

Project Management Practices: Success versus Failure

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Abstract

Often, software managers have to monitor and manage many projects concurrently. Unfortunately, some projects were completed successfully but some were not completed on time, over budget or being cancelled. Some of the reasons of this project failure are: lack of user involvement, lack of planning, incomplete requirements, lack of resources, incorrect cost estimation, etc. There are many project planning and scheduling techniques to manage and help to ensure project success. Some of these techniques, however, may not be suitable for specific types of projects and thus, cause projects to fail. This paper discusses the issues involved in project success and failure, and presents the results of seven projects undertaken by the undergraduate students taking the course project management.

1. Introduction

Project is a temporary, one-time event that meets the following criteria: has a start and an end date; has schedule, cost, and quality constraints [1]. Project management is a set of tools, techniques, and knowledge that, when applied, helps to achieve the three main constraints of scope, cost and time. However, based on literatures, 52.7% of projects were not able to complete on time, and over cost and 31.1% not fulfilled the scope [2]. Nowadays, a lot of companies focus on project management, because the importance of project management comes from its focus on achieving the objectives that might be removed by the concentration of people doing their traditional daily work, the ongoing operations of any

organization. It is also important as it applies managerial process and has its tools that give managers a good opportunity to succeed in achieving our objectives. The following sections discuss the project classification, the factors that contributed to project success and resulted in project failure.

2. Overview

2.1. Project Classification

Basically, projects can be classified into three resolution types [2]:

- i. *Resolution Type 1 (project success):*
The project is completed on-time, on-budget, fulfilled all functions and features as specified.
- ii. *Resolution Type 2 (project challenged):* The project is completed and operational but over-budget, over the time estimate, and offers fewer functions and features than originally specified.
- iii. *Resolution Type 3 (project impaired):* The project is cancelled at some point during the development cycle.

Among these three types, the success rate was only 16.2%, while challenged projects accounted for 52.7%, and impaired (cancelled) for 31.1% [2].

2.2. Project success factors

According to the 1994 Standish CHAOS Report, there are the top 10 factors found in successful projects. These factors are shown in Table 1 below:

Table 1: Project success factors

Project Success Factors	%of Responses
User Involvement	15.9%
Executive Management Support	13.9%
Clear Statement of Requirements	13.0%
Proper Planning	9.6%
Realistic Expectations	8.2%
Smaller Project Milestones	7.7%
Competent Staff	7.2%
Ownership	5.3%
Clear Vision & Objectives	2.9%
Hard-Working, Focused Staff	2.4%
Other	13.9%

The three biggest contributors to project success are user involvement, exclusive support and project planning.

User involvement, the absence of user involvement is a major case of project failure. Even when delivered on time and on budget, a project can fail if it does not meet users' needs.

Excusive support influence the process and progress of a project and lake of exclusive input can put a project at a severe disadvantage.

Project planning, the key to a successful project is in the planning. Creating a project plan is the first thing you should do when undertaking any kind of project.

An analysis of the Chaos reports from the Standish Group over the last few years (as shown in Table 2) shows a steady improvement in project success based on the measures of “on budget, on cost, and to specification” [10]. Failures have also reduced significantly considering the number of projects has almost doubled in the 8 years of research. However, almost half of the projects remain “challenged.” According to the Standish Group, this means that these projects are over budget, over time or under specification [10].

Table 2: Chaos Report findings

	1994	1996	1998	2000	2002
Succeeded	16%	27%	26%	28%	34%
Challenged	53%	33%	46%	49%	51%
Failed	31%	40%	28%	23%	15%

2.3 Issues contributing to project management success

Research shows that when one or more projects were started, some important issues need to be considered to achieve project success [4, 5, 6]. Some of these issues that manager must pay serious attention to are shown in Table 3 [4].

