Title: An Evaluation of Re-engineering Projects in the Portland Metropolitan Area

Course:
Year: 1994
Author(s): M. Bayyigit, P. Gilbarg, J. Stein, J. Yu and W. Yuwana

Report No: P94035

Abstract: Re-engineering involves the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service, and speed. Based on a review of the literature regarding re-engineering, this paper develops a simple framework for evaluating whether an improvement project should be classified as re-engineering as well as the "quality" of the effort. This framework is applied to a sample of eight projects identified by their sponsors as re-engineering efforts.

AN EVALUATION OF RE-ENGINEERING PROJECTS IN THE PORTLAND METROPOLITAN AREA

M. Bayyigit, P. Gilbarg, J. Stein,
J. Yu, and W. Yuwana

EMP - P9435

EMGT 620

RESEARCH PROJECT

AN EVALUATION OF RE-ENGINEERING PROJECTS IN THE PORTLAND METROPOLITAN AREA

December 5, 1994

PORTLAND STATE UNIVERSITY

Team 6

Team Members:

Mete Bayyigit
Paul Gilbarg
John Stein
Jocelyn Yu
Wira Yuwana

EXECUTIVE SUMMARY

Re-engineering involves the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service, and speed. Based on a review of the literature regarding re-engineering, this paper develops a simple framework for evaluating whether an improvement project should be classified as re-engineering as well as the "quality" of the effort. This framework is applied to a sample of eight projects identified by their sponsors as re-engineering efforts.

I. INTRODUCTION

Business process re-engineering is certainly one of the most discussed subjects today. The publication of books on this topic is practically a growth industry in itself, and it is the subject of numerous seminars throughout the country. It has also proven to be a fertile area for consultants claiming to be experts in this field.

There are two reasons for the great attention being paid to re-engineering. The first reason lies in the increasingly competitive environment in which businesses must function. The second reason lies in the promises made in the literature and by the practitioners of re-engineering. It is claimed that conventional improvement projects, with their often modest incremental gains in performance, are not sufficient to guarantee survival in the current and future business environment. Instead, what is needed are dramatic, truly phenomenal gains in performance. Such gains, it is claimed, can only come from radically re-engineering business processes.

Radically re-engineered processes leading to dramatic improvements in performance is not a recent phenomenon although it would be easy to think so based on many of the current articles and books being written on the subject of re-engineering. History is filled with examples that we would today classify as re-engineering. One of the things that is new is the use of the term "re-engineering" applied to business processes.

Re-engineering was introduced into the business vocabulary by Michael Hammer in his 1990 Harvard Business Review article, "Re-engineering Work: Don't Automate, Obliterate."[1] A second thing that is new about re-engineering is the formal, analytical development that has occurred in terms of recommended methodologies for carrying out re-engineering. These methodologies often feature the central role of modern information technology as an enabler of business process re-engineering.

With all the current discussion about re-engineering, there appears to be a certain amount of "hype" that is occurring. To some extent, organizations are getting on the bandwagon and calling projects re-engineering that are really no more than conventional improvement efforts that are perhaps more extensive than usual. Labeling a project as re-engineering may be a way to get people excited, get upper-management's attention, and gain funding. In other cases, legitimate re-engineering-type efforts are being carried out, but in ways that are far less than effective.

The existing literature does not explore these issues. Instead, it provides detailed descriptions of methods for carrying out re-engineering projects, and case studies to illustrate the effective implementation of these methods. The general purpose of this study is to examine how re-engineering projects are actually being carried out. In particular, this study has two specific objectives:

1. To evaluate the extent to which projects identified by

their sponsors as re-engineering can actually be classified as re-engineering, rather than more conventional improvement efforts.

2. To evaluate the "quality" of such projects in terms of the methods used and the results achieved.

It should be emphasized that this is a descriptive study rather than a prescriptive one. It does not attempt to identify a "best method" for carrying out re-engineering efforts. Nevertheless, it may shed some light on practices that appear to be linked to successful re-engineering efforts.

II. THEORETICAL DISCUSSION

The theory underlying business process re-engineering will, for the purpose of this paper, be divided into two parts. Part A will be concerned with developing criteria for classifying projects as re-engineering. Part B will be concerned with identifying methods commonly associated with carrying out re-engineering projects.

