

IT Barrier Stands in the Way of Corporate Change

**—Inadequate IT management impedes review of
business strategy—**

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These days, many companies face the need to embark on major business change. While information technology (IT) can act as a means of accelerating business change, it can also stand in the way of change. Whenever IT cannot change at the same pace as business does, IT constitutes a “barrier to change.”

This paper follows on from “Corporate Change and the Use of IT,” NRI Papers, No. 178, published on October 1, 2012, and examines the area(s) of business strategy that companies are trying to review and the change that they are implementing. This paper also clarifies how IT has been contributing to the achievement of the desired effects through change. Based on these analytical findings, this paper proposes the use of IT that contributes to corporate change.

In December 2012, Nomura Research Institute (NRI) conducted a questionnaire survey of leading companies in Japan and received responses from 603 companies. The results of this survey revealed a problem in that “in spite of their recognition of the need for reviewing business strategy, many companies have actually been unable to do so.” It was also found that the reason behind these companies not being able to take a step forward in reviewing business strategy was inadequacy in terms of both “change management” and “the use of IT for change.”

Of these two impeding factors, this paper focuses on the insufficient use of IT. The survey results confirmed that companies that were unable to review their business strategy were similarly unable to achieve the desired effects through the use of IT, and that the root cause behind their inability was attributable to inadequate IT management. Merely implementing perfunctory IT management will not enable companies to surmount the “IT barrier.” Instead, they should adopt a more proactive approach that goes one step beyond their previous efforts.

I Overall Structure of Corporate Change and the Use of IT

1 Overall structure of corporate change and the use of IT

The author’s thoughts on the use of information technology (IT) that contributes to corporate change remain the same as those explained in “Corporate Change and the Use of IT,” NRI Papers, No. 178, published on October 1, 2012. The overall structure of “corporate change and the use of IT,” which was established by referring to literature based on studies and research conducted in the past, is as follows. The “IT barrier to corporate change” that is examined in this paper is based on this overall structure (Figure 1), which consists of the following hypotheses.

- (1) Given drastic changes in the business environment, companies must review a variety of business strategies.
- (2) Companies that have reviewed their business strategy are implementing change at many different levels.
- (3) Companies that have reviewed their business strategy are performing change management in order to implement change.
- (4) Companies that have reviewed their business strategy are using IT in order to implement change.

The following sections outline Items (1) to (4).

2 Four key areas for review of business strategy

When creating a business strategy, a company generally determines options for the strategy based on “appraisal of the external situation” and “appraisal of the internal

situation.”¹ The external situation involves analysis of customers and competition, while the internal situation relates to analysis of a company’s strengths and weaknesses.

One way of determining the external situation is to analyze customers and competition, which means that the external situation can be determined based on the market structure and the industrial structure. For example, five competitive forces are evaluated: threat of new entrants, bargaining power of suppliers, bargaining power of buyers, threat of substitute products or services and intensity of rivalry among existing firms. Based on the results of this evaluation, one of the following three generic competitive strategies is chosen: “cost leadership,” “differentiation” or “focus.”²

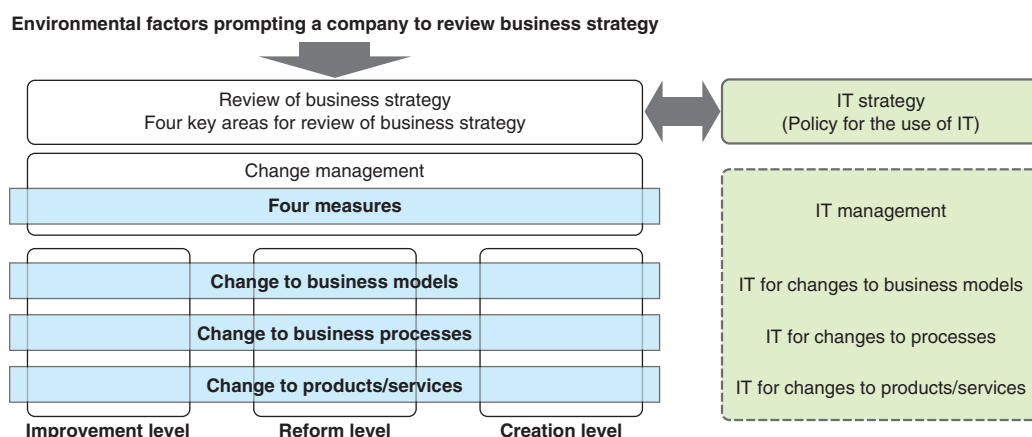
There is also a method for determining effective business strategy based on the assets that form a company’s strengths, which are part of the internal situation. The assets of a company include physical resources, human resources and organizational resources. With corporate culture serving as a moderator, these resources are integrated into a single resource bundle. Based on this unique resource bundle, business strategy that leverages the strengths of a company can be created.³

As a policy for implementing the business strategy thus created, a company makes a set of four decisions, which is known as the marketing mix.⁴ From the perspective of suppliers, the marketing mix is defined as the 4Ps —product, price, place and promotion.⁵ From the perspective of customers, the mix is defined as the 4Cs— customer solution, cost, convenience and communication.⁶

In this paper, based on the above-mentioned studies and research conducted in the past, the following four key areas are assumed for the review of business strategy that prompts a company to implement change.

- (1) Markets and customers (customers)
- (2) Industry and competition (competitors)
- (3) Company strengths (company)
—The above three areas are referred to as the 3Cs.
- (4) Marketing mix

Figure 1. Overall structure of corporate change and the use of IT



IT Barrier Stands in the Way of Corporate Change

(1) Review of markets and customers

Because the markets and customers that a company has targeted in the past have changed, there is a need to re-define target customers as well as the value that a company should provide to them.

(2) Review of industry and competition

In view of changes in competitive conditions in the industry, increased threats from new entrants and substitute products/services and increased pressure from the upstream or downstream of a supply chain, it has become necessary to review a company's position in the industry and a competition strategy.

