its intended outcomes.

Further, findings from students and staff members show problems in BPR's implementation which are related to communication issues such as lack of communication and clarity about BPR, lack of transparency in assigning qualified individuals for positions and work assignments, and poor followup of its implementation. The respondents added problems in their collaborative working environment: A smooth staff-student relationship was perceived to be lacking; that between academic and administrative staff members too was lacking. Recognition among employees was perceived as being very low. A more conducive working environment in the university would be appreciated. Thus, failing to maintain a collaborative environment might have negatively affected BPR's performance in the university.

Regarding staffing, respondents talked of a number of critical issues like assigning individuals inappropriate positions after BPR, selection of BPR team members, and that positions in the university were not based on achievements and performance of individuals but on their ethnic groups and friendships (informal networks). Employee resistance has been found to be a reason for BPR's failure in prior research (Lee 1995). Employee resistance in JU was attributed to the uncertainty and fear of what effects BPR would bring. The most common fear was that of downsizing, which the respondents commonly associated with the BPR effort. In general, even though the objectives of BPR per se do not include laying-off employees, downsizing has been a result of many BPR efforts. Respondents in JU brought up a number of aspects related to employee resistance which in prior research have been attributed to reasons for failure (Lee 1995). These include administrative bodies not being willing to implement BPR, employees fearing losing their jobs, inadequate attention to employees' concerns, middle management's fears of losing authority, uncertainty about project results, and feeling uncomfortable with new systems. There is a doubt such resistance contributed to the lack of BPR's success in the studied university.

According to Stanley et al. (2005), the top management's commitment plays a significant role in the success of BPR projects, as BPR changes have to be aligned with an organization's strategic direction. Also, resistance to a project can be handled expeditiously with clear top management commitment. Communication by the upper management with the affected business units, motivating changes, and stepping into resolve differences have also been outlined as important factors in BPR's success (Stanley et al. 2005). However, our findings suggest that JU lacked not only the top management's commitment, but also the sufficient knowledge about the BPR project, realistic expectations of BPR results, and frequent communication between BPR team members and users.

Another important factor for implementing BPR is the taskforce's composition and empowerment of team members (Lee 1995). The team should represent different skills and backgrounds, combining experts from various functions of the organization. However, our findings reveal that BPR team members at JU were selected from only two colleges—the college of agriculture and veterinary medicine and the medical science college. The university also has many qualified experts in other colleges such as the college of business and economics, where colleagues

have knowledge and experience about BPR. However, no members of the BPR team were selected from this college, which could have helped the reported insufficient expertise (in terms of knowledge and experience) about BPR, thus increasing confidence and trust in team members.

A fundamental principle of universities is academic freedom, and functionally, this includes research and teaching. Thus, BPR in HEIs should strive to enhance the quality of education and promote research which solves societal problems. However, our findings reveal a number of negative effects of BPR on the quality of education and research: increased work loads for some academic staff members, a shortage of qualified academic staff members, a shortage of academic resources such as books, journals, and electronic references, and lack of guidelines and procedures for research. Further, the respondents criticized the increase in monotonous and routine meetings, documents produced in the university were not put to action, BPR's implementation did not follow the standard procedure of BPR implementation, BPR's implementation guidelines were not prepared, and job descriptions for each position were lacking.

5.6 *Organizational Structure*

BPR aims at achieving dramatic improvements in performance through radical changes in organizational processes and re-architecting of business and management processes (Hammer and Champy 1993). It involves the redrawing of organizational boundaries and reconsideration of jobs, tasks, and skills. In order to assess changes in the organizational structure of the university, the respondents were asked about structural changes as a result of BPR's implementation; JU's BPR document was also reviewed.

A. **Reshuffling of Positions and Departments**

One result of BPR can be reshuffling of positions and/or departments. Thus, we assessed whether employees changed their positions or departments because of BPR's implementation. As shown in Table 5, 21.7% of the employees responded that they had changed their positions or departments. The remaining 77.2% had not changed their positions or departments due to BPR's implementation.

B. **Changes in Top-level Managers due to BPR**

We also assessed changes in the top-level management. Our research revealed that 45.6% of the employees and 52.5% of the students saw changes in top-level managers in the university, while the remaining respondents saw no changes (Table 5).