A. Criteria for Classifying Projects as Re-engineering:

A natural way to develop criteria for classifying projects as re-engineering is to start with the definition of re-engineering offered by Hammer and Champy:

> **Re-engineering involves the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service, and speed.**[2]

Four key words in this definition help to further explain the nature of business process re-engineering:

- Fundamental: A business must answer the most fundamental of questions: Why do we do what we do? Why do we do it the way we do it? Asking these questions uncovers the assumptions that underlie the way business is conducted. These assumptions can be faulty or out of date.
- Radical: Re-engineering is about reinventing the business, not merely enhancing or improving it. Radical design means

disregarding existing structures and procedures and inventing completely new ways of accomplishing work.

- Dramatic: Re-engineering is about making major improvements, not about incremental change.
- Processes: A business process is an interrelated series of activities that utilizes inputs to create outputs of value to customers. Re-engineering is process-oriented, rather than narrowly focused on some of the individual activities that comprise the process.

Other authors emphasize that re-engineering involves "core" processes. These are processes central to the achievement of an organization's mission.

Hammer and Champy also identify characteristics that re-engineering business processes frequently have in common:

- Several jobs are combined into one.
- Workers make decisions.
- Work is sequenced in terms of what *needs* to follow what instead of being forced to follow a linear sequence.
- Processes have multiple versions, each one directed toward meeting a specific need or requirement.
- Work is performed where it makes the most sense rather than fitting it into rigid organizational boundaries.
- Checks and controls are reduced.
- Reconciliation is minimized.
- Hybrid centralized/decentralized operations are prevalent.

Hammer and Champy also provide examples of what is not re-engineering. Oftentimes knowing what something is not helps to

understand what it is.

- Re-engineering is not synonymous with automation. Automation may enable you to carry out certain activities faster or cheaper while basically leaving intact a fundamentally flawed process. Simply automating what you are already doing mechanically, without fundamentally rethinking the purpose and structure of the entire process, can be compared to "paving cow paths."
- Business process re-engineering is not synonymous with software re-engineering, which herein means rebuilding obsolete information systems with more modern technology. Again, software re-engineering may simply result in a more sophisticated computerized system which serves to automate an obsolete process.
- Re-engineering is not restructuring or downsizing. Re-engineering means doing more with less while downsizing usually means doing less with less.
- Re-engineering is not the same as "flattening" an organization. However, re-engineering can result in an organization having fewer levels.
- Re-engineering is not the same as total quality management (TQM).

Because it is so easy to confuse re-engineering with TQM, the matrix given below compares the two approaches to improvement along a number of dimensions.

Good comparison

Method / Dimension	TQM	Re-engineering
Improvement goals	Incremental improvements on a continual basis	Dramatic improvements over a relative short time frame.
Breadth of focus	Addresses narrowly defined work processes.	Addresses core processes that span entire business units.
Magnitude of organizational change.	Limited disruption to existing systems and structures.	Radical changes to existing systems and structures.
Intensity of team-member involvement.	Ongoing involvement on a part-time, as-needed basis.	Ongoing involvement for a specified duration on a full-time basis.
Dependence on information systems.	Information systems used for data collection and interpretation.	Information systems used as a central enabler of change.
Use of benchmark data.	Used after process improvement, to compare data.	Used at front end to assist with process selection.
Senior-management involvement.	Basically reinforcement oriented.	Hands-on, active involvement throughout the process.

Based on the previous discussion, the following criteria were used to distinguish business process re-engineering projects from more conventional improvement efforts:

Dimension	Criteria
Performance (i.e., quality, speed, cost, etc.)	Dramatic improvement in performance was expected rather than an incremental improvement.
Breadth of focus	A core process of the business was addressed from a cross-functional perspective rather than a more narrowly-defined work process.
Change to the process	A radical change was made to the process rather than a limited improvement.
Use of information technology	Information technology was used not to automate an existing process but to enable a new one.
Impact on the organization	Major changes to existing systems, policies, and procedures rather than limited changes.
Involvement of team members	Full-time (or nearly full-time) involvement of team members for a limited period of time rather than part-time involvement on a continuing basis.

B. Re-engineering Methods:

The literature is filled with recommended methods for carrying out business process re-engineering. Appendix A provides a sample of such approaches.

Based on a reading of the literature, the following elements were identified as common to many of the recommended methods. These elements were part of the basis for judging the "quality" of the re-engineering projects that were investigated:

Item: The existence of quality (performance) goals.

Description: Explicitly stated, measurable goals provide direction and motivation. They also provide a basis for judging the success of the improvement effort.

Item: The use of a structured (i.e., logical step-by-step) re-engineering process.