(3) Review of company strengths

Because a company's traditional strengths have lost rareness and inimitability, and its organization is no longer able to maintain such strengths, new strengths must be created.

(4) Review of marketing mix

Because the ways by which values are provided and delivered to customers have changed, a company must review its marketing mix including the company's products/services, their prices, the underlying cost structure, the supply channels and the methods of communicating with customers.

3 Targets and levels of change to be implemented

Business activities are expressed as a chain of activities such as product development, procurement, manufacturing, distribution, sales and after-sales service, which are conducted by a company to generate value for its customers. This chain is known as the "value chain."⁷ Through the review of its business strategy, a company inevitably makes changes to its value chain. Business change consists of "changes to products/services," which are the output of the value chain, "changes to processes," which constitute the value chain and "changes to business models," which represent the structure of the value chain itself.

Changes to products/services can take several forms: (1) change for the penetration of existing products/services into existing markets, (2) change for bringing existing products/services to new markets, (3) change for launching new products/services in existing markets and (4) change for developing new products/services for new markets.⁸

These forms represent change at different levels. Item (1) is at the "improvement level" in which existing products/services are improved to better fit existing markets. Item (2) is at the "reform level" where existing products/services are considerably changed to tailor them to new markets. Items (3) and (4), which involve new products/services, are at the "creation level" where

new demand is stimulated by creating new products/services.

Changes to processes can also be of the "improvement," "reform" and "creation" levels. Activities such as quality management that are designed to continuously improve customer satisfaction by constantly improving all organizational processes are at the "improvement level."⁹ Reengineering, in which thought is given to how work should be done and what organizational structure should be adopted if business activities were to restart from scratch, is at the "reform level."¹⁰ The creation of new processes is part of a major rearrangement of the value chain.

Because these levels of change cannot be clearly defined simply as being "large" or "small," in this paper, the following definitions are applied to the "improvement level," "reform level" and "creation level" for all areas of change, i.e., products/services, processes and business models.

- "Improvement level" refers to change in which only improvements are made with both existing functions and existing methods to implement the functions remaining unchanged.
- "Reform level" refers to change in which existing functions are not changed, but the methods to implement those functions are changed to new ones.
- "Creation level" refers to change in which new functions are implemented by new methods.

In this way, change undertaken by companies takes three forms, depending on the target of the change. The forms are "changes to products/services," which are the output of the value chain, "changes to processes," which constitute the value chain and "changes to business models," which represent the structure of the value chain itself. Furthermore, there are also three levels, depending on the extent of the required change. They are "improvement level," "reform level" and "creation level." In this paper, corporate change is classified into these "3 × 3" categories.

4 Change management

To undertake corporate change with the aim of successfully implementing business strategy, money, people and things that are necessary must be effectively managed. According to Peters and Waterman, for a company to be successful, efforts must be made to skillfully manage the 7-S framework, which consists of "strategy," "structure," "systems," "skills," "staff," "style" and "shared values."¹¹ Shared values are placed in the center of the framework. The 7-S framework is also important for achieving the desired change. Among these seven elements, "shared values" and "(management) style" correspond to "money (financial aspects)," which involves the evaluation of value and results. "Skills" and

“staff” correspond to “people (personnel aspects),” and “structure” and “systems” correspond to tangible and intangible “things (physical aspects).” In this paper, these seven elements are classified into four types of management—three areas within an organization plus one area that involves resources outside the organization. Specifically:

- Shared values and management style are classified as “value governance (control of business value creation processes).”
- Staff and skills are classified as “change capabilities (management of human resources needed to undertake change).”
- Structure and systems are classified as “change mechanisms (design and development of mechanisms to implement change).”

In addition to the above three types of management within an organization, the following fourth type is included.

- The creation of collective strategy with network members outside the organization¹² is referred to as “procurement of change resources.”

In order for a company to successfully undertake change, business strategy itself must be appropriate. In addition, these four types of management need to be properly combined in implementing the determined strategy.

(1) Value governance

Value governance refers to the governance (control) of the value creation through the implementation of change, which is exerted in the capacity of a sponsor or leader of change. Specifically, governance is exerted on a series of business value creation processes, which includes presenting the principles of shared values, creating change plans that are consistent with the goals of business strategy, managing overall change projects as portfolios, monitoring each individual change project to ensure its implementation and promoting continued improvements after the completion of any change project.

(2) Change capabilities

Management related to change capabilities aims to improve the abilities of employees to implement change. Specific personnel management activities start by acquiring employees who will be engaged in the implementation of change. Based on a shared vision for change, these employees set their own goals toward implementation of change and commit to achieving these goals. A company must vest them with the authority according to their responsibility, equip them with the necessary abilities and enable them to continuously improve their skills.

(3) Change mechanisms

The creation of change mechanisms means establishing mechanisms that function as a foundation for implementing change. Specifically, the environment necessary for change is developed, which includes setting up the structure of an organization that implements change, enabling employees to share the knowledge, wisdom and information that constitute the sources of change, introducing methodology and tools for change, designing new business models, business processes and business functions and actually applying such newly designed elements to an organization as well as to its information systems.

(4) Procurement of change resources

Management related to procurement of change resources involves establishing a strategy for procuring resources, which become necessary to operate the businesses that are created through change. Based on this strategy, a company should select the best external resources and develop mutually beneficial relationships with external partners. In this way, a company should be able to offer the best products/services by combining optimal internal and external resources.

5 Use of IT for change

IT acts as an enabler for accelerating the speed at which change occurs.¹³ These days, IT is incorporated in most products/services as their one common element. Most processes applied to business activities are implemented by information systems. The value chain linking internal and external organizations is networked by means of IT, and this network functions as the essential basis for creating a business model. As such, making the best use of IT is very effective in implementing change in any of the following fields: products/services, processes and business models.

In sum, in an effort to pursue corporate change, IT can be used in the following ways.