Though BPR literature suggests that management systems be modified to support the newly redesigned processes, our study finds that such changes were not drastic at JU.

Table 5 Structural changes in the university after BPR's implementation

	Employees		Students		Total	
	Frequency	Valid percent	Frequency	Valid percent	Frequency	Valid percent
<i>Position/departmental reshuffling after BPR</i>						
Yes	20	22.0	–	–	20	22.0
No	71	78.0	–	–	71	78.0
Total	91	100.0	–	–	91	100.0
No response	1		–	–	1	
<i>Change in top-level managers due to BPR</i>						
Yes	41	45.6	96	52.5	137	50.2
No	49	54.4	87	47.5	136	49.8
Total	90	100.0	183	100.0	273	100.0
No response	2		3		5	

Source Administered Questionnaire, 2014

Table 6 Reasons for BPR's implementation in the university

Reason for BPR Implementation	Responses	
	Number of valid responses	Percent
External pressure	116	23.4
Existing system problems	115	23.2
Technology	125	25.2
Market situation	44	8.9
Social and political changes	96	19.4
Total	496	100.0

Source Administered Questionnaire, 2014

5.7 Reasons for BPR's Implementation in the University

BPR can be implemented for various reasons ranging from external pressure and solving existing problems in an organization to the introduction of new information technology and/or information systems, the market situation, or social and political changes. Accordingly, our research assessed the perceived reasons for BPR's implementation at JU.

Among our respondents, 23.4% said external pressure was responsible for implementing BPR at Jimma University, 23.2% cited problems in the existing system, and 25.2% saw technology as the main reason (see Table 6).

5.8 Findings from the Logistic Regression Model

Next, we present our quantitative findings based on a binary logistic regression model. Standard linear regression models are applied when the variables are continuous in nature. But there are many situations in which the dependent variable in a regression equation represents a discrete choice assuming only a limited number of values. Models involving dependent variables of this kind are classified as qualitative response models. This is true for our study where the dependent and independent variables have two qualitative discrete choices. In general, binary logistic regressions can tell us the likelihood for the occurrence of events. Binary logistic regression is suitable for variables of categorical nature as is the case in our study. The reliability of the questionnaires was tested using Cronbach’s Alpha, and it was found to be 0.704 for the students’ set and was 0.796 for employees. This assures a leeway for statistical inferences.

The logistic regression model describes the relationship between a dichotomous response variable Y_i , coded to take the values 1 or 0 for ‘negative’ and ‘positive’ impacts of BPR, respectively. In this case, the dependent variable is BPR’s performance, and it takes only two values and is shown by:

$$Y_i = \begin{cases} 1 & \text{if the performance of the } i\text{th individual is affected negatively by BPR} \\ 0 & \text{if the performance of the } i\text{th individual is affected positively by BPR} \end{cases}$$

This categorization is based on the responses of major stakeholders including staff members (both academic and administrative) and students to the question: ‘How is BPR’s implementation affecting your performance?’ The explanatory variables together with their categories and coding are given in Table 7.

Table 7 Coding of explanatory variables

Variable	Category	Parameter coding
Management system	Agree	1
	Disagree	0
Communication	Agree	1
	Disagree	0
Organizational culture	Agree	1
	Disagree	0
Incentives and rewards	Agree	1
	Disagree	0
Resistance	Agree	1
	Disagree	0
ICT	Agree	1
	Disagree	0
Education and training	Agree	1
	Disagree	0

Source Administered Questionnaire, 2014

The category that is assigned the value 0 (disagree) is the reference category. When interpreting the results, all comparisons were made with reference to this category. Table 8a, b gives the outputs of the logistic regression.

Table 8a, b gives the refined summaries of statistics obtained using SPSS version 16.