Description: The use of a structured process increases the likelihood that the improvement effort will be carried out in an efficient and effective manner. The alternative is usually

chaos.

Item: Identification of customer needs using a formal methodology such as Quality Function Deployment.

Description: Meeting customer needs is a key measure of process effectiveness. Using a formal methodology increases the likelihood of accurately identifying these needs and expectations.

Item: Carrying out a Situation Analysis.

Description: The purpose of a Situation Analysis is to understand the structure and performance of the existing process or system. It provides the basis for developing alternatives that can provide potentially dramatic improvements in performance.

Item: Use of process mapping.

Description: Process mapping is a graphical tool for helping to understand the structure and performance of a process. It can also be used to design improvements to the process.

Item: Cycle-time analysis.

Description: Cycle-time is the time required to produce an item from the beginning to the end of the process. Cycle-time analysis is used to determine this time, as well as the times required for individual steps within the process. It is obviously is an important method of analysis to carry out if one of the goals is to speed up the process.

Item: The use of benchmarking.

Description: Benchmarking is the process of comparing and measuring aspects of an organization against business leaders anywhere in the world. The objective is to obtain information that will help the organization take action to improve its performance. Benchmarking provides an external orientation to the improvement. It reduces the likelihood of "reinventing the wheel." It provides a basis for faster and better learning because comparisons are being made with "best in class" organizations which do not necessarily have to be competitors, or even in the same industry. This kind of comparison can lead to improvements in performance for greater than would occur if the organization remains focused only on its internal processes and structures.

Item: Use of a multifunctional team with a formal charter.

Description: A re-engineering effort, with its focus on achieving dramatic improvements in a core process, requires a team that possesses a broad base of knowledge and skills appropriate for the task. This can only be accomplished with a multifunctional

team (i.e., a team representing all significant parts of the process). Furthermore, a formal charter provides legitimacy and direction to the team.

Item: Use of a change plan to deal with anticipated resistance to change.

Description: A re-engineering effort results in significant changes affecting people throughout the organization. Such changes inevitably generate resistance, both overt and covert. The development of a change plan to deal with this resistance greatly increases the likelihood of success.

Item: Use of information technology in the re-engineering effort.

Description: Information technology plays an important role in many re-engineering efforts. The key role is not in terms of simply automating an existing process but instead to enable a radically redesigned process.

Item: Use of other forms of automation.

Description: Here again, utilizing more advanced machinery or equipment to perform certain operations within the process more efficiently is not the sign of a re-engineering process. Rather, the increased automation must provide the basis for a radically redesigned process.

Item: Involvement of suppliers.

Description: While this is not a necessary requirement for a re-engineering effort, suppliers often are significantly impacted by the results. Therefore, including suppliers in some appropriate way on the multifunctional team increases the likelihood of the success of the project.

Item: Use of consultants.

Description: Again, this is not a necessary requirement. Nevertheless, because of their inherent technical complexity, re-engineering efforts usually require the services of external consultants.

Ten Precepts for Success in Re-engineering[3]

1. Begin with strategic, value-added processes, i.e., processes that are critical to your customers and your business strategy.
2. Address support processes, i.e., processes the customer never sees but that have a positive impact on customer service.

3. Consider incorporating information technology in core, value-added processes.
4. Rethink the boundaries between your processes and those of your suppliers and customers.
5. Analyze in-house versus third-party options.
6. Rethink the benefit of centralization versus decentralization.
7. Consider segmenting process inputs and creating parallel process flows.
8. Resequence activities where possible to eliminate the need for separate subprocesses.
9. Rethink and relocate controls.
10. Simplify interfaces and information flows.

Why Re-engineering Projects Fail[4]

1. Unclear definitions.
2. Unrealistic expectations.
3. Inadequate resources.
4. Taking too long.
5. Lack of sponsorship.
6. Wrong scope.
7. Technocentricism, i.e., the belief that more technology is synonymous with business process re-engineering.
8. Mysticism, i.e., the belief that business process re-engineering results solely from unusual creative acts or experiences, rather than the disciplined use of specific tools and techniques.
9. Lack of an effective methodology.

III. METHODOLOGY

The framework developed in Part II of this paper was applied to a sample of eight projects identified as re-engineering by people who played important roles in the efforts. All of these projects took place within the Portland metropolitan area with one project involving a Canadian location. The initial identification of these projects was based upon the personal awareness of team members regarding their existence and general nature.