- (1) Using IT for changes to products/services
- (2) Using IT for changes to processes
- (3) Using IT for changes to business models

II Premises: Correlation between Corporate Change and the Use of IT

In order to confirm that the overall structure of the assumptions adopted regarding corporate change and the use of IT is actually adopted by companies, Nomura Research Institute (NRI) conducted the “Survey on the Actual Status of the Use of IT by User Companies” in 2012.

- Premises of this research: Companies that have reviewed their business strategy have implemented change and change management, and have been using IT for change.

1 Details of the survey

In the survey conducted in December 2012, questionnaires were mailed to the chief information officers and heads of information systems departments of about 3,000 companies having the highest sales in Japan. Responses were received from 603 (a response rate of 20.1 percent). Because responses came from a full range of industries, the answers can safely be assumed representative of Japan’s leading companies. While a similar survey was conducted in December 2011, the 2012 survey used improved questions so that the responses enabled more statistical analyses.

For necessity, extent of implementation, effectiveness, extent of use and other items, the 2012 survey gave choices on a scale of 1 to 5 points to each question. They were: 5 points meaning “affirmative,” 4 points meaning “somewhat affirmative,” 3 points meaning “can’t say either way,” 2 points meaning “somewhat negative” and 1 point meaning “negative” (Figure 2). The point values used in the explanation of the survey refer to the weighted average of these points.

The following analyses were conducted based on the data acquired from the survey.

- (1) Has a greater number of companies that have reviewed their business strategy actually been implementing change than those that have not reviewed their business strategy?
- (2) Has a greater number of companies that have reviewed their business strategy actually been implementing change management than those that have not reviewed their business strategy?
- (3) Has a greater number of companies that have reviewed their business strategy actually been using

IT for change than those that have not reviewed their business strategy?

- (4) Have those companies that have reviewed their business strategy been able to create the desired effects from change?

2 Implementation of review of business strategy

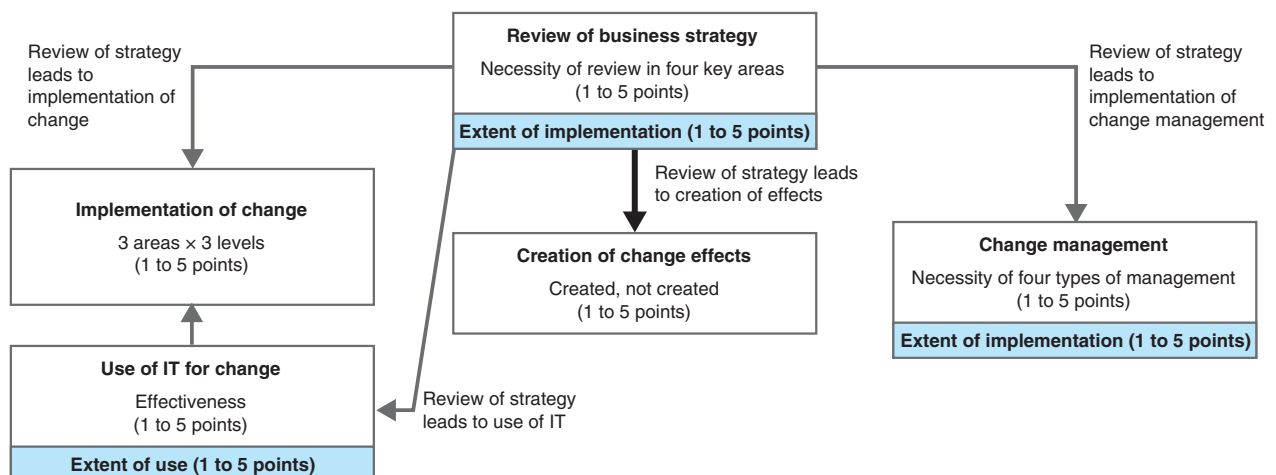
While many companies recognize the need for reviewing their business strategy, they are actually unable to do so.

More than 30 percent of responding companies selected “necessary” for them to review all four key areas of business strategy, which were specified in Chapter I. In particular, 47.3 percent selected “necessary” for “review of markets and customers.” If responding companies that selected “somewhat necessary” are added to those that selected “necessary,” the rate exceeds 70 percent for each of all four key areas. However, the percentage of responding companies that are actually reviewing their strategy was only 18.7 percent, even for the area of “review of markets and customers,” for which the largest number of companies selected “necessary.” For three other areas, the percentage was on the order of 12 to 13 percent (Tables 1 and 2).

3 Correlation between review of business strategy and implementation of change

Among 603 responding companies, 179 reviewed their business strategy in at least one of the four key areas. In this paper, these 179 companies are classified as Group 1 (G1). There were 249 companies that considered the review of business strategy “necessary,” but that did not review strategy in any of these areas (companies that “reviewed to some extent” are counted as companies that did not do so). These 249 companies are classified as Group 2 (G2). Of the responding companies, 169 did not select “necessary” for the question about the need

Figure 2. Correlation between survey questions



for review of business strategy in any of the four areas. (In this paper, these companies are referred to as those that consider that “review of business strategy is not necessary.”) These 169 companies are classified as Group 3 (G3).

Relative to the G2 companies, which consider review is necessary but have not done so, and the G3 companies, which consider review is not necessary, a larger proportion of G1 companies that reviewed strategy in any of the four areas implemented change (Figure 3-1).

