

# **Numerical Analysis for NEDO Projects Follow up Monitoring**

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(1) Overview of Follow-up Evaluation

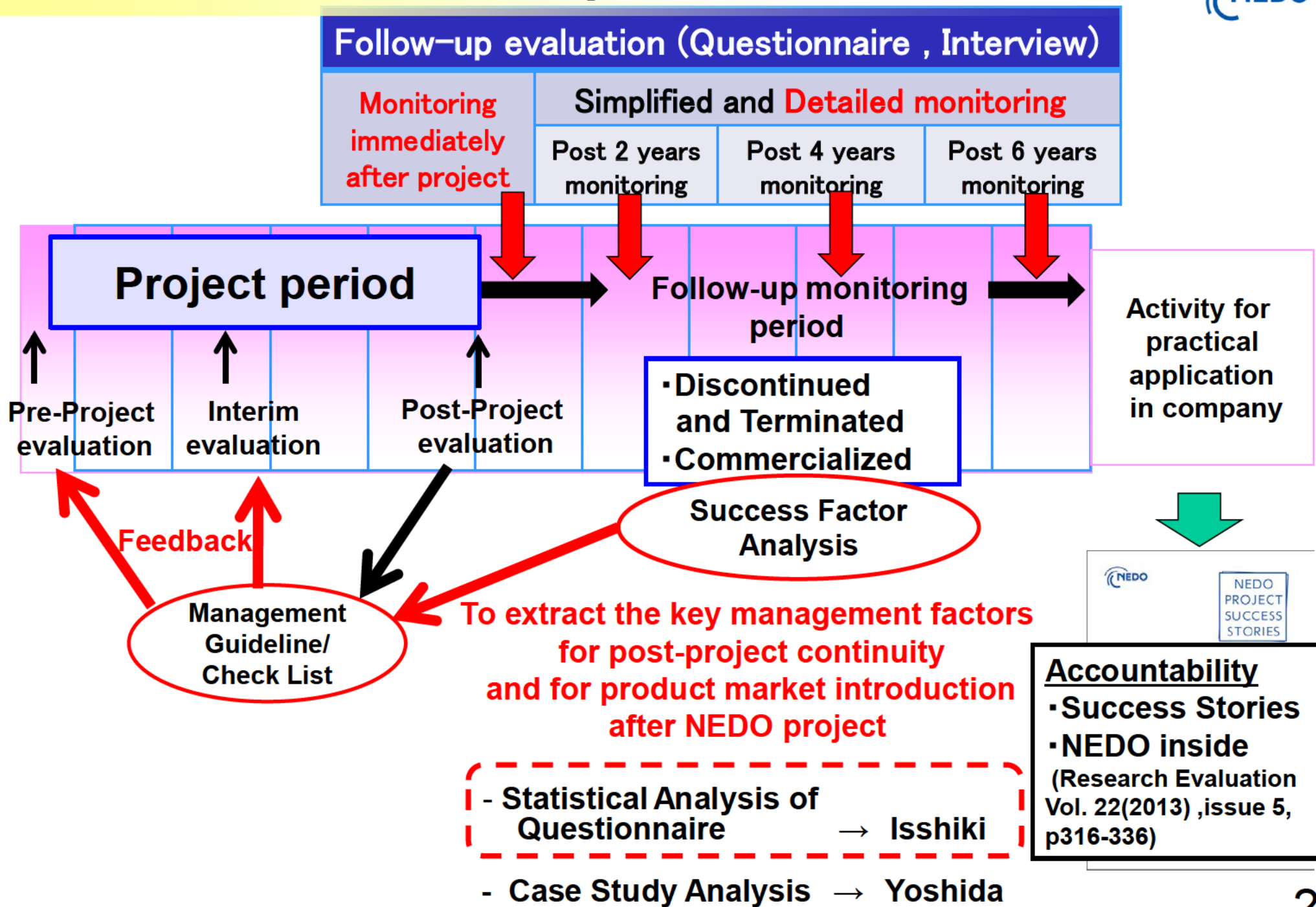
(2) Method

(3) Results

- Key Management Factors influencing the Achievement
- Key Management Factors influencing the decisions
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# Overview of Follow-up Evaluation



