A Business Process Regeneration (BPR) Project
JOLTS DCC Case Study

Paul R. Calhoun, Jr.
Applied Management and Decision Sciences, Walden University
Minneapolis, MN, 55401, USA
JOLTS DCC, U.S. Bureau Of Labor Statistics
Atlanta, GA, 30303, USA

ABSTRACT

This paper describes the development and implementation of a new and innovative production methodology used by the U.S. Bureau of Labor Statistics in the monthly collection of survey data for the Job Openings and Labor Turnover Survey (JOLTS). The resulting production methodology known as Panel Rotation Production Protocol (PRPP), represents the product of an intensive business process re-engineering (BPR) project implemented to improve organizational performance. The seven-phase BPR Process Regeneration Framework described by Kettinger and Teng (2000) is utilized as a guide to describe the development and implementation of the PRPP. This discussion provides an excellent example of the application of the principles of re-engineering to real-time business processes.

Keywords: BPR, Business Process Reengineering, Organizational Management, Survey Management, Data Collection, CATI, Organizational Change.

1. INTRODUCTION

This case study explores the application of Business Process Reengineering/Regeneration (BPR) concepts, methods, and tools in an actual organizational setting. Specifically, the JOLTS Data Collection Center of the US Bureau of Labor Statistics initiated a BPR project in August 2006 to improve organizational production performance. This project, designated the Panel Rotation Production Protocol (PRPP) project, was primarily concerned with raising both enrollment and response rates. In actual implementation, this project specifically followed the six-step BPR model outlined by Timothy Furey (1998) which prescribed the following steps [2]:

1) Identify the Process's Customer-driven Objectives
2) Map and Measure the Existing Process
3) Analyze & Modify the Existing Process
4) Benchmark for Innovative, Proven Alternatives
5) Reengineering the Process
6) Roll Out the New Process

The Furey model is very useful for tactical planning; however, this case study will utilize the newer seven-step Process Regeneration Method Framework (PRMF) by Kettinger and Teng (2000) as the framework for discussion and analysis [4]. This framework provides a closer look at the strategic linkages (not provided in the Furey model) which more recently have been shown to be a critical requirement for long-term, successful implementation in BPR projects. As a roadmap for the

remainder of this case study, the following approach is taken. First, a summary will be provided on the evolution of BPR

projects. This will lead to an introduction of the Kettinger and Teng BPR framework [4]. Utilizing this framework as a guide and following a brief organizational overview, each step in the framework will be described and used as a guide to assess those activities which took place in the implementation of the JOLTS PRPP project. Finally, a few conclusions will be presented which might aid in the implementation of future BPR projects.

2. BPR PROJECTS – EVOLUTION

Traditionally, BPR is an acronym for Business Process Reengineering and has been generally defined by scholars, in the following manner,

> Business Process Reengineering (BPR) is a redesign and reorganization of business activities that results from questioning the status quo. It seeks to fulfill specific objectives and can lead to breakthrough improvement. It is often associated with significant cultural and technological changes. [7, p. 3]

After years of experimentation with BPR, the lessons of many failures have caused organizations to scale back projects and take a much more cautious approach to organizational change. Consequently, BPR projects are no longer necessarily called re-engineering projects [4]. Current projects are more concerned with integrating processes into the overall strategic plan [4]. According to Kettinger and Teng (2000), "Today's process change projects are more likely to focus on enterprise wide mega-processes such as new product development, integrated supply chain, web-portal based order fulfillment, and financial management processes, including treasury and risk management" [4, p. 2].

In the end, more and more recent literature refers to these projects as Business Process "Regeneration" projects instead of Business Process Re-engineering projects. Along with this change in definition, these projects are characterized by an emphasis on project buy-in by stake-holders, and these projects depend less and less on technology [4].

In Chapter 1 of Varun Grover and William Kettinger's Process Think: Winning Perspectives For Business Change in the Information Age, author's Kettinger and Teng (2000) present a framework for the new BPR projects in their essay entitled, "Conducting Business Process Change: Recommendations from a Study of 25 Leading Approaches" [4]. Utilizing the lessons from their study, Kettinger and Teng identify a framework to guide future BPR projects. A central finding in their study is that change management and buy-in are of utmost importance [4]. Kettinger and Teng (2000) summarize this by concluding, "Successful methods recognize resistance to change and attempt to minimize this through an assessment of cultural readiness and activities to establish project buy-in" [4, p. 3].