Table 1. Need for review of business strategy

(Unit: %, N = 603)

	Necessary	Somewhat necessary	Can't say either way	Not so necessary	Not necessary	Don't know
Review of markets and customers	47.3	38.0	8.1	3.5	1.5	1.6
Review of industry and competition	32.0	44.8	15.8	4.5	1.2	1.8
Review of company strengths	33.3	40.5	16.9	5.5	2.0	1.8
Marketing mix	33.8	36.0	19.6	5.8	1.7	3.2

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Table 2. Extent to which business strategy is reviewed

(Unit: %, N = 603)

	Reviewed	Reviewed to some extent	Can't say either way	Scarcely reviewed	Not reviewed	Don't know
Review of markets and customers	18.7	52.1	15.6	8.5	3.3	1.8
Review of industry and competition	13.9	44.4	27.4	8.3	3.8	2.2
Review of company strengths	13.9	38.5	29.2	11.9	4.0	2.5
Marketing mix	12.4	40.0	28.0	10.3	6.0	3.3

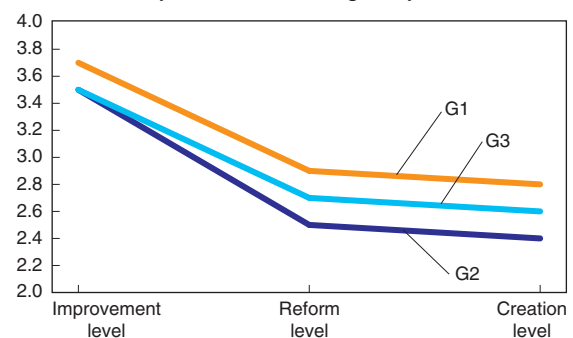
Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Figure 3. Correlation between review of business strategy and implementation of change

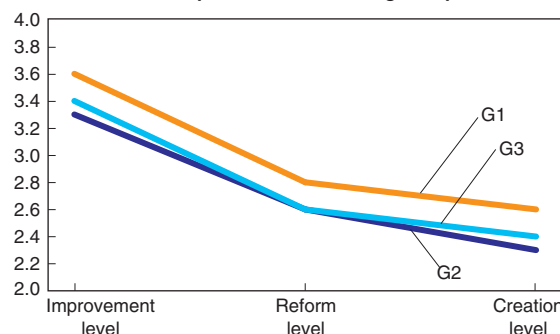
3-1. Correlation between review of business strategy and implementation of change

Extent of implementation of change		Whether business strategy was reviewed		
		Reviewed one or more areas of strategy	Review of strategy is necessary, but have not done so	Review of strategy is not necessary
		G1	G2	G3
Products/ services	Improvement level	3.7	3.5	3.5
	Reform level	2.9	2.5	2.7
	Creation level	2.8	2.4	2.6
Processes	Improvement level	3.6	3.3	3.4
	Reform level	2.8	2.6	2.6
	Creation level	2.6	2.3	2.4
Business models	Improvement level	3.3	2.9	3.1
	Reform level	2.7	2.3	2.5
	Creation level	2.6	2.3	2.5
		N = 179	N = 249	N = 169

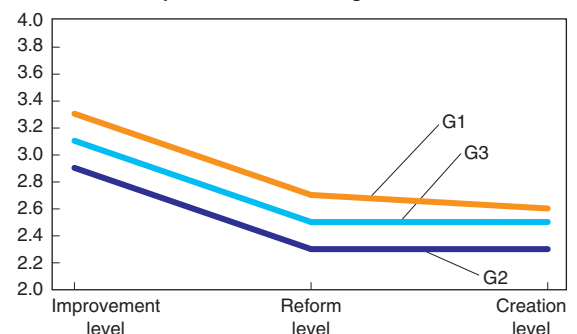
3-2. Extent of implementation of changes to products/services



3-3. Extent of implementation of changes to processes



3-4. Extent of implementation of changes to business models



Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

What is noteworthy here is that G2 companies recorded lower points than did G3 companies in terms of the extent to which change is implemented in all three target areas of products/services, processes and business models (Figures 3-2, 3-3 and 3-4). While G2 companies recorded the same points as those of G3 companies at the improvement level for products/services and at the reform level for processes, G2 companies recorded fewer points than G3 companies did in all other areas and levels. As a result, to the question of whether the desired effects are brought about by change, the G1 companies recorded the highest points, followed by G3 companies, with G2 companies recording the lowest points.

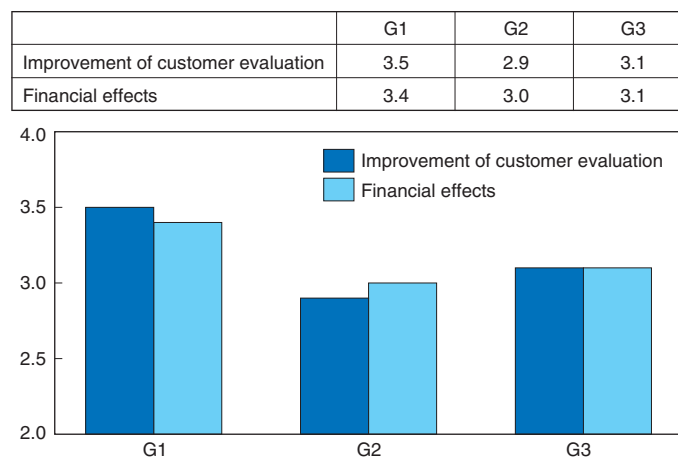
A question was made about the self-evaluation of whether the desired effects are brought about by change for the two indicators of “improvement of customer evaluation” and “financial effects” on the scale of 1 to 5 points. While G1 recorded around 3.5 for both indicators, G3 recorded 3.1 for both and G2 recorded 2.9 and 3.0, respectively (Figure 4).

Why is the extent to which change is implemented low among G2 companies? The answer lies in the fewer number of points recorded for the implementation of

change management. For all four types of management, G2 companies, as do G1 companies, recognize the need for review, with the point being high at more than 4.0, which generates a difference of about 0.5 from G3 companies (Figure 5). However, the extent of management implementation by G2 companies is at similar levels as are G3 companies, at around 3.0, generating a difference of about 0.5 from G1 companies whose extent of implementation is high. In short, although G2 companies recognize the need for the implementation of change management, the extent to which they actually implement change management is at levels similar to those of G3 companies, which do not recognize the need so much (Figure 6).