## Questions

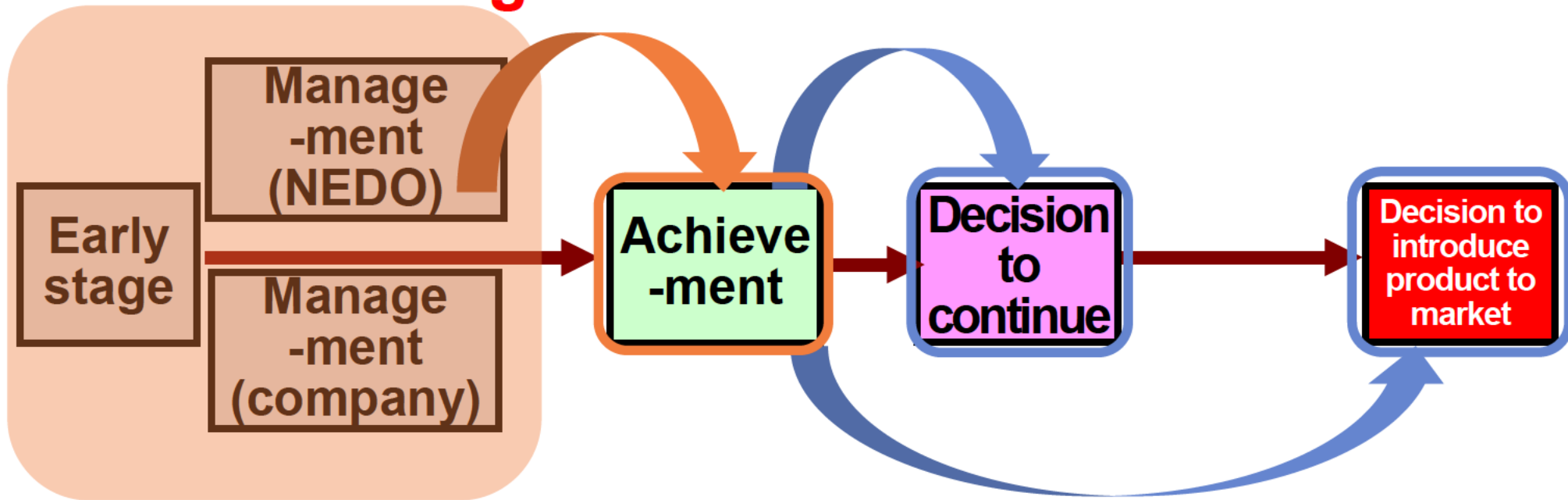
- Sent the questionnaire to 302 companies
- Response ratio was over 99%

- (a) Characteristics of NEDO project and a company  
(e.g. Project structure, Product Areas)
- (b) Status and expectations at participation in company (Early stage)  
(e.g. **Expectations**, R&D phase before project, Involvement of top management or business division)
- (c) Status during a project (NEDO's and company's management items)  
(e.g. Data volume obtained , IP rules, Implementation of surveys, Frequency of meetings with business division or collaborators)
- (d) R&D status and achievements immediately after project end  
(e.g. **Achievements**, **Continuation or Discontinuation of R&D**)
- (e) R&D status after project (once every two years)  
(e.g. **Present status of R&D**, Derived technologies and technology transfer, New Patents/ Papers/Awards)

## Achievements

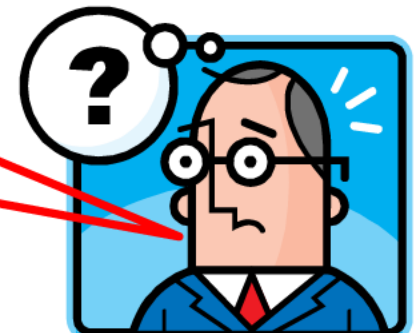
1. Resolution of Technical Issues
2. Resolution of Cost Issues
3. Acceleration of technology/ product development
4. Promotion of technology Standardization
5. Technology improved due to Collaboration with other organizations
6. Increased Presence in your company /business field
7. Winning R&D Funds Obtained in your company
8. Risk Dispersion (Implementation of high-risk R&D)
9. Human/systematic Network Building with other organizations
10. Human Resource development (researcher capability increase)
11. Synergistic Effects