Table 3: Issues for project management success

Issues	Description	Activities
Focus	Time, budget, quality.	Focused on achieving these broad goals.
Planning	Engage in is planning - detailed, systematic.	Planning and replanning.
Sense of urgency	Limited time, money, and other resources.	Regular status checks, meetings, and reminders are essential.
Use a time-tested, proven project life cycle	Use standard models to build into project plans.	Identify the best project life cycle.
Visualized and communicated in vivid detail	Avoid vague descriptions.	Focused in the same direction.
Evolve gradually in succeed	Costs, risks too much.	Maintain a controlled evolution.
Clear approvals and sign-off by sponsors	Clear approval points.	Examine and approve.
Correlated	Greater likelihood of project success.	Documented business need .
Fight for time to do things right	Do it right the first time.	Demonstration and why it is necessary?
Matched by equivalent authority	Project outcomes.	Acquire and coordinate resources, request .
Project sponsors and stakeholders must be active participants, not passive customers	Most project sponsors and stakeholders rightfully demand the authority to approve project deliverables, either wholly or in part.	Helping to define deliverables. Keeping the project moving.
Sold, and resold	Function as salesperson.	Periodically remind the business need .
Acquire the best people	The most skilled, experienced, best qualified.	Valuable team members.
Actively set priorities	Strategies, establishes criteria.	Leadership necessary to prevent multi-project log jams.

2.4. Causes of project failure

Projects fail mainly because of unable to plan and estimate correctly, or fail to implement the tasks according to plan or failure causes by human factor. The following are explanations of these three [2, 3, 4, 7, 8]:

2.4.1. Planning and Estimation factor.

- Initial cost and schedule estimates are not revised when more information becomes available as the project progresses.
- Plans are not used correctly or used to guide the project forward

2.4.2. Implementation factor.

- The project scope changes.
- Incorrect project methodology is used.
- Requirements have major changes.
- Testing and/or inspections are poorly done.

2.4.3. Human factor.

- Project managers are not trained to acquire the necessary skill base.
- The theory of project management is not put into practice.
- Communications are poor.

Among these reasons, the major causes of project failure are inappropriate use of project planning and scheduling methodology [3]. The next category of these from the Standish report deals with projects that proved to be “Challenged”, that is they were completed but were over budget, over time, or did not contain all functions and features originally required [11]. These challenged factors are shown in Table 4.

Table 4: Project Challenged factors

Project Challenged Factors	% of Responses
Lack of User Input	12.8%
Incomplete Requirements & Specifications	12.3%
Changing Requirements &	11.8%

Specifications	
Lack of Executive Support	7.5%
Technology Incompetence	7.0%
Lack of Resources	6.4%
Unrealistic Expectations	5.9%
Unclear Objectives	5.3%
Unrealistic Time Frames	4.3%
New Technology	3.7%
Other	23.0%

Finally, a list of all the top factors found in “Failed” projects is shown in Table 5.

Table 5: Project Impaired Factors

Project Impaired Factors	% of Responses
Incomplete Requirements	13.1%
Lack of User Involvement	12.4%
Lack of Resources	10.6%
Unrealistic Expectations	9.9%
Lack of Executive Support	9.3%
Changing Requirements & Specifications	8.7%
Lack of Planning	8.1%
Did not Need It Any Longer	7.5%
Lack of IT Management	6.2%
Technology Illiteracy	4.3%
Other	9.9%

3. Comparison

3.1. Project definition and team structure

A common way of looking at successes and failures is through the use of case studies. This case study based on different idea of 50 students taking the course Project Management. Gives Table 6 brief descriptions of seven projects undertaken by the second year undergraduate students taking the course WKES 2202: project management. Each team consists of Chinese, Malayan and Indian students according to legend.

Table 6: Project Titles and Description (Legend: A: Chinese, B: Malayan, C: Indian, D: Male, E: Female)

Team No.	Project title and description	Team structures (Team Members)					
		A	B	C	D	E	Tot.
1	Development of a system to assist in organizing a talk: Invite a professional speaker to give a talk on the topic “Teamwork” for all students. The functionalities of the system shall include dissemination of information about the talk; registration of participants; keep track of fee paid by participants; attendance of participants; printing of certificate, etc.	3	3	-	4	2	6
2	Development of animation frames: Organise a Malaysian Sign language workshop for students and develop animation frames to illustrate the signing of Malaysian Sign Language words using the graphical tool 3D Poser. Students are also required to find the meaning of each word, its antonym, synonym, a picture to illustrate the word, its pronunciation, and construct a sentence, etc.	5	2	-	5	2	7
3		5	2	-	5	2	7
4	Development of a computer-aided system to teach the course: Music Appreciation: Design and develop a system with multimedia futures to teach students taking the course: Music Appreciation. Development tools shall include Flash, VB or VB.NET, with interesting and attractive graphics and sound features.	4	3	-	5	2	7
5		6	2	-	3	5	8
6		3	4	-	3	4	7
7		-	6	2	3	5	8
Total No. of Students		26	22	2	28	22	50

3.2. Methodology

Case study is a research tool for evidence collection. The primary objective of this study is to investigate the causes of failure in software projects. The following research question provided a focus on seven projects undertaken by the second year undergraduates taking the course: WKES 2202 case studies Project Management:

What are the factors that impact on the success or failure of software projects?