A detailed questionnaire was developed utilizing the framework described in Part II. Personal interviews with key participants in the projects were then carried out. The matrix that follows provides a summary description of the eight projects ultimately selected for further evaluation:

DESCRIPTION OF R NGINEERING PROJECTS

escription / Organization	Department or Process	Function	Purpose of Re-engineering Project
Financial Institution Project #1	Loan administration process	Administration of commercial real estate loans.	To reduce processing time for commercial real estate loans.
Financial Institution Project #2	Asset management process	Management of assets for individuals and corporations.	To eliminate duplication and inconsistency between sites.
Medical Center	Transportation services	Transport of patients, supplies, and equipment throughout the medical complex.	To eliminate duplication of transportation services while significantly reducing average response times.
Addictions Treatment	Information services	Provision of information services in support of all functions.	To implement an integrated information system for clinical services and billing.
State Agency	Project selection and development process	To select and effectively carry out transportation projects.	To design and implement the optimum project selection and development process.
Manufacturing	Information services	Provision of information services in support of all functions.	To design and implement an integrated information system for Portland and Canadian plants.
High Tech Company #1	Customer returns process	To provide feedback to customers on returned (perceived defective) components and make appropriate accounting charges.	Reduce cycle time. Eliminate paper quality records. Establish a single focal point for the customer.
High Tech Company #2	Information services	Provision of information services in support of all functions.	To implement an integrated information system to achieve improved inventory management, control of manufacturing, and other benefits.

Case summaries

IV. Results

A. Were the projects actually re-engineering?

The following observations are based on the summary of results appearing in the matrix on the next page.

- All of the projects were judged to be re-engineering, although two were viewed as small-scale in nature.
- In the case of the Addictions Treatment organization, the project did not radically change the process; but it did involve much more than simply upgrading software, and it had significant effects on job responsibilities and procedures.
- In the case of High Tech #1, there was a more profound change to the process, but the ultimate impacts on other aspects of the organization were more limited in nature.

Re-engineering Project Criteria

Criteria \ Organization	Financial Inst. Proj. # 1	Financial Inst. Proj. # 2	Medical Center	Addiction Treatment	State Agency	Manufac-turing	High Tech. # 1	High Tech. # 2
Anticipated dramatic improvement in perform-ance.	✓	✓	✓	✓	✓	✓	✓	✓
Core processes addressed from a functional per-spective.	✓	✓	✓	✓	✓	✓	(✓)	✓
Radical change made to the process.	✓	✓	✓	(✓)	✓	✓	✓	✓
Information technology used to enable a new process.	✓	✓	✓	✓	✓	✓	✓	✓
Major changes to existing systems, policies and procedures.	✓	✓	✓	✓		✓	✓	✓
Full-time involvement of team members.		✓			✓	✓		✓
Relative scale of re-engineering project	Large	Large	Large	Small	Large	Large	Small	Large

✓ indicates criteria satisfied. (✓) indicates weak satisfaction of criteria.

Results

B. What were the needs addressed by the projects?

The following observations are based on the summary of results related to needs addressed that appears in the matrix on the next page.

- Four out of eight projects identified the need to reduce costs as a major driving force behind the project. Nevertheless, costs were still identified as an important concern for the other projects.
- Seven out of eight projects identified the need to achieve better coordination between functions as an important driving force.
- Seven out of eight projects identified reduction in process time as an important need. This can be viewed as being closely related to the need for achieving better coordination between functions.
- All eight projects identified the need to improve customer service as a driving force. Closely related to this, seven out of eight projects identified responding to changing customer needs as a driver. Together, this indicates a strong customer orientation for these projects.
- Only two out of eight projects identified increased revenue as a driving force.
- Only two out of eight projects identified new government regulations as a driving force.

Re-engineering Project Needs

Needs \ Organization	Financial Inst. Proj. # 1	Financial Inst. Proj. # 2	Medical Center	Addiction Treatment	State Agency	Manufac-turing	High Tech. # 1	High Tech. # 2
Reduce costs.	✓	✓			✓	☑		
Increase revenue.	✓	✓						
Respond to changing customer needs.	☑	☑		✓	✓	✓	✓	✓
Match a competitor's new product or service.	✓	✓	☑	✓				
Reduce process time.	✓	✓	✓	✓	☑		✓	✓
Reduce defect levels.							✓	✓
Reduce customer complaints.				✓	✓	✓	✓	✓
Improve customer service.	✓	✓	☑	✓	✓	✓	☑	☑
Respond to or utilize new technology.				✓	✓	✓		✓
Respond to new government regulations.				✓	✓			
Achieve better coordination between functions.		✓	✓	☑	☑	☑	☑	☑

✓ indicates presence of need. ☑ indicates critical need.