## Multiple linear regression



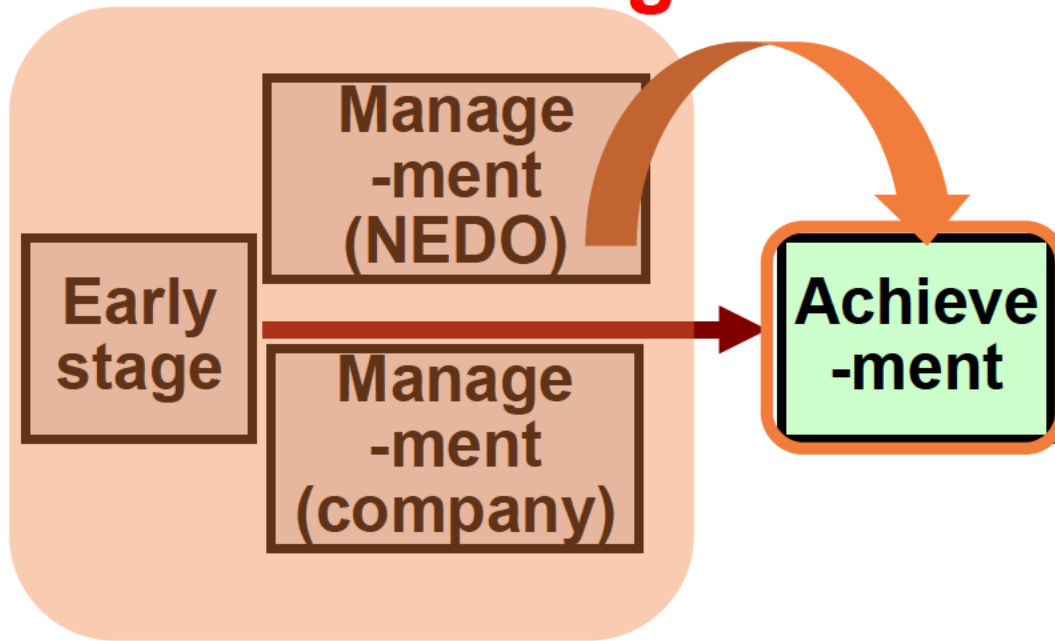
## Binominal logistic regression

**What are the key factors??**

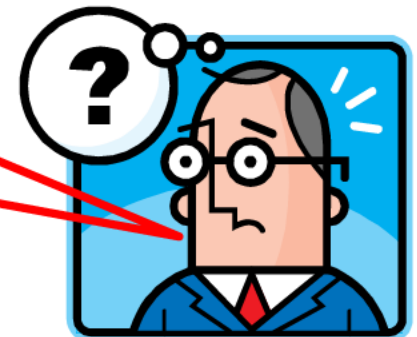


# Results of Management Factors contributing to the Achievement

## Multiple linear regression



**What are the key factors??**



# Results of Management Factors contributing to the Achievement



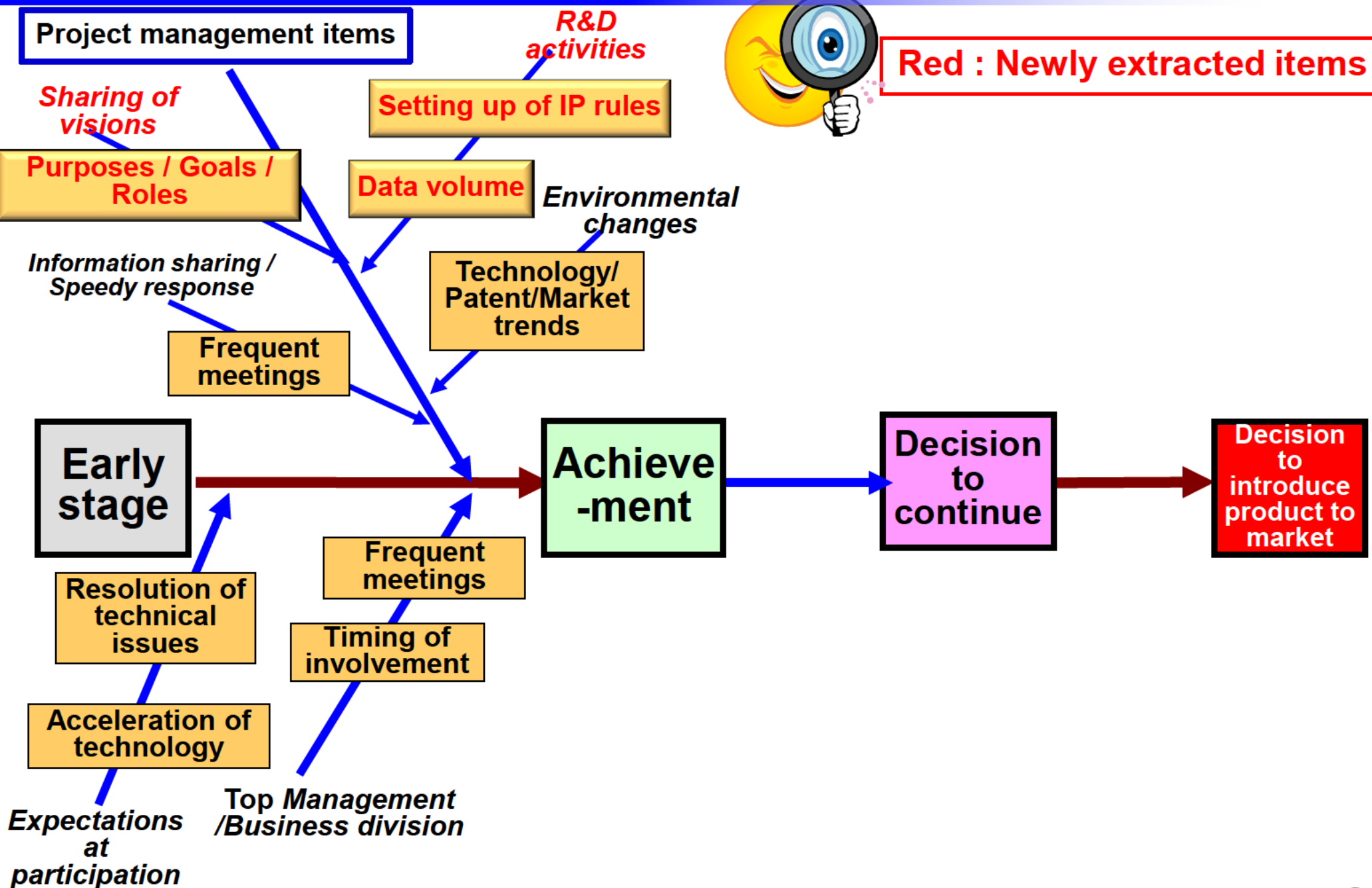
<Explanation Variables (41 items) >

- Expectations at participation(company) (11 items)
- Management items(NEDO) (17 items)
- Management items (company )(13 items)

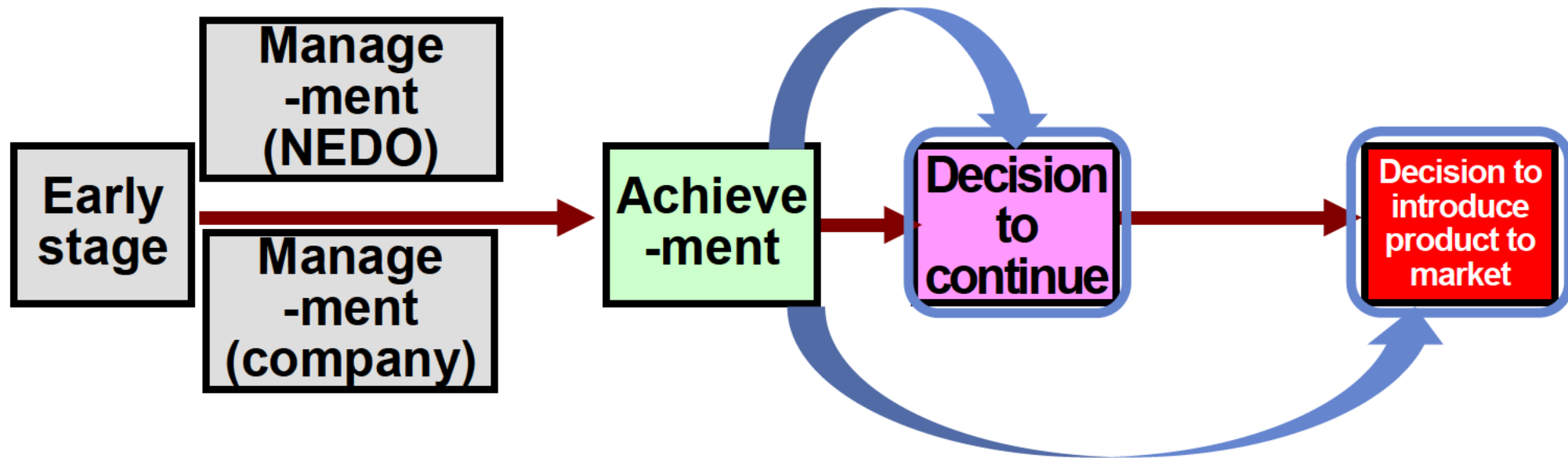
Response Variable (Achievement)	Factor 1	Factor 2	Factor 3
Technical Issues	Large volume of data	Clear role assignment	
Cost Issues			
Acceleration	Large volume of data	Frequent meetings with customers	
Synergistic Effects	Early awareness of synergistic effects	Management personnel involvement	Existence of IP rules
Network Building	Existence of IP rules	Large volume of data	Early awareness of synergistic effects
Collaboration	Existence of IP rules	Large volume of data	Obtained acceleration fund
Presence	Large volume of data	Frequent meetings with business division	
Risk Dispersion	Large volume of data		
R&D funds obtained	Large volume of data	Frequent meetings with other companies	
Standardization	Clear purposes		
Human resource	Large volume of data		