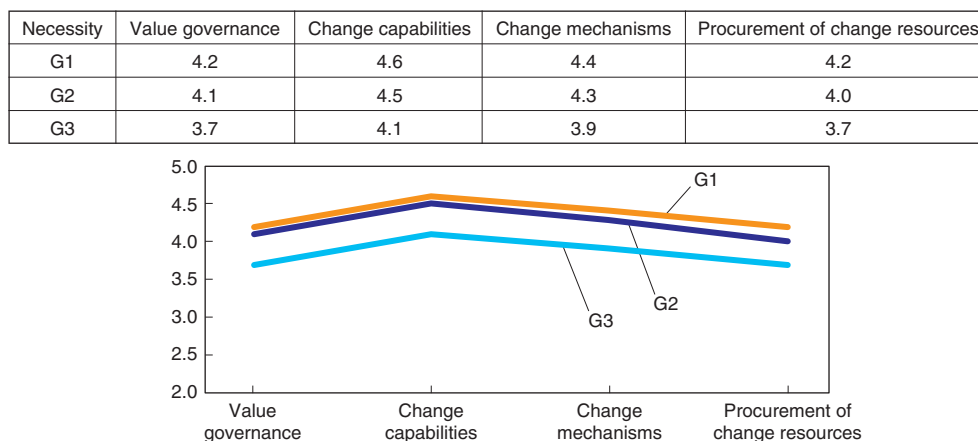
A similar trend as that seen for change management is seen for the use of IT for change. Next to G1 companies, G2 companies highly recognize the effectiveness of the use of IT for change in all three key areas of products/services, processes and business models. However, the extent to which IT is actually used for change is at levels similar to those recorded by G3 companies, generating a difference of more than 0.4 from those of G1 companies (Figures 7 and 8).

Figure 4. Extent to which effects are brought about by change



Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

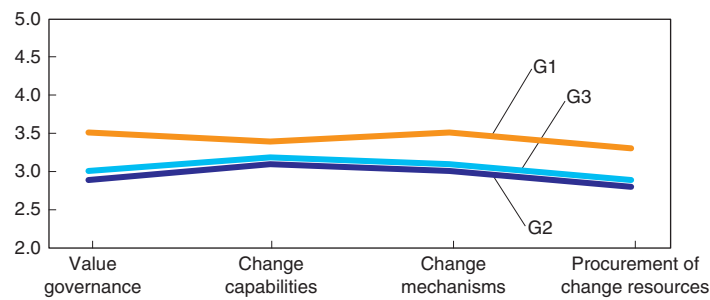
Figure 5. Correlation between review of business strategy and change management (necessity)



Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Figure 6. Correlation between review of business strategy and change management (extent of implementation)

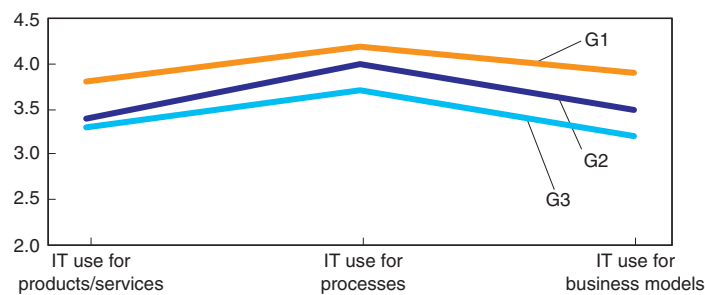
Extent of implementation	Value governance	Change capabilities	Change mechanisms	Procurement of change resources
G1	3.5	3.4	3.5	3.3
G2	2.9	3.1	3.0	2.8
G3	3.0	3.2	3.1	2.9



Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

Figure 7. Correlation between review of business strategy and the use of IT for change (effectiveness)

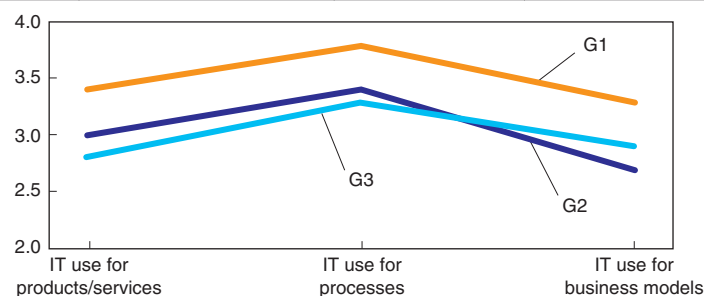
Effectiveness	IT use for products/services	IT use for processes	IT use for business models
G1	3.8	4.2	3.9
G2	3.4	4.0	3.5
G3	3.3	3.7	3.2



Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

Figure 8. Correlation between review of business strategy and the use of IT for change (extent of use)

Extent of use	IT use for products/services	IT use for processes	IT use for business models
G1	3.4	3.8	3.3
G2	3.0	3.4	2.7
G3	2.8	3.3	2.9



Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

4 Confirmation of research premises and recognition of problems

Based on the results of the comparison and analyses described above, it was confirmed that the correlation assumed by this research does exist between corporate

change and the use of IT. Relative to G2 and G3 companies, which have not reviewed their business strategy, a greater proportion of G1 companies, which have done so, have implemented change and change management, used IT for change and as a result, been successful in achieving the desired effects.

On the other hand, a lower proportion of G2 companies, which recognize the need for the review of their business strategy, but have not done so, have implemented change than that of G3 companies, which consider that the review of business strategy is not necessary, to say nothing of that of G1 companies. These G2 companies face problems. The causes behind these problems are assumed to come from the fact that although they consider that both change management and the use of IT for change are necessary, they are unable to adequately implement them.

III Use of IT that Does Not Lead to Achieving the Desired Results

G2 companies, which recognize the need for the review of business strategy but are unable to take action, are assumed to face the obstacles to change both in terms of change management and the use of IT. Of these two obstacles, this paper examines the use of IT in more detail. Examination of the actual status in which IT is not adequately used revealed the following fact.

- Actual status: Companies that recognize the need for reviewing their business strategy, but have not done so are also unable to achieve the desired results through the use of IT.

The 2012 survey asked the responding companies about self-evaluation of the achievement of the desired results for each purpose of IT investment such as “support for business/service creation,” “improvement of business

efficiency,” “support for the use of information” and “enhancement of management functions.”