Results

C. What methods were commonly employed by the projects?

The following observations are based on the summary of the results appearing in the matrix that follows.

- Information technology played a key role in all the projects.
- Process mapping was also utilized in all projects.
- Multifunctional teams, although not all full-time, were used in seven out of eight projects.
- Overall quality goals were identified in seven out of eight projects.
- A situation analysis was carried out in seven out of eight projects.
- Only four of the projects carried out a formal cycle time analysis, although seven had identified reduced process time as an important need.
- Only one of the eight projects developed a formal change plan for identifying and dealing with potential resistance.
- Six out of eight projects used external consultants with three using major accounting firms in this role. It should be mentioned that two of these latter three projects were very dissatisfied with the performance of the accounting firms. This was due to either the high cost relative to perceived benefits or a perceived bias in the analysis that was carried out. In both cases, upper-management overruled the choice of the team in selecting the consultants.

Re-engineering Pro_ ct Methods Utilized

Organization / Methods Utilized	Financial Inst. Proj. # 1	Financial Inst. Proj. # 2	Medical Center	Addiction Treatment	State Agency	Manufac-turing	High Tech. # 1	High Tech. # 2	Count
Overall quality goals identified.	✓		✓	✓	✓	✓	✓	✓	7
Structured process carried out.		✓	✓	✓	✓		✓	✓	6
Customers and their needs identified using a formal method.	✓	✓	✓	✓	✓	✓			6
Benchmarking.	✓	✓	✓		✓	✓		✓	6
Situation analysis.	✓	✓	✓	✓	✓	✓		✓	7
Process mapping.	✓	✓	✓	✓	✓	✓	✓	✓	8
Cycle time analysis.	✓		✓	✓		✓			4
Mulifunctional team.		✓	✓	✓	✓	✓	✓	✓	7
Change plan.								✓	1
Information technology.	✓	✓	✓	✓	✓	✓	✓	✓	8
Other forms of automation.			✓			✓			2
Suppliers.			✓		✓				2
Consultants.		✓DT	✓	✓	✓	✓AA		✓AA	6

✓ indicates formal application of method. DT is Deloit Touche. AA is Arthur Anderson.

Results

D. What results were actually achieved?

Financial Institution: Project #1.

- Efforts to date have enabled them to increase the number of loan closing by 85% within a certain time period while reducing staff by 10%
- The project is still in progress with a new loan management system yet to be installed.
- No parts of the re-engineering effort were viewed as going smoothly.
- It was felt that more time was needed up front developing the necessary recognition of the need for change and the commitment to accomplish it.

Financial Institution: Project #2.

- The only tangible accomplishment was the identification of seventeen "change imperatives." Specific action plans to implement were not developed.
- The major benefit identified was "increased credibility" with upper management which may provide the basis for obtaining additional resources in the future.
- The total commitment of employees involved was cited as a high point of the project.
- Again, the up-front visioning and setting of expectations was viewed as grossly inadequate.

Medical Center.

- A new organization structure was implemented based on the findings of the re-engineering team. It is expected that

this will provide the basis for anticipated dramatic changes to the transportation process.

- A reduction in average response time from forty to ten minutes was the primary objective of the project. Only limited progress has been made to date. It is anticipated that the implementation of new technologies such as pneumatic tubes and robotics will enable them to accomplish their objective.
- A very interesting characteristic of this project was the extensive use of computer simulation to explain existing performance and to redesign the process.
- In general, this project appeared to be carried out in a disciplined manner due to the professionalism of employees and the considerable expertise of the external consultant.

Addictions Treatment.

- The central objective of the project, the implementation of a data management system that effectively integrates clinical services, billing, and other functions, was successfully carried out.
- While most steps of the actual project went smoothly, the on-going operation of the system is encountering problems due to inadequate internal expertise.

State Agency.

- This project is still in its beginning phase so that no evaluation could be made of its results.
- The initial planning efforts appear to be very thorough

and disciplined.

Manufacturing.