# Results of Management Factors contributing to the Achievement

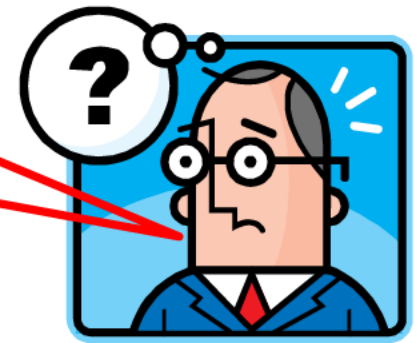


# Results of Management Factors contributing to the decisions



**Binominal logistic regression**

**What are the key factors??**



# Results of Management Factors contributing to the decisions



## <Explanation Variables (17 items) >

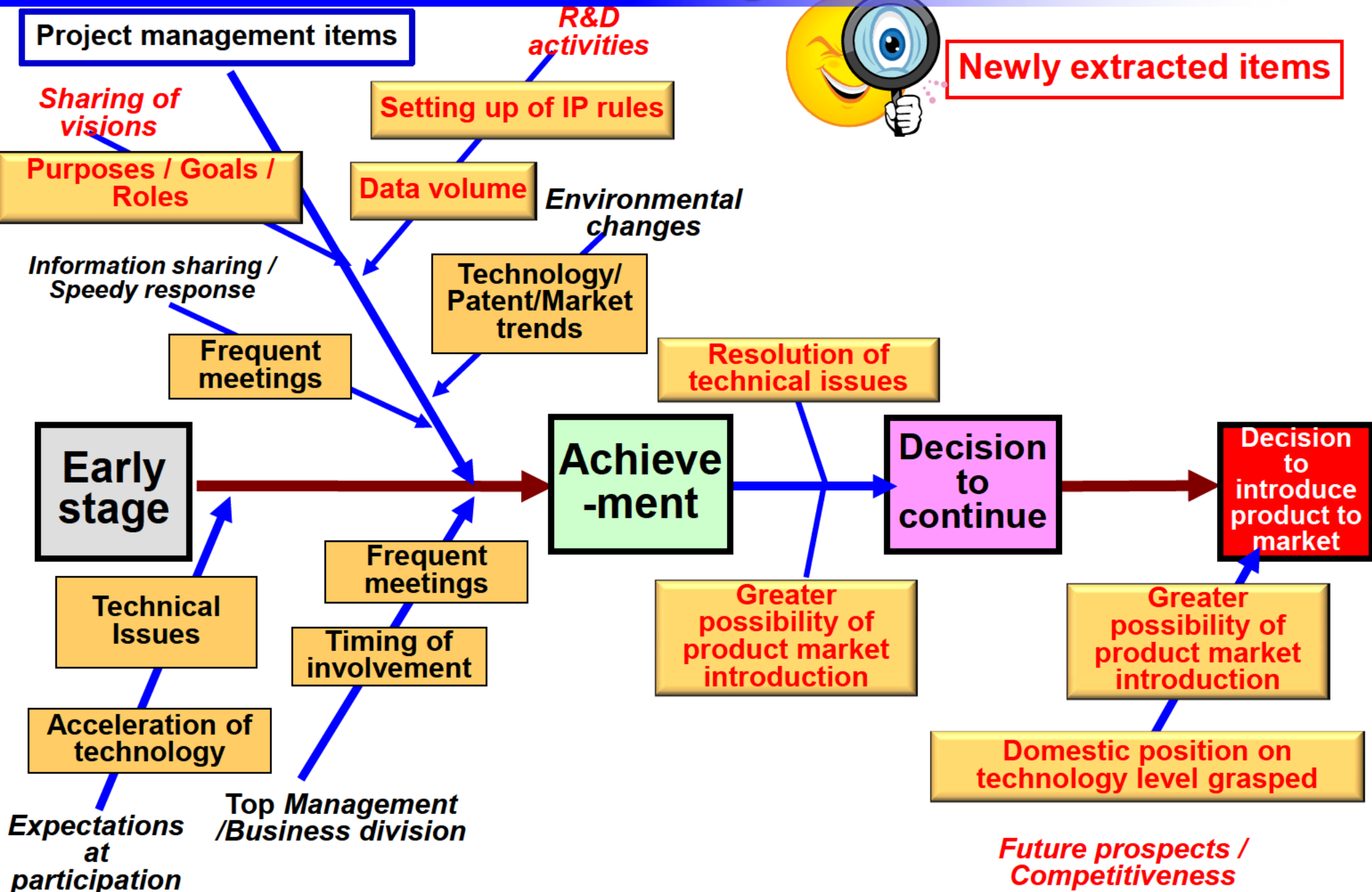
- Achievements (11 items)
- Changes in possibility of product market introduction etc. (3 items)
- Technology level position (3 items)