Kettinger and Teng (2000) coined their model, Process Regeneration Method Framework [4]. This framework consists of 7 distinct phases. Each of these phases capitalizes on the best practices uncovered in their study. The phases which are identified by Kettinger and Teng (2000) include [4]:

1. Phase 1: Strategy Linkage
2. Phase 2: Change Planning
3. Phase 3: Process Pathology
4. Phase 4: Social Re-Design
5. Phase 5: Technical Re-Design
6. Phase 6: Process Re-Generation
7. Phase 7: Continuous Improvement

While not obvious at first, it's important to understand that Phases 1-3 are identified together as the Process Regeneration Method. These 3 phases, Strategy Linkage, Change Planning, and Process Pathology provide the underlying foundation for the entire framework which links the framework to organizational strategy. Phases 4-7 (Social Re-Design, Technical Re-Design, Process Re-Generation, and Continuous Improvement) represent the iterative nature of the overall framework which is applied to improve successive processes.

3. JOLTS PRPP PROJECT ASSESSMENT

Organization Overview

The Bureau of Labor Statistics' Job Openings and Labor Turnover Data Collection Center (BLS JOLTS DCC) was created in 1999 to collect survey data which is used to generate national labor turnover estimates. These data series measure the level of labor demand in the United States. For over 100 years, the BLS has published data on the supply of labor, which is measured by the unemployment rate. However, without a clear measure of the demand for labor, economists have not been able to accurately explain economic concepts such as "wage inflation" or "full employment".

The JOLTS DCC's primary mission is to collect survey data for the US Bureau of Labor Statistics [1, 3]. Located in Atlanta, Georgia, this organization specializes in collecting data via Computer Assisted Telephone Interviewing (CATI), Touch Tone Data Entry (TDE), and other electronic means. Data are collected from approximately 16,000 businesses on a monthly basis across the United States.

The JOLTS DCC has provided labor turnover data for use in the development of job vacancy and turnover data since 2000. During this time, the organization has produced some of the highest response rates when compared to other BLS monthly surveys. Response rates represent the most universal measure of survey collection efficiency and represents the most important and measurable variable for any collection organization.

While response rates for the DCC have historically been between 60%-62%, response rates began to gradually decline until reaching levels of 57%-59% in 1996. This situation coupled with a recurring annual backlog of new survey members which must be added to refresh the survey sample, became of concern to the JOLTS Program Managers. Managers were seeking ways to simultaneously return response rates to earlier levels and reduce the backlog of new survey members by decreasing the time to enroll or move new members into the survey.

Phase 1: Strategy Linkage

The main purpose of the Strategy Linkage Phase of the Process Regeneration Framework is to review the business's strategic vision to ensure that any proposed changes in the business's operations are in line with business strategy [4]. The following five activities are completed during this phase including: (a) Linking business, process, and information technology strategy, (b) Identifying re-generation opportunities, (c) Identifying possible information technology leverages, (d) Selecting a process to re-generate, and (e) Securing management commitment.

To identify re-generation opportunities, a number of techniques such as Competitive Analysis, Value Chain Analysis, and Critical Success Factors Analysis are utilized during this phase to identify Key Performance indicators (KPIs). This leads to the identification of key processes.

JOLTS PRPP Strategy Linkage Assessment

As noted, the main purpose of this phase is the identification of potential linkages which could be used to tie a project into the current organizational strategies. Process and technology strategy are acutely joined in the original designs and operational plans of the JOLTS DCC. The overall strategy of the DCC is to utilize Computer Assisted Telephone Interviewing (CATI) software to leverage production activities. Therefore, the primary strategic linkage concern is one of process linkage, not technology linkage. With this consideration, DCC management pursued the identification and analysis of process oriented Key Performance Indicators (KPI).

In traditional BPR applications, financial accounting was the measurement tool through which management identified KPI's to aid in measuring improvements. According to Robert Eccles [5], a revolution begun over a decade ago, pushing management to accept other measures of performance which would enable the organization to support more dramatic performance changes. These measures of performance would be centered around a focus on customer satisfaction.