A questionnaire was designed to investigate the research questions. The questionnaire consisted of two parts. Part A contains questions for gathering background information about the project and team members, etc. Part B contains close-ended questions about the project management factors. This questionnaire consists of 13 questions about project management practices and rates the factors on a scale of 1 to 5. So, maximum score is 5 and each chart consists of 2 parts: Questions that shown r question number; Rating that shown average of results.

1 and 2. These results shown viewpoints of team leader and team members about each question and scores' range are 0 to 5.

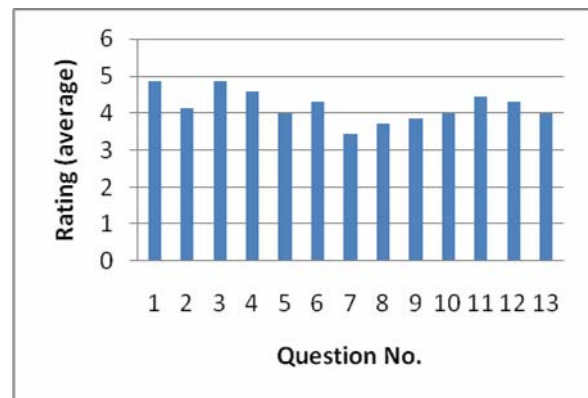


Figure 1: Team leaders' viewpoints

3.3. Outcomes of student projects

After project completion, all teams answer this questionnaire. This questionnaire requires the team leader to answer part A and the team members were requested to answer part B. Team leaders' viewpoints and Team members' viewpoints are shown in Figures

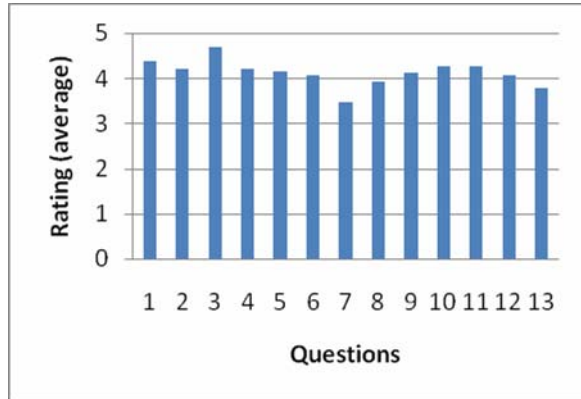


Figure 2: Team members' viewpoints

After analyze these result and make it normalize. Normalize causes that all scores put in range 0 to 100 and summation of all questions scores is 100. The final result is shown in Figure 3.

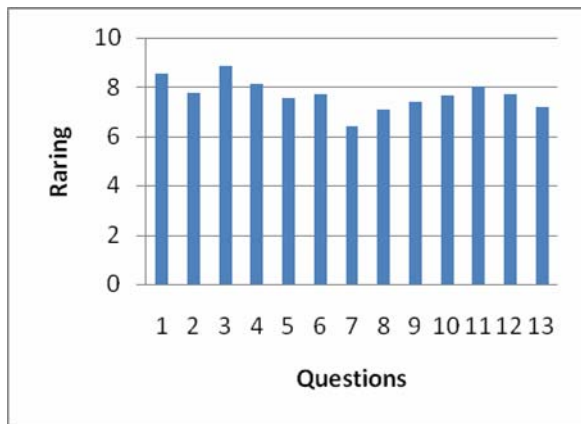


Figure 3: Make normalize of final result

Finally, comparison between “Standish Group” results on the top 10 factors found in project success and failure. So, final results in this research are shown below in Tables 7, 8, with Figures 4, 5 to comparison between Standish Group and Research Results.