- There was a substantial reduction in administrative employees, a major goal of the project.
- Inventory management was greatly improved, leading to an increase in inventory turns from 2.5 to 7.5.
- Also, a result of the project, taxes were reduced by $4 million.
- A major shortcoming of the project was its failure to appropriately alter the organization structure and simplify procedures.
- Again, another major failing was inadequate preparation at the front-end of the project. There was no real understanding of the nature of business process re-engineering, and too little commitment from the management hierarchy.
- Finally, the project took seven years to complete rather than the expected duration of two years.

High Tech Company #1.

All major objectives were fully or mostly achieved.

- The process was truly simplified, leading to a reduction in cycle time.
- The use of information technology eliminated the use of paper quality records.
- The time spent by QA "shuffling paper" from department to department and producing reports has been reduced from hours to minutes.

- To further improve customer service, new job responsibilities for customer liaison managers have been established.
- All parts of the project progressed fairly smoothly and according to schedule.
- One difficulty encountered was a fall-off in employee enthusiasm and resulting participation as the project continued.

High Tech Company #2.

All major goals were accomplished, including the following:

- The provision of disaster recovery for the accounting system.
- The ability to run multiple books.
- Improved inventory management.
- Better control of manufacturing processes.
- Improved information on which to base decision-making.
- All in all, this project should also be viewed as highly successful due to a well-planned, cross-functional team approach that made good use of consultants with the necessary experience and skills.

Results

E. What was the impact on employees?

The following observations are based on the summary appearing in the matrix following this section:

- Three out of eight projects will result in a significant reduction in the number of employees.
- All projects will result in changes in job

responsibilities.

- All projects will result in increased needs for training. Most of this training is related to using personal computers and other aspects of information technology.
- In five out of eight projects the impact on employee morale was described as "mixed." This means that while morale improved for some employees it declined for others . These changes were related to shifts in job responsibilities, fear of future loss of employment, and disenchantment with how the project was carried out.

Re-engineering Project Impact on Employees

Organization / Impact on Employees	Financial Inst. Proj. # 1	Financial Inst. Proj. # 2	Medical Center	Addiction Treatment	State Agency	Manufac-turing	High Tech. # 1	High Tech. # 2
Impact on number of employees.	⇩	⇩⇩⇩	Ø	⇧	⇧	⇩⇩	⇧	⇧
Impact on job responsibilities.	⇧⇧⇧	⇧⇧⇧	⇧⇧	⇧⇧⇧	⇧⇧⇧	⇧⇧⇧	⇧⇧⇧	⇧⇧
Impact on training requirements.	⇧⇧⇧	⇧⇧	⇧⇧	⇧⇧	⇧⇧⇧	⇧⇧	⇧⇧	⇧⇧
Impact on employee morale.	MIXED	MIXED	MIXED	MIXED	⇧	MIXED	Ø	MIXED

KEY TO TABLE ENTRIES

⇧ Increases are indicated by the ⇧ symbol:
⇧ = slight, ⇧⇧ = moderate and ⇧⇧⇧ = significant increases.

⇩ Decreases are indicated by ⇩ symbol:
⇩ = slight, ⇩⇩ = moderate, and ⇩⇩⇩ = significant decreases.

Ø No change is indicated by the Ø symbol.

MIXED MIXED indicates both increases and decreases simultaneously.

V. CONCLUSION

Certain general conclusions can be drawn from our empirical results. It was interesting that all eight projects initially identified by key participants as re-engineering turned out to be so according to our criteria. This was partially a result of our initial screening effort. But it also indicates that the key participants interviewed had a good understanding of what constituted a re-engineering project.

It is also clear that the actual conduct of these projects is decidedly mixed in quality. Three of the projects: Additions Treatment and High tech Companies 1 and 2 can be viewed as successful. Two of these were earlier identified as being of relatively "small-scale." One large-scale project, Medical Center, is being carried out very professionally and appears headed for success. Financial Institution Project #2 also seems headed for success if momentum can be maintained. The remaining three large-scale projects can at best be viewed as only partially successful to date.

While all the projects used an impressive array of tools, there definitely appears to be an underlying lack of organization in many of them. In particular, almost a universal complaint was about the lack of up-front preparation and commitment on the part of upper management. This almost guarantees that such efforts will fail in fundamental ways.

Finally, this study highlights both the positive and

negative rolls played by consultants in these re-engineering efforts. The improper use of consultants can be mitigated if participants are highly knowledgeable about the nature of these efforts, but no amount of expertise can counter the willingness of upper-management to select consultants on the wrong basis. And this will continue to happen as long as upper-management remains uncommitted, uninvolved, and not knowledgeable about what is required.