Customer satisfaction in the context of the JOLTS DCC would be concerned with the improvement in both Response Rates and

Enrollment Rates. Five core performance factors can be identified for the JOLTS DCC including;

1. Response Rate (RR) – Response Rate measures the level of response which the JOLTS DCC receives from survey respondents. The greater the response, the greater level of fulfillment. This measure is calculated by dividing the number of survey responses by the total number of respondents in the survey.
2. Item Response Rate (IR) – Item Response Rate measures the level of completeness of a survey based on the number of data items (or responses) provided on a completed survey. The more items completed; the more valuable the completed survey. This is calculated by taking the number of provided survey responses divided by the total number of possible survey responses.
3. Enrollment Rate (ER) – Enrollment Rate indicates the level of success in gaining participation in the survey. This rate is calculated by dividing the total number of participants agreeing to participate divided by the total number of sample units
4. Refusal Rate (XR) – Refusal Rate measures the percent of sample units which refuse to complete a survey for a particular period. This rate is calculated by dividing the number of respondents which do not complete a survey by the number of sample units.
5. Turnover Rate (TR) – Turnover Rate measures the loss in survey production capability due to the routine loss of survey staff. This rate is calculated by taking the number of loss staff during a period by the full staffing level.

The chart which follows describes the various performance levels for the Key Performance Indicators. A cursory review of this chart shows that the DCC met the required performance for 1 of the performance factors (IR=4). A total of 2 factors were rated as Needs Improvement (RR & XR). Finally, 2 factors are rated as Unacceptable (ER & TR). None of the rating factors are exceeded. With so many areas requiring improvement, simple continuous process improvement techniques would probably not create any real changes in performance in a short period of time. Therefore, picking 1 or 2 of the substandard areas to improve would not be adequate. A much more aggressive approach to improvement is needed. According to Vikram and King's (1998) Classification of Reengineering Projects, what is required is in the realm of a BPR project [5].

Table 1 – JOLTS DCC Key Performance Indicator (KPI)

	PERFORMANCE LEVEL (%)					
	1	2	3	4	5	DCC
Performance FACTOR	Very Unacceptable	Unacceptable	Needs Improve	Acceptable	Exceeds	RATING
1. RR	00-39	40-49	50-59	60-75	76-100	3
2. IR	00-29	30-49	50-69	70-80	81-100	4
3. ER	00-69	70-79	80-84	85-90	91-100	2
4. XR	41-100	31-40	21-30	15-20	00-14	3
5. TR	21-100	16-20	11-15	05-10	00-04	2

Phase 2: Change Planning

This phase plans activities related to making the change. It looks at infrastructure and the stakeholders. The goals of this phase are to (a) Organize, (b) Inform the stakeholders, (c) Conduct project planning, and (d) Set performance goals.

JOLTS PRPP Change Planning Assessment:

For the JOLTS PRPP project, change planning involved selecting a few of the large number of measures which could be targeted for this redesign. After careful consideration, management finally concluded that the objectives of the redesign will primarily include;

1. Raise Response Rates closer to the acceptable range of between 60%-75%
2. Raise Enrollment Rates to the acceptable range of between 85%-90%
3. IR, XR, and TR rates should fall within corresponding acceptable ranges

Additional constraints placed on the project included;

4. Response Rates should not fall below 57%
5. Enrollment Rates should not fall below 79%

6. There will be no staff increases or reductions
7. All changes must be coordinated with supervisory staff
8. Improved rates must be apparent within 6 months to 1 year.

In terms of planning, the PRPP project specifically followed the six-step BPR model outlined by Timothy Furey (1998) as previously outlined [2].