Response Variable	Primary Factor	Secondary Factor
Decision on continuation/ discontinuation	Greater possibility of product market introduction	Resolution of technical issues

Response Variable	Primary Factor	Secondary Factor
Decision on product market introduction/ termination	Greater possibility of product market introduction	Domestic position on technology level grasped

Contribution rate of “Greater possibility of product market introduction”: Approx. 30%

# Results of Management Factors contributing to the decisions



# Results of Management Factors influencing the decisions on continuation (Characteristics-based analysis)

Combining the data from 2011 and 2012

## When Categorized by Business Size

	Factor 1	Factor 2	Factor 3	N
Capital > \$100 million	Resolution of technical issues	Technology level position enhanced	Presence enhanced	180
Capital < \$100 million	Resolution of cost issues	Technology level position enhanced		106

## When Categorized by Project Structure

	Factor 1	Factor 2	Factor 3	N
Collective Research	Acceleration of technology/ product development	Technology level position enhanced	Presence enhanced	42
Decentralized Research	Technology level position enhanced	Resolution of technical issues		185
Combination of the above two items	Resolution of cost issues			102

# Results of Management Factors influencing the decisions on continuation (Characteristics-based analysis)

## When Categorized by Product Areas

	Primary Factor	Secondary Factor	Tertiary Factor	N
Materials	Domestic position on technology level grasped	Technology level position enhanced	Acceleration of technology/ product development	76
Components / Parts	Resolution of technical issues	Technology level position enhanced		86
Mechanical equipment	Resolution of cost issues	Standardization facilitated		51
Process	Acceleration of technology/ product development			30
System	Technology level position enhanced			70

## Summary

- Significant management factors contributing to the Achievement and decisions were extracted.
- It was elucidated that “Possibility for product market introduction” was the most significant factor for decisions both on continuation and product market introduction.
- Increased number of samples enabled attribute-based analyses and as a result, it was found that key factors vary according to business/project characteristics.

## Subject of future investigation

- **Clarify causal relationships between key factors** using path analysis
- **Enhance the precision of characteristic-based analyses** such as analyses based on project characteristics and business areas