APPENDIX A

Examples of recommended "structured approaches" to business process re-engineering:

Source: Thomas H. Davenport[5]

Approach:

1. Identify Processes for Innovation
2. Identify Change Levers
3. Develop Process Visions
4. Understand Existing Processes
5. Design and Prototype the New Process

Source: Kodak Re-engineering Methodology[6]

Approach:

1. Identify Forces Driving Re-engineering
2. Initiate Project
3. Develop an Understanding of the Process
4. Design New Process
5. Implement New Process Across Business

Source: Daniel Morris and Joel Brandon[7]

Approach:

1. Identify possible projects
2. Conduct initial impact analysis
3. Select the effort and define the scope
4. Analyze business and work process baseline information
5. Define new process alternatives
6. Evaluate the potential costs and benefits of each alternative

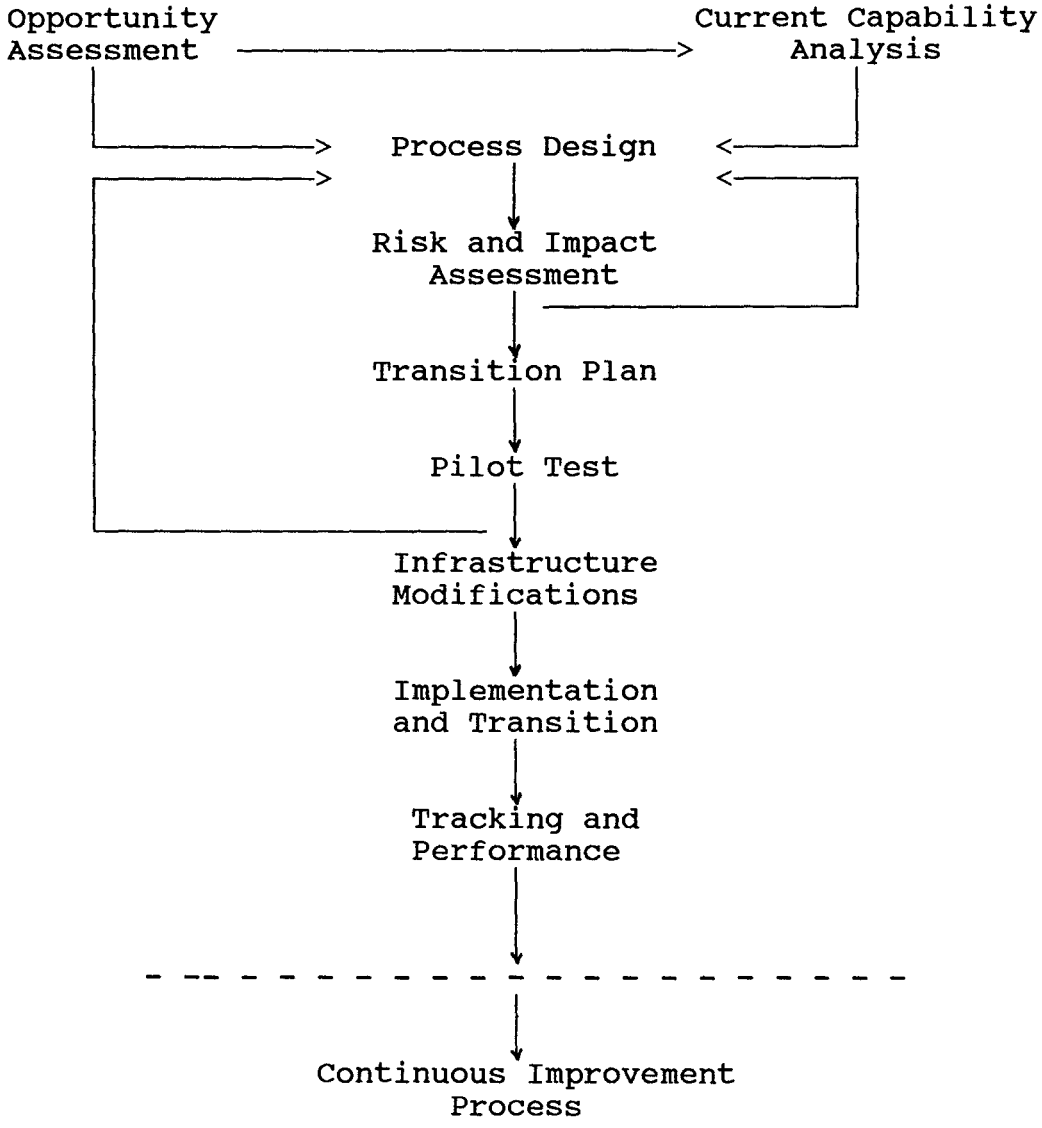
7. Select the best alternative

8. Implement the alternative selected

9. Update information

Source: Lon Roberts[8]