The response probability $P_i = \text{Prob}(Y_i = 1|X_i)$ refers to the probability that BPR's implementation is perceived to negatively affect the performance of an individual given the conditions bestowed on the identified explanatory variables denoted by X_i . If the odds ratio $\text{Exp}(B)$ is less than one, then this means that the odds (or the likelihood) of an individual's performance due to BPR will be negatively affected are higher for the reference category. If $\text{Exp}(B)$ is greater than one,

Table 8 Binary logistic model's result summary

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
(a)								
Management system	−0.912	0.452	4.064	1	0.044	0.402	0.166	0.975
Communication	0.828	0.450	3.385	1	0.066	2.288	0.947	5.523
Organizational culture	0.872	0.452	3.723	1	0.054	2.392	0.986	5.799
Incentives and rewards	0.358	0.443	0.655	1	0.418	1.431	0.601	3.410
Resistance	1.145	0.460	6.191	1	0.013	3.143	1.275	7.746
ICT	1.584	0.545	8.433	1	0.004	4.872	1.673	14.186
Education and training	1.056	0.466	5.126	1	.024	2.875	1.152	7.173
Constant	0.677	0.221	9.417	1	0.002	1.968		
−2 Log likelihood 94.518 ^a								
Cox & Snell R Square 0.217								
Nagelkerke R Square 0.300								
	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
(b)								
Management system	−0.912	0.452	4.064	1	0.044	0.402	0.166	0.975
Communication	−0.828	0.450	3.385	1	0.066	0.437	0.181	1.055
Organizational culture	−0.873	0.319	7.505	1	0.006	0.418	0.224	0.780
Resistance	0.957	0.337	8.067	1	0.005	2.604	1.345	5.041
ICT	1.005	0.480	4.384	1	0.036	2.732	1.066	6.999
Education and training	1.319	0.402	10.742	1	0.001	3.739	1.699	8.227
Constant	1.112	0.231	23.256	1	0.000	3.040		
−2 Log likelihood 215.458 ^a								
Cox & Snell R Square 0.105								
Nagelkerke R Square 0.146								

Source Administered Questionnaire, 2014

^a the loglikelihood, which is the objective function value

then the odds are higher for a particular category as compared to the reference category.

1. The odds ratio for management system ($\text{Exp}(B) = 0.402$) is less than one. Since the coding of management system as (1) refers to a positive view on the system and the reference category (0) is a negative view on the system, the odds of a poor management system are higher than those of a good one. This implies that the likelihood of a management system which is poorly designed and orchestrated to impede the successful implementation of BPR is higher. This further means that if the management system is poor, it will negatively affect the performance of individuals and the organization as a whole which exonerates BPR's implementation. The inverse of $\text{Exp}(B)$ is $1/0.402 = 2.49$. Thus, it is perceived that well-executed management is 2.49 times more likely to pave the way for proper BPR implementation as compared to a poor one.
2. The variable 'communication' is significant at the 10% level. The odds ratio for communication is greater than one for employees ($\text{Exp}(B) = 2.288$) and less than one for students ($\text{Exp}(B) = 0.437$). In this case, the odds ratio's magnitude for students and employees' responses is totally different. The implication is that the odds ratio of good communication is higher than poor communication through a chain of command for employees. In contrast, the odds ratio of a poor communication style is higher for students. Thus, the quality of communications at the university is more likely to positively influence the performance of employees which supports the idea of BPR's implementation as a solution to organizational problems. On the other hand, poor-quality communication can aggravate the failure of BPR's implementation.
3. The odds ratio for 'Organizational culture' is 2.392 for employees and 0.418 for students. As the coding (1) refers to the existence of a positive organizational culture and the reference category (0) refers to a negative one, the implication is that a conducive and parsimonious organizational culture is 2.392 times more likely to increase individual and organizational performance by paving the way for BPR's implementation as a tool for solving organizational problems. As per the students' statistics, the inverse of $\text{Exp}(B)$ is $1/0.418 = 2.392$. This implies that the likelihood of a negative organizational culture to obscure the implementation of BPR is higher than the conducive environment created by an enabling culture. This confirms the relevance of considering cultural issues in BPR's implementation.
4. The variables 'incentives' and 'rewards' are insignificant at both the 5 and 10% levels. Thus, they do not appear to have been relevant for BPR's implementation process at JU.
5. The odds ratio for change resistance (1) is 3.143 for employees and 2.604 for students. Since the coding (1) refers to higher resistance to change and the reference category (0) refers to low resistance, the interpretation is that a higher level of resistance to organizational change is 3.143 times more likely to interfere with the successful implementation of BPR and it is 2.604 times more likely on the students' side. Thus, we find clear evidence of resistance to the