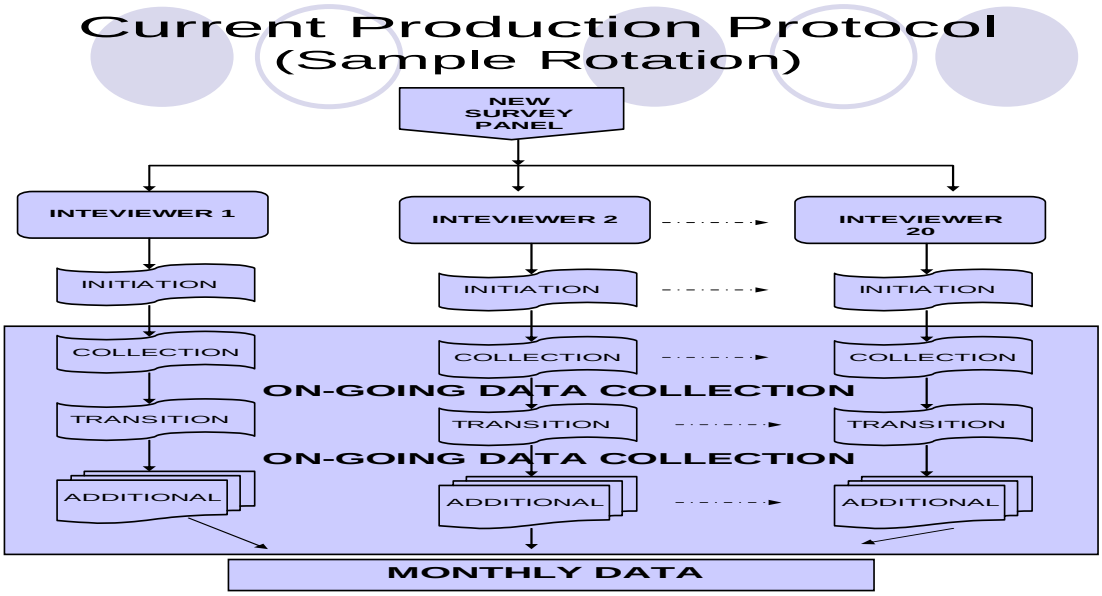
Phase 3: Process Pathology

The primary purpose of Phase 3 is to (a) identify the existing processes and (b) diagnose problems with the existing processes. In identifying the process, all relevant process players are identified. Techniques such as Data Flow Diagramming, Block Diagramming, and Process Flowcharting are used diagnostically to identify bottlenecks or un-necessary activities. TQM techniques such as Fishbone Analysis and Statistical Process Control are also useful at this stage.

JOLTS PRPP Process Pathology Assessment:

The first step in this phase of the PRPP Project was to identify the key process which would be regenerated. Figure 1 graphically describes the current process which needs to be regenerated. According to this AS-IS Diagram, a new survey panel is received each month. This new panel is then divided among survey interviewers. These interviewers are then responsible for 3 recurring processes including Initiation, Collection, and Transition. In addition to these recurring processes, there are other recurring and non-recurring processes including, non-response prompting (NRP), data quality edit reviews, drop panel notifications, refusal conversion, and other unidentified non-recurring tasks.

Figure 1 - AS-IS Diagram – JOLTS Production Workflow



Phase 4 / 5: Social Re-Design / Technical Redesign

These phases involve the integration of people and technology to create an improved process that will be in line with organizational strategy. Phase 4 seeks to design a new personnel architecture; whereas, Phase 5 incorporates the information technology considerations. Modeling, simulation, and what-if techniques are used at this time.

JOLTS PRPP Social/Technical Re-Design Assessment:

The BLS has utilized the sample rotation protocol depicted in Figure 1 for over 10 years. Since that time, the responsibilities of the data interviewer has changed dramatically from a role of simply collecting data from ongoing respondents, to the role of enrolling new sample members, collecting sample data, performing refusal conversion activities, and overcoming automated screening technologies which increases the difficulty in collecting data from respondents.

Based on years of observing interviewer production, analysis of the performance factors such as Response Rates, Collections Rates, Enrollment Rates, Refusals Rates, and considering a collection of miscellaneous factors, an overarching observation was clear. What was observed was that the interviewer staff was very proficient in handling a few production tasks extremely well when only those tasks were required. As soon as other tasks required priority, effectiveness in the previous task became sub-par. In essence, the data interviewers suffered from over-
tasking. Multitasking was something that only a few of the interviewers were able to accomplish well. What was needed was a production protocol which minimized the number of required tasks at any one time by any one interviewer.

Based on this analysis and conclusion, a preliminary rotation scheme was designed to minimize interviewer multi-tasking. The preliminary new design, divided concurrent tasks among the staff, so that they may focus on 1 of 3 defined group of activities identified as (a) Initiation, (b) Collection, and (c) Transition. Instead of being required to individually multitask all of these functions simultaneously, a data interviewer is only required to focus on one of these three tasks at any one time. According to this design, data interviewer teams were assigned to work Initiation, Collection, and Transition for 2 months each. New Panels were only assigned to those in the Initiation Rotation, thus the term “Panel Rotation”. New Panels were rotated, or assigned, every 2 months.

This preliminary design, as depicted below, was field tested utilizing three interviewer staff members for a period of six months. This testing was performed to identify any additional implementation issues prior to moving to Phase 6: Process Regeneration.

Phase 6: Process Regeneration

Change management, deployment of the project, and reorganizing are the key components of this phase. Resistance to change must be identified. Techniques such as force field analysis are utilized at this point.