For all IT investment purposes, a higher proportion of G1 companies selected “very good” or “good” than did other groups. The self-evaluation of G2 companies was lower than that of G1 companies for all purposes, and was somewhat higher than that of G3 companies for “improvement of business efficiency” and “enhancement of management functions.” However, for other purposes, the self-evaluation of G2 companies was as low as that of G3 companies (Figure 9).

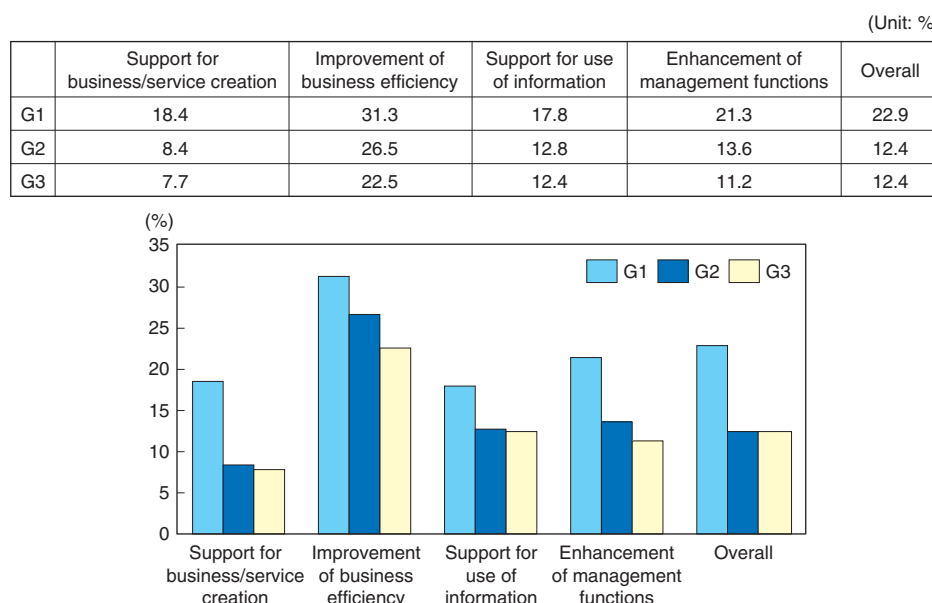
To begin with, relative to G1 companies, many G2 and G3 companies have not made IT investments for purposes other than “improvement of business efficiency.” In particular, the proportion of these companies that have not made IT investments for the purpose of “support for business/service creation” is large, at more than 50 percent (Figure 10).

Because many G3 companies consider that the need for the use of IT for change in concert with the review of business strategy is low, it is reasonable that they do not expect much of IT. However, in the case of G2 companies, while the achievement of the results brought about by the use of IT is at the same level as that of G3 companies, such a situation should not occur. It is assumed that the use of IT that does not lead to the achievement of the desired results hinders the implementation of change by G2 companies.

IV Hypothesis: Root Cause is Inadequate IT Management

Why does the use of IT by G2 companies not lead to the achievement of the desired results? In the same way as change management is important when implementing

Figure 9. Achievement of results for each purpose of IT investment (companies selected “very good” or “good”)

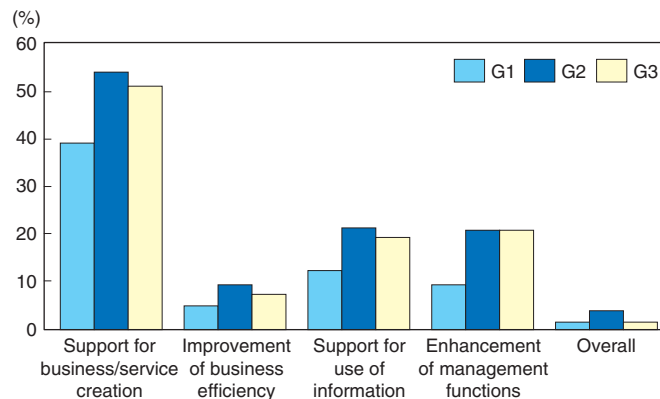


Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Figure 10. Achievement of results for each purpose of IT investment (companies that have not made investment for the indicated purpose)

(Unit: %)

	Support for business/service creation	Improvement of business efficiency	Support for use of information	Enhancement of management functions	Overall
G1	39.1	5.0	12.3	9.5	1.7
G2	53.8	9.6	21.3	20.9	4.0
G3	50.9	7.7	19.5	20.7	1.8



Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

change, the author believes that for the use of IT to be successful, four types of management are important, namely, “IT governance,” “IT capabilities,” “IT mechanisms” and “IT resource procurement.”

The importance of IT management in the creation of value is described in the following frameworks that were proposed in the past.

- “Governance” has been defined in COBIT (Control Objectives for Information and Related Technology) developed by the Information Systems Audit and Control Association (ISACA) of the U.S. —a framework for IT governance and IT management for creating value for enterprises.¹⁴
- “Capabilities” has been defined in UISS (Users’ Information Skill Standards) developed by Japan’s Information Technology Promotion Agency (IPA) —definitions of skills of IT human resources that IT user companies are required to have.¹⁵
- “Mechanisms” has been defined in TOGAF (The Open Group Architecture Framework) developed by the Open Group of the UK —a framework for the overall structure of business and information systems.¹⁶
- “Resource procurement” has been defined in ITIL (Information Technology Infrastructure Library) developed by the UK’s HM Government —a collection of best management practices for the provision and use of IT services.¹⁷

The following hypothesis is established for the correlation between review of business strategy and the above four types of management.

- Hypothesis: Companies that recognize the need for reviewing their business strategy, but that have not done so are not adequately implementing IT management, which hinders the implementation of change.

In order to prove this hypothesis, the following sections examine the results of the 2012 survey to confirm that a larger proportion of G1 companies is implementing IT management than are G2 companies.