change efforts at JU which do not appear to have been adequately addressed by the management. The odds ratio for ICT is 4.872 for employees and 2.732 for students. Since the coding as (1) refers to an adequate ICT infrastructure and the reference category (0) refers to an inadequate ICT infrastructure, this finding suggests that a well-developed ICT infrastructure in a university due to BPR is 4.872 times more likely to positively influence individual employees' and total organizational performance and is 2.732 times more likely for students. Here, the evidence from Jimma University substantiates this significantly meaning that the claim is confirmed.

6. The odds ratio for education and training is 2.875 for employees and 3.739 for students. Since the coding (1) refers to excellent education and training provisions because of BPR and the reference category (0) refers to poor education and training put in place, our findings suggest that a well-developed and dynamic education and training provision as a result of BPR in a university is 2.875 times more likely to promote BPR as a solution to universities and similar organizations according to the employees and it is 3.739 times more likely to advance knowledge, skills, and attitudinal changes according to the students. Here, the odds ratio's magnitude related to students is higher than that for employees since the variable is students' priority concern.

In conclusion, all the four hypotheses presented in the theoretical framework are supported by this analysis.

6 Conclusion and the Way Forward

6.1 Conclusion

We analyzed, using both descriptive and binary logistic regression analyses, the impact of the management system, communication, organizational culture, incentives and rewards, ICT, resistance, and education and training on BPR's performance.

We found the management system to be non-participatory with inadequate attention being paid to employees' concerns during the BPR implementation process. Top-level BPR managers failed to re-engineer from a customer's perspective, contributing to disappointing BPR results (see also Terziovski et al. 2003). Users' involvement in the process, from BPR planning to its actual implementation, was very meager. Employees were treated as passive followers who were expected to actuate signals given by higher bodies. Regarding awareness creation and training, more training geared toward gaining a conceptual understanding of implementation scenarios could have been more carefully delivered for those in need. The insufficiency of the training offered resulted in lack of expertise. No clear chain of command, lack of transparency in BPR's team formation, and later job assignments were all found to obstruct BPR's success. Team members of the BPR process did

not represent different subjects and positions at the university; instead, they came from very few departments. Moreover, implementation was followed up rather poorly. The organizational culture of Jimma University is facing challenges regarding ethnicity, languages, and geographic affiliations. All these result in higher levels of resistance to attempted changes. Similarly, poor management commitment, centralization of resources, subordination to the needs and orders of external interest groups, and fatigue among academic staff members are all indications that the BPR implementation process was not executed as suggested by management literature.

Neither were reward packages designed to support the proper implementation of BPR. As a result, stress, repetitive, and seemingly useless meetings impede the engagement of academic staff members as also their personal development. Moreover, massive size expansion, external pressures, and voluminous intake of students have created additional challenges for BPR's implementation.

6.2 *Practical Implications*

Our findings have the following practical implications:

- Creating a conducive environment that nurtures trust, ignites initiation, and contributes to personal development agendas can facilitate bringing about a desired institutional transformation.
- Acknowledging the principle of academic freedom while attempting to achieve mutual consent regarding change initiatives can help in avoiding resistance to change.
- Our findings also imply that organizations undergoing BPR projects would be well advised to allow enough time to complete the transition cycle. Hurrying people might not save time as members will be left with their other working tasks unfinished. At some point, the overall load will get too heavy. Thus, reducing the time pressure and focusing on communication could reduce the burden put on employees.
- Efforts should concentrate on areas that have the most direct impact on BPR's performance—training.
- Top managers and BPR team members should not forget to listen to the voices of the customers (academic and administrative staff members) to enhance the chances of successfully implementing BPR (see also Terziovski et al. 2003).

Jimma University has a track record of implementing innovative management practices. To maintain this track record, it will be a good idea to follow up on the different change initiatives to learn from these processes before embarking on new processes.

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