JOLTS PRPP Process Regeneration Assessment:

While an analysis of the results of the preliminary design led managers to conclude that the new design was feasible, a major modification would be needed to be made to account for a major deficiency in the design. The deficiency in the preliminary design was the lack of a follow-up mechanism to handle incomplete cases following a rotation. Without this modification, incomplete cases would have to rotate with team members. The result would be a return to the original problem of multi-tasking which plagued the process under the former protocol.

The solution was the addition of a non-rotating team called the Resolution Team. This team would be responsible for completing any incomplete work at the time of each rotation. Figure 2 displays the new duties with the addition of this element to the design.

Figure 2 – Final Panel Rotation Production Protocol

ROTATATIONS

TWO MONTH ROTATIONS

INITIATION			*COLLECTION*			*TRANSITION (ROLLS)*		
OBJECTIVE: Fully Enroll 2 Panels in 2 Mths			*OBJECTIVE: Fully collect CATI & LT CATI Units. Refusal conversion.*			*OBJECTIVE: Fully Roll/Collect Eligible rolls & PERM CATI. Refusal Conversion, and New Panel Refinement.*		
GOAL TARGET	*BY*		*GOAL TARGET*	*BY*		*GOAL TARGET*	*BY*	
	MTH1	*MTH2*		*MTH1*	*MTH2*		*MTH1*	*MTH2*
GOAL: Adr Ref Rate >= 98%	X	X	GOAL: TGT Panel CR >= 85%	X	X	GOAL: Overall CR >= 85%	X	X
GOAL: Enrl Rate >= 50%	X		GOAL: Overall RR >= 85%	X	X	GOAL: Ref Conv Rate >= 30%	X	
: Enrl Rate >= 85%		X						
			GOAL: Refusal Conv Rate >= 30%		X	GOAL: Roll Rate >= 50%	X	X
GOAL: TGT Panel CR >= 85%	X	X						
						GOAL: Adr Ref Rate >= 98%		X
	MTH1	**MTH2**		**MTH1**	**MTH2**	WORKLOAD:	**MTH1**	**MTH2**
WORKLOAD:	# Cases	# Cases	WORKLOAD:	# Cases	# Cases		# Cases	# Cases
Ref/Enr: 2 TGT Panels	550	1100	**Collect: 2 TGT Panels+Other**	**1800**	**1800**	**Collect: 2 TGT Panels (ROLLS)**	1000	500
			Collect: LongTerm CATI	**700**	**700**	Collect: Eligible PERM CATI -Rolls	900	293
				2500	2500	Addr Ref: INITIATION PANEL 1		550
							1900	1343
TEAM REQUIREMENT (# Intvs):	5	5	TEAM REQUIREMENT (# Intvs):	5	5			
Cases/Intvw	**110**	**220**	**Cases/Intvw**	**500**	**500**	TEAM REQUIREMENT (# Intvs):	5	5
						Cases/Intvw	**380**	**269**
ADDITIONAL:			ADDITIONAL:					
NRP	**N**	**N**	Refusal Conversion (Pre/Post Col)/Intv	**25**	**0**	ADDITIONAL:		
EDITS	Y	Y	Drop Panel Notifications	Y	Y	Refusal Conversion (Pre/Post Col)/Intv	**25**	**0**
			NRP	Y	Y	NRP	Y	Y
			EDITS	Y	Y	EDITS	Y	Y
TOTAL WORKLOAD / Interviewer	110	220	TOTAL WORKLOAD / Interviewer	525	500	TOTAL WORKLOAD / Interviewer	405	269

RESOLUTION

OBJECTIVE: Finalize Incomplete Initiations and Transitions. Recover Delinquent Reporters (82s). Collect PERM CATI Units.

GOALS	MTH1	MTH2	WORKLOAD	MTH1	MTH2	ADDITIONAL	MTH1	MTH2
GOAL: Refinement Rate >=	98%	98%		# Cases	# Cases		# Cases	# Cases
GOAL: Enrollment Rate >=	85%	85%	Ref/Enroll: Delinquent Enrollments	**220**	**220**	EDITS	Y	Y
GOAL:Response Rate >=	75%	75%	Collect: Delinquent Reporters (82s)	**600**	**600**	NRP	N	N
			Collect: PERM CATI	**300**	**600**			
				1120	1420			
			TEAM REQUIREMENT (# Intvs):	5	5			
			TOTAL WORKLOAD / Interviewer	**224**	**284**			

ROTATION ASSIGNMENTS

Figure 3 provides a final model of the complete Panel Rotation Production Protocol. There are 4 major differences in this TO-BE Model versus the AS-IS Model:

1. Interviewers are initially assigned to 1 of 4 production activity teams (Initiation, Collection, Transition, or Resolution).
2. Second, new survey panels are only assigned in the Initiation activity.
3. After a 2 month period of production in the assigned activity, each team is rotated to next activity along with any newly enrolled cases. The rotation continues every 2 months in the following sequence; Initiation to Collection to Transition.
4. Resolution team members do not rotate. These staff members remain in the center of the rotation to capture any cases which are not completed at the time of each rotation.