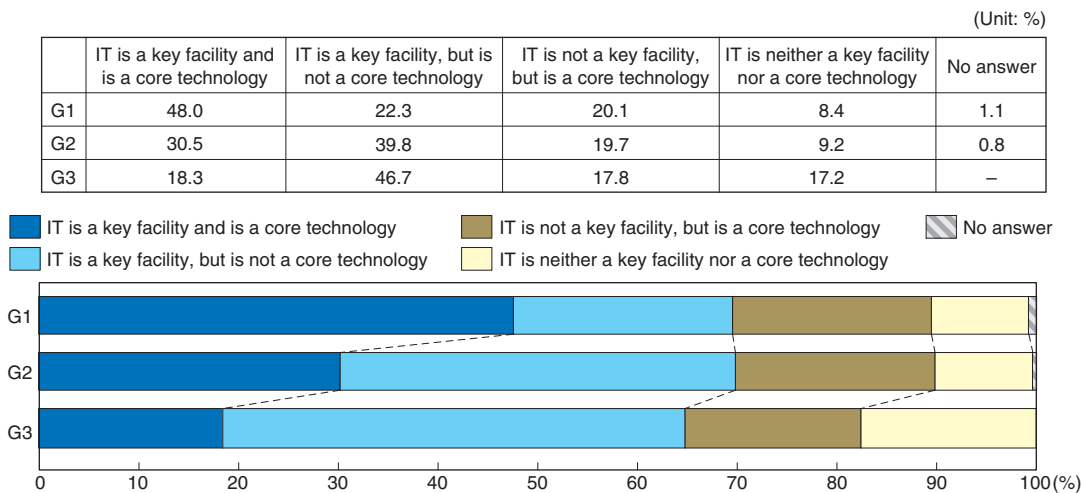
1 “Governance” for the use of IT

(1) Recognizing the role of IT

In the 2012 survey, a question was made about the role of IT within a company, asking whether “IT is one of your key facilities” or whether “IT is a core technology that differentiates your company from competitors.” The concept behind this question mirrors the thinking of McFarlan’s strategic grid, which divides the IT role into four quadrants depending on whether IT is an asset on which a company has a high degree of dependence or whether IT has an impact on competition.¹⁸

More than 60 percent of G1, G2 and G3 companies recognize that IT is one of their key facilities. However, between these groups, there is a difference in whether they recognize IT as being a core technology, with about 30 percent of G1 companies considering that IT is “not a core technology,” and 49 percent of G2 companies and about 64 percent of G3 companies having the same opinion. Many G3 companies simply do not see IT as being a means of differentiating themselves (Figure 11).

Figure 11. Role of IT within a company



Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

(2) Final decision makers in the area of IT

The 2012 survey asked who was responsible for making the final decisions regarding “IT investment projects,” “IT utilization policies,” “IT infrastructure policies” and “IT application requirements.”

The decision-making structure is basically the same in all G1, G2 and G3 companies. The involvement of the chief executive officer (CEO)/president in “IT utilization policy decisions” is slightly greater in G1 companies than in other group companies, while the involvement of the chief information officer (CIO) in “IT investment project decisions” is again somewhat higher in G1 companies than other group companies. However, separation of the powers has been established for form’s sake in all groups in which the CEO/president is involved in matters of company-wide importance such as “IT investment project decisions” and “IT utilization policy decisions,” while the CIO and the managers of information system departments are responsible for matters particular to IT such as “IT infrastructure policies” and “application requirements” (Tables 3 and 4).

(3) Degree of actual CEO/president involvement in IT

The 2012 survey went on to ask about the details of whether the CEO/president is involved in important IT-related matters to the degree that the CEO/president himself/herself gives instructions for such matters. Specifically these important matters are:

- Understanding the content of IT cost (“content of IT cost”)
- Giving instructions for improvement concerning the lack of data (“data”)
- Giving instructions for responding to deficiencies in internal control (“internal control”)
- Giving instructions for improving information security (“information security”)
- Giving instructions for improving business continuity (“business continuity”)

- Giving instructions for responding to a project failure (“project failure”)
- Giving instructions for responding to strategy change (“strategy change”)

“Data” and “internal control” are related to the maintenance of internal discipline, thus having a defensive nature; “information security” and “business continuity” are related to a robust business base and are specialistic in nature; and “project failure” and “strategy change” relate to the implementation of change, thus having an aggressive nature.

In terms of the percentage of companies in which the CEO/president is involved in all these matters, the CEO/president was in control in more G1 companies than in G2 and G3 companies. While G2 companies recorded slightly higher percentage than G3 companies did for “content of IT cost” and the maintenance of internal discipline, they recorded considerably lower percentage than G3 companies did for somewhat specialistic matters related to a business base as well as for the implementation of change. As such, there is a major difference between G1 and G2 companies in the degree to which the CEO/president actually has a good grasp of IT operations (Figure 12).

(4) Method of evaluating the appropriateness of IT operations

The 2012 survey asked about the method of objectively evaluating the appropriateness of a company’s IT operations as a whole. The following choices were given as the evaluation methods: “self-evaluation by the IT department and its report to the CEO/president,” “evaluation by the internal audit department,” “evaluation by an external organization” and “no evaluation is done.”

Relative to G2 and G3 companies, a larger proportion of G1 companies has implemented evaluation, regardless of method. While a somewhat large proportion of

Table 3. Percentage of companies in which the CEO/president makes the final decisions

(Unit: %)

	IT investment project decisions	IT utilization policy decisions	IT infrastructure policy decisions	Application requirements decisions
G1	64.2	59.2	35.2	12.8
G2	63.5	49.0	39.0	17.3
G3	55.0	45.6	40.8	15.4

Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

Table 4. Percentage of companies in which the CIO makes the final decisions

(Unit: %)