Table 7: Comparison between Final result and Standish Group result (Success Factors)

No.	Project Success Factors	% of Responses	
		Standish Group result	Final result
1	User Involvement	15.9%	17.2%
2	Executive Management Support	13.9%	11.3%
3	Clear Statement of Requirements	13.0%	12.6%
4	Proper Planning	9.6%	14.8%
5	Realistic Expectations	8.2%	7.3%
6	Smaller Project Milestones	7.7%	9.4%
7	Competent Staff	7.2%	8.2%
8	Ownership	5.3%	4.1%
9	Clear Vision & Objectives	2.9%	3.4%
10	Hard-Working, Focused Staff	2.4%	4.6%
11	Other	13.9%	7.1%

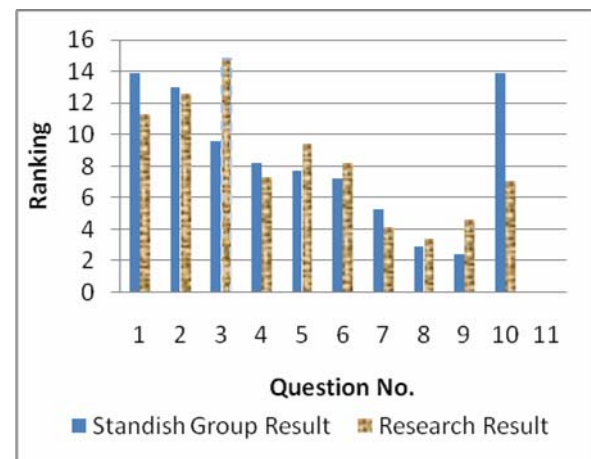


Figure 4: Comparison between Standish Group and Research Result (Project Succeed Factors)

Table 8: Comparison between Final result and Standish Group result (Failure Factors)

No	Project Failure Factors	% of Responses	
		Standish Group result	Final result
1	Incomplete Requirements	13.1%	10.8%
2	Lack of User Involvement	12.4%	7.7%
3	Lack of Resources	10.6%	8.2%
4	Unrealistic Expectations	9.9%	7.4%
5	Lack of Executive Support	9.3%	12.3%
6	Changing Requirements & Specifications	8.7%	9.6%
7	Lack of Planning	8.1%	14.8%
8	Didn't Need It Any Longer	7.5%	9.3%
9	Lack of IT Management	6.2%	5.6%
10	Technology Illiteracy	4.3%	2.7%
11	Other	9.9%	11.7%

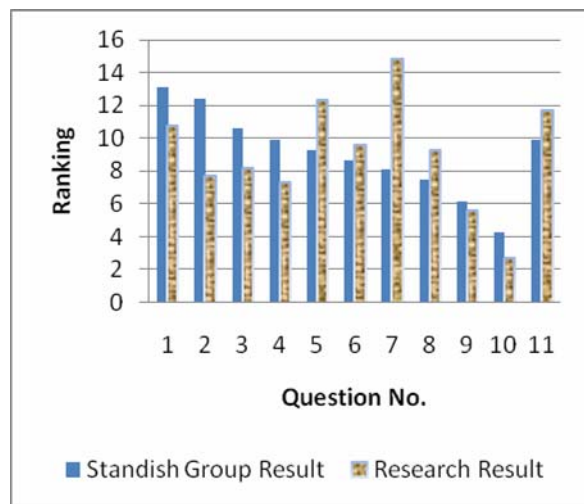


Figure 5: Comparison between Standish Group and Research Result (Project Failure Factors)

According to this study some of these factors matched with the Standish Group results. On the other hand, some of these factors are same as Standish Group results, but this is normal, because all projects and project conditions are not similar. Also these results are shown, some of these factors are very important, Such as planning, user involvement, team leader, etc.

4. Conclusion

This paper discusses about project failure and success, and the major issues in this area. The main goals of this research are to recognize project failure and how manager can reduce these failures by introduce success factors that shown in this paper.

There are many ways that causes large software systems to fail. But, there are only very few ways of making them succeed. It is interesting that project management is the factor that tends to push projects either to the path to succeed or to fail. Large software projects that are incompetent in quality control and skimpy in project management tasks are usually doomed to either outright failure or massive overruns. Thus, improve our knowledge about the causes of project failure is necessary.