This protocol provides minimal multi-tasking for each interviewer during their assignments.

Phase 7: Continuous Improvement Phase

Phase 7 ensures that the improvements incorporated in Phases 1-6 are maintained and possibly even improved over time. This is where measuring performance is particularly important. Total Quality Management (TQM) techniques such as the Quality Function Deployment (QFD) are put into play in this phase.

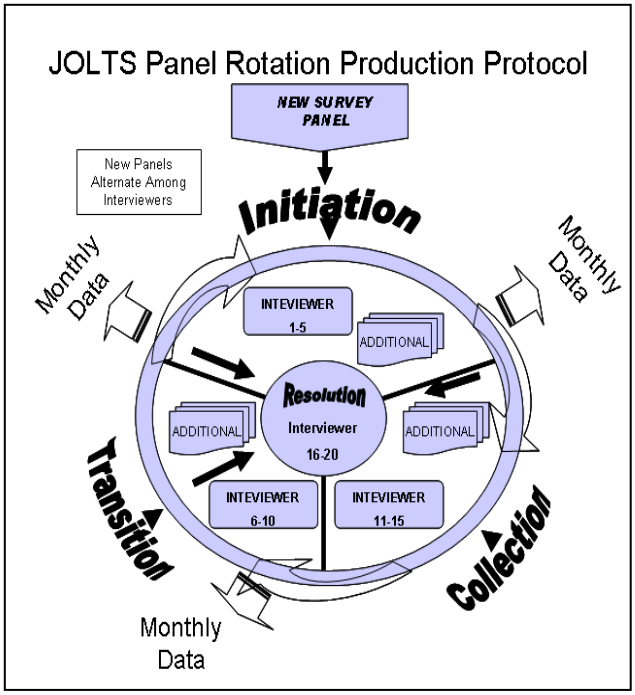
JOLTS PRPP Continuous Improvement Assessment:

During this phase, a number of steps were taken to ensure that the PRPP project remains on track. The most important of these steps was the development of a reporting system to provide easy access to KPI metrics.

The Panel Rotation Production Protocol is a much more dynamic production process; therefore, it requires a much more comprehensive set of reporting features than previously required. Reports are required to allow both management and interviewers to provide focus on the many individual and team production goals. To aid in this reporting requirement, a reporting system called “GamePlan” was developed. GamePlan allows reporting by team and by individual. GamePlan also

provides management earlier identification of production problems. With GamePlan, problems are more easily identified through a collection of detailed team reports.

Figure 3 – Panel Rotation Production Protocol Model



4. Conclusion

The Panel Rotation Production Protocol represents a radical change from traditional data collection center production management. The entire JOLTS DCC staff was moved to the Panel Rotation Production Protocol in early 2007. The first 2-month rotation occurred at the end of Mar 2007. During the first 4 months of full implementation of the Panel Rotation Production Protocol, the following results were reported:

1) Overall response rates were consistent with previous performance and improving.

2) Individual New Panel Response Rates improved 5-7%.

3) Individual New Panels were enrolled approximately 1 month earlier

4) The historical backlog of incomplete and older survey panels was reduced.

5) Activities such as Refusal Conversion, which were only performed sporadically, are now performed consistently each month.

6) Problem were identified and resolved much more quickly.

While the Process Regeneration Method Framework developed by Kettinger and Teng (2000) was primarily used in this case study as a framework to assess the implementation of the JOLTS DCC Panel Rotation Production Protocol, its use as a re-engineering framework also has been fully demonstrated by Kettinger and Teng (2000) [4]. In addition, this case-study further demonstrates that this is a very versatile framework and provides vast improvements over other models by introducing strategic linkages and change management in the overall process.

Considering today's competitive environment, which requires continuous improvements, it is imperative that any BPR framework ensures that projects are aligned with overall organizational strategy. The Process Regeneration Method Framework by Kettinger and Teng provides a much improved guide for improving the effectiveness of future BPR projects.

5. References

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