**Thank you  
for your attention**

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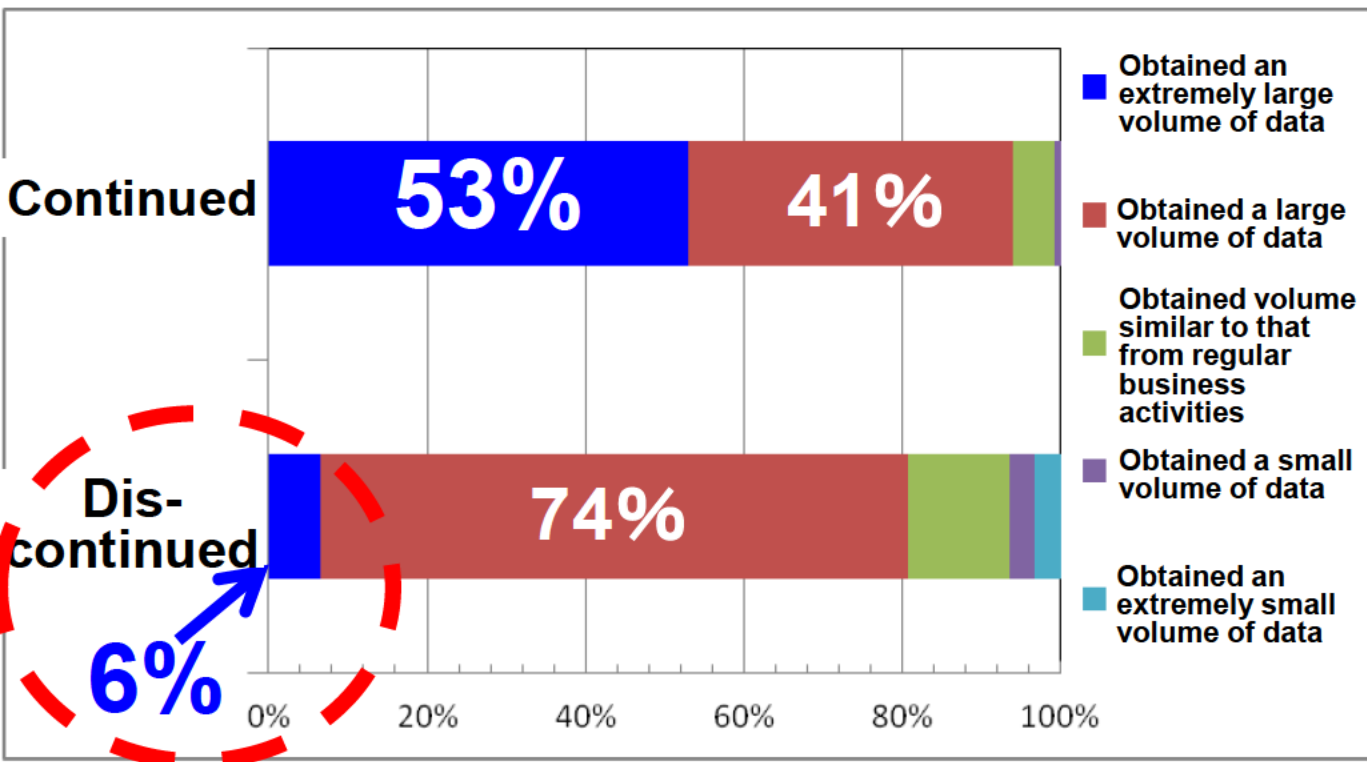


# Reference

# Results of Management Factors influencing the decisions

## Volume of Experimental Data Obtained during Project

Marked difference in the item “Obtained an extremely large volume of data”



### Obtained Technology



- 1<sup>st</sup>: Assessment technology (25%)
- 2<sup>nd</sup>: Data analysis technology (19%)
- 3<sup>rd</sup>: Dissection technology (16%)

**-Mechanism – clarification**  
**-Scale up**  
**-Reliability – enhancement**



# (Reference) Definitions of Stages

Follow-up monitoring clarifies status based on the definitions below.

	Stage	Definition	Implementing body	Details	Expected output
0	(Terminated)	Termination of continuing activities		Continuing activities to leverage project results as well as to attain project targets are terminated (same as for the case in which project results are transferred to different areas than for the original purpose).	Determined termination of research themes
1	Research	Fundamental/elemental research	R&D sector	Novelty of the attained phenomena as well as the progress of performance are identified.	In-company reports, patents, dissertations
2	Technology development	Research taken into consideration practical application/commercialization	R&D sector	Advantages of the technologies/costs as well as issues in mass production technologies, etc. are identified through the creation of free samples and marketing research for users.	Research results, etc. which can be criteria for practical application/commercialization
3	Practical application	Establishment of technologies for practical application/mass production	Business operating sector	In-company approval for practical application, manufacturing of test models, sales permission/inspection by responsible governmental agencies/regulatory organizations, capital investment to launch products in the market, etc.	Non-free samples, mass production trials, production line placement and cost calculation, etc.
4	Commercialization	Transactions in the market	Business operating sector (Sales sector)	(The status capable of business transactions in the market)	Product lineup (shown in catalogues), continuous sales, etc.

**“Average stages” at project completion =**

The stages in succeeding years after project completion identified by follow-up monitoring are ranked by numbers according to the above list (from 0 to 4) and averages for projects are calculated.