Among the most important software development practices leading to success are those of planning and estimating before the project starts, absorbing changing requirements during the project, and successfully minimizing bugs or defects. Successful projects always excel in these critical activities: planning, estimating, change control, and quality control. By contrast, projects that run late or fail typically had flawed or optimistic plans, had estimates that did not anticipate changes or handle change well, and failed to control quality. According to the case studies to achieve project success, need to use new technique based on planning and scheduling. Because most failures are related to planning and scheduling techniques, therefore finding the relation between project planning and project success is very important. Focus on the techniques for collaborate planning issues with project execution is necessary. In fact, managers need to use dynamic planning and scheduling techniques in order to achieve project succeed.

5. References

- [1] Charvat, J. Project Management Methodologies: Selecting, Implementing, and Supporting Methodologies and Processes for Projects. 2003 .John Wiley & Sons, Inc. Hoboken, New Jersey.
- [2] Clancy, T. The Standish Group, Retrieved Feb 20, 2008 from <http://www.projectsmart.co.uk/reports.html> , Chaos report, 1995.
- [3] Coley, Phil. Why project fail. Retrieved Feb 27, 2008 from www.coleyconsulting.co.uk. Project fail .2007.
- [4] Boettcher, Jo A. Ten Steps To IT Project Success. Retrieved Feb 29, 2008 from www.projectkickstart.com/downloads/IT-project-success.cfm. Project Management. 2007.

[5] Greer, M. 14 Key Principles for PM Success. "*Chapter 6: Planning and Managing Human Performance Technology Projects*," Handbook of Human Performance Technology, San Francisco, Jossey-Bass, 1999 . Retrieved Feb 29, 2008 from <http://www.michaelgreer.com>.

[6] Aaron, J. S. James, J. Improving PM: Linking Success Criteria to Project Type . Center for the Development of Technological Leadership, University of Minnesota, MN R. Max Wideman, Fellow PMI, AEW Services, Vancouver, BC. AEW Services, Vancouver, BC ©200.

[7] Phillips, J. Project management professional study guide. 2en Edition, McGraw Hill, San Francisco, California, 2006.

[8] Pinto, J. K. and Mantel, S. J. The Causes of Project Failure. IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT, VOL. 37, NO. 4. NOVEMBER 1990. Pp.269-276.

[9] Wasileski, J.S. Learning Organization Principles & Project Management. *SIGUCCS'05*, November 6–9, 2005, Monterey, California, USA. Copyright 2005 ACM 1-59593-173-2/05/0011

[10] Brock, S. A Balanced Approach to IT Project Management. Proceedings of SAICSIT, ACM 2003, Pages 2 –10.

[11] Frese, R. Project success and failure: what is success, what is failure, and how can you improve your odds for success?, Retrieved March 27, 2008 from <http://www.umsl.edu> , 2003.

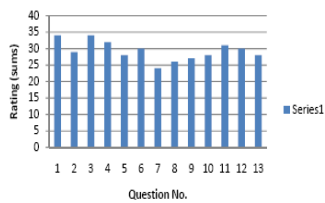
Appendix 1

Appendix

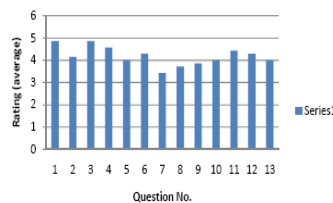
Analyze of team leaders' viewpoint

Team leader No.	#1	#2	#3	#4	#5	#6	#7	Sum	Average
Q1	5	5	5	5	5	5	4	34	4.857143
Q2	5	4	4	3	5	4	4	29	4.142857
Q3	5	5	5	5	5	5	4	34	4.857143
Q4	4	5	5	4	5	4	5	32	4.571429
Q5	4	4	5	3	5	3	4	28	4
Q6	4	4	5	5	5	3	4	30	4.285714
Q7	5	2	3	3	4	2	5	24	3.428571
Q8	4	2	3	5	5	4	3	26	3.714286
Q9	4	4	4	4	5	3	3	27	3.857143
Q10	4	3	4	5	5	3	4	28	4
Q11	5	3	5	4	5	4	5	31	4.428571
Q12	4	4	4	4	5	4	5	30	4.285714
Q13	4	4	5	4	5	2	4	28	4
Sum	57	49	57	54	64	46	54	381	4.186813
Average	4.384615	3.769231	4.384615	4.153846	4.923077	3.538462	4.153846	4.186813	