Approach:



Source: Manganelli and Klein[9]

Approach: The Rapid Re-Methodology

Stage	
1. Preparation	To mobilize, organize, and energize the people who will perform the re-engineering.
2. Identification	To develop and understand a customer-oriented process model of the business.
3. Vision	To develop a process vision capable of achieving breakthrough performance.
4. A. Solution: Technical Design	To specify the technical dimension of the new process.
4. B. Solution: Social Design	To specify the social dimension of the new process.
5. Transformation	To realize the process vision by implementing the process design produced in Stage 4.

APPENDIX B

RE-ENGINEERING PROJECT EVALUATION FORM

I. BACKGROUND DATA

1. Description of Organization:

2. Person(s) Interviewed:

Name	Position

RE-ENGINEERING PROJECT EVALUATION FORM

II. PROJECT NEED

Key Questions Addressed:

1. Why was the project undertaken?

2. What problems or needs were addressed by the project?

Category	Need	Comments
Financial	Need to reduce costs.	
	Need to increase revenue.	
Customer & Competitor Factors	Need to respond to changing customer needs and expectations.	
	Need to match a competitor's new product or service.	
	Need to reduce process time.	
	Need to reduce defect levels.	
	Need to reduce customer complaints	
	Need to improve customer service (be specific here).	
Technological	Need to respond to or utilize new technology.	
Regulatory	Need to respond to new government regulations	

RE-ENGINEERING PROJECT EVALUATION FORM

II. PROJECT NEED (continued)

Category	Need	Comments
Organizational	Need to achieve better coordination between functions.	
Other		

Other comments/notes:

RE-ENGINEERING PROJECT EVALUATION FORM

III. DESCRIPTION OF REENGINEERED PROCESS

1. Name of Process:

2. Purpose/Function of Process:

3. Problems Experienced By the Process:

4. Specific Objectives of the Reengineering Effort:

5. Who Lead the Reengineering Effort?

RE-ENGINEERING PROJECT EVALUATION FORM

IV. METHODS USED

Question	Yes	No	Comments
1. Were overall quality goals identified?			
2. Was a structured, step-by-step reengineering process carried out?			
3. Were customers and their needs identified using Quality Function Deployment or some other formal methodology?			
4. Was Benchmarking carried out?			
5. Was a Situation Analysis carried out?			
6. Was Process Mapping carried out?			
7. Was Cycle Time Analysis carried out?			
8. Was a Multifunctional Team with a formal charter utilized?			
9. Was a Change Plan developed to anticipate and deal with resistance?			
10. Did Information Technology play an important role in the reengineering effort?			

RE-ENGINEERING PROJECT EVALUATION FORM

VII. IMPACT OF THE REENGINEERING EFFORT ON EMPLOYEES

1. Impact on Number of Employees:

2. Impact on Job Responsibilities:

3. Impact on Training and Development Needs:

4. Impact on Employee Morale:

Notes

[1] M. Hammer, "Re-engineering Work: Don't Automate, Obliterate," Harvard Business Rev., July-Aug. 1990, vol. 68.

[2] M. Hammer and J. Champy, Re-engineering the Corporation, New York: Harper Business, 1993.

[3] R. L. Manganelli and M. M. Klein, The Re-engineering Handbook, New York: AMACOM, 1994.

[4] Ibid.

[5] Ibid.

[6] Institute of Industrial Engineers, Beyond the Basics of Re-engineering: Survival Tactics for the '90s, Norcross, Georgia: Industrial Engineering and Management Press, 1994.

[7] D. Morris and J. Brandon, Re-engineering Your Business, New York: McGraw-Hill, 1993.

[8] L. Roberts, Process Re-engineering: The Key to Achieving Breakthrough Success, Milwaukee, Wis: ASQC Quality Press, 1994.

[9] R. L. Manganelli and M. M. Klein.

Works Cited

Davenport, T. H. and J. E. Short, "The New Industrial Engineering: Information Technology and Business Process Redesign," Sloan Management Review, (Summer 1990), 11-27.