Team leaders' viewpoint
Summation



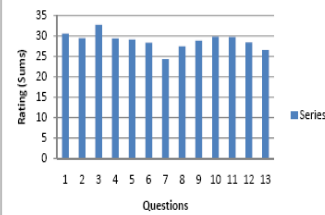
Team leaders' viewpoint
Average



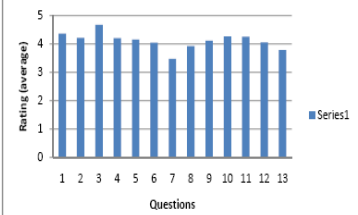
Analyze of team members' viewpoint

Team members No.	#1	#2	#3	#4	#5	#6	#7	Sum	Average
Q1	5	4	5	5	4.57	4	3	30.57	4.367143
Q2	5	3.75	3.75	4	5	5	3	29.5	4.214286
Q3	5	4.75	5	4	5	4	5	32.75	4.678571
Q4	4	4.75	5	3	4.71	4	4	29.46	4.208571
Q5	4	4.25	5	4	4.85	3	4	29.1	4.157143
Q6	4	3.5	4	4	4.85	3	5	28.35	4.05
Q7	5	1.75	2.75	3	4.85	2	5	24.35	3.478571
Q8	5	3	3.75	4	4.71	4	3	27.46	3.922857
Q9	5	4	4	4	4.85	3	4	28.85	4.121429
Q10	4	4	4	5	4.85	4	4	29.85	4.264286
Q11	5	3.5	4	5	4.28	4	4	29.78	4.254286
Q12	4	4	4	4	4.42	4	4	28.42	4.06
Q13	5	3.75	4.5	3	4.28	3	3	26.53	3.79
Sum	60	49	54.75	52	61.22	47	51	374.97	4.120549
Average	4.615385	3.769231	4.211538	4	4.709231	3.615385	3.923077	4.120549	

Team members' viewpoints
Summation



Team members' viewpoints
Average



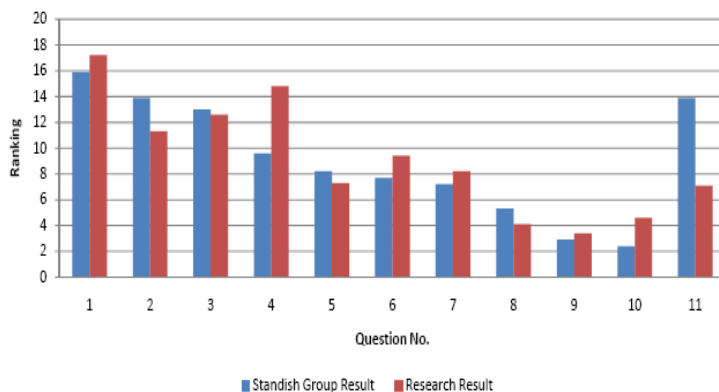
Comparison between Standish Group and Research Result

Project Success Factors	Standish Group	Research result
1 User Involvement	15.9	17.2
2 Executive Management Support	13.9	11.3
3 Clear Statement of Requirements	13	12.6
4 Proper Planning	9.6	14.8
5 Realistic Expectations	8.2	7.3
6 Smaller Project Milestones	7.7	9.4
7 Competent Staff	7.2	8.2
8 Ownership	5.3	4.1
9 Clear Vision & Objectives	2.9	3.4
10 Hard-Working, Focused Staff	2.4	4.6
11 Other	13.9	7.1

Comparison between Standish Group and Research Result

Project Failure Factors	Standish Group	Research result
1 Incomplete Requirements	13.1	10.8
2 Lack of User Involvement	12.4	7.7
3 Lack of Resources	10.6	8.2
4 Unrealistic Expectations	9.9	7.3
5 Lack of Executive Support	9.3	12.3
6 Changing Requirements & Specifications	8.7	9.6
7 Lack of Planning	8.1	14.8
8 Didn't Need It Any Longer	7.5	9.3
9 Lack of IT Management	6.2	5.6
10 Technology Illiteracy	4.3	2.7
11 Other	9.9	11.7

Comparison between Standish Group and Research Result



Comparison between Standish Group and Research Result