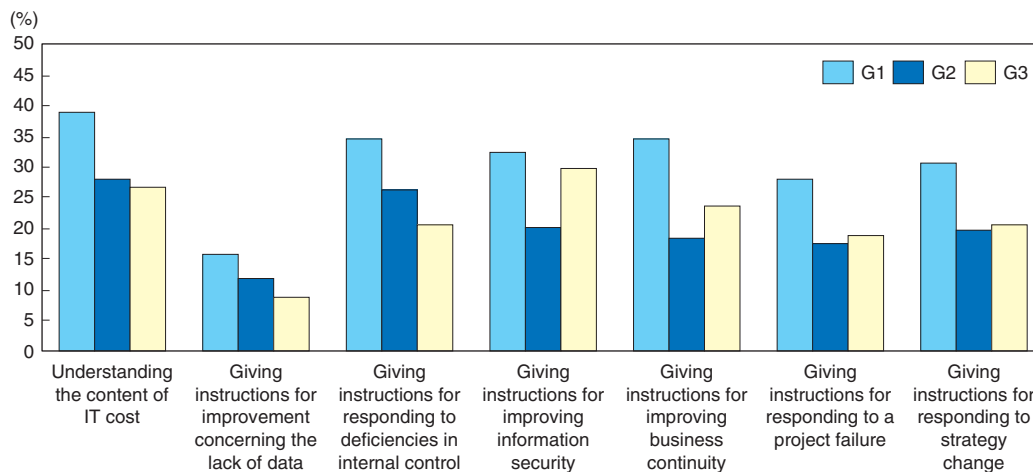
	IT investment project decisions	IT utilization policy decisions	IT infrastructure policy decisions	Application requirements decisions
G1	62.0	67.0	73.7	57.5
G2	51.4	64.3	67.5	55.0
G3	50.2	66.3	71.0	60.4

Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

Figure 12. Percentages of companies in which the CEO/president himself/herself gives instructions

(Unit: %)

	Understanding the content of IT cost	Giving instructions for improvement concerning the lack of data	Giving instructions for responding to deficiencies in internal control	Giving instructions for improving information security	Giving instructions for improving business continuity	Giving instructions for responding to a project failure	Giving instructions for responding to strategy change
G1	39.1	15.6	34.6	32.4	34.5	27.9	30.7
G2	28.1	11.6	26.1	20.1	18.5	17.3	19.7
G3	26.6	8.9	20.7	29.6	23.7	18.9	20.7



Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

G2 companies adopted the method of "evaluation by the internal audit department," some G2 companies adopted other methods, as is the case with G3 companies (Table 5).

These findings suggest that while G2 companies have established IT governance for the sake of formality such as requests for the CEO's approval and internal audits, few G2 companies see IT as being a core technology that they can leverage to differentiate themselves, indicating insufficient involvement of the CEO/president in IT operations.

2 "Capabilities" for the use of IT

(1) Methods of fostering IT human resources

As part of the 2012 survey, questions were asked about the types of IT human resources that were fostered by companies. Choices given for the types of human resources that should be fostered included: "fostering IT employees as IT professionals," "fostering IT employees as generalists" and "fostering IT employees as project leaders." Questions went on to ask "whether there is a career path" and "whether

there is any rotation among departments” to develop IT human resources.

Regardless of which types of human resources are being developed, the results revealed that the order always ran $G1 > G2 > G3$. Compared to G3 companies, which include many companies that do not consider IT being a core technology, G2 companies are making greater efforts to develop their IT personnel.

However, many companies in every group selected “fostering IT employees as IT professionals.” Even in G1 companies, 35.2 percent selected “no career path in particular” and 55.9 percent selected “almost no rotation among departments.” There is basically no difference between all groups in that they all stress “fostering IT employees as IT professionals” within their IT departments (Table 6).

(2) Upstream IT human resources are lacking

The 2012 survey asked respondents to name upstream IT human resources that are lacking. Upstream IT human resources refer to those responsible for planning, design and promotion, which are processes positioned above the creation of a system. Choices given as upstream IT human resources included “company-wide

IT strategy planners,” “business analysts,” “business reform advocates,” “IT architects” and “project managers.”

Every group has a strong sense of shortage of these upstream IT human resources. Among G1 companies, as many as 63.1 percent selected “company-wide IT strategy planners” and “business reform advocates.” In G3 companies, 58.6 percent selected “business analysts.” While G2 companies reported a shortage of all types of upstream IT human resources, 55.4 percent selected “project managers,” which is a larger percentage than in any other group (Table 7).

(3) Human skills that IT human resources lack

Through the 2012 survey, a question was also asked about which essential human skills for IT personnel were missing. Choices given were those related to the ability to lead IT-based change, rather than technical skills. Specifically, they were “overall assembly of a project,” “interview skills,” “scenario creation ability,” “alternative proposal ability” and “presentation ability.”

The percentage of G1 companies that felt they were lacking in human skills was larger than other two groups for all such skills. Among G2 companies, the percentage

Table 5. Percentages of companies evaluating the appropriateness of IT operations

(Unit: %)

	Self-evaluation by the IT department and its report to the CEO/president	Evaluation by the internal audit department	Evaluation by an external organization	No evaluation is done
G1	39.1	53.0	34.1	14.0
G2	27.3	44.6	22.1	22.9
G3	29.6	33.1	24.9	26.0

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Table 6. Methods of fostering IT employees

(Unit: %)

	Fostering IT employees as IT professionals	Fostering IT employees as generalists	Fostering IT employees as project leaders	No career path in particular	Almost no rotation among departments
G1	55.3	15.6	31.3	35.2	55.9
G2	49.4	12.9	24.1	41.0	60.6
G3	43.8	10.7	19.5	40.8	61.5

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Table 7. Upstream IT human resources that are lacking

(Unit: %)

	Company-wide IT strategy planners	Business analysts	Business reform advocates	IT architects	Project managers
G1	63.1	55.3	63.1	46.9	49.7
G2	58.6	54.6	63.5	50.6	55.4
G3	55.6	58.6	56.8	50.9	49.7

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

of those that considered they were lacking in human skills was less than that of G3 companies for all skills other than “interview skills” (Figure 13).

While G2 companies claim a major shortage of upstream IT human resources, they only expect such human resources to be in charge of the upstream processes of system construction. They seem to be barely aware that IT can be used to propose and create change.

3 “Mechanisms” for the use of IT

(1) Maturity of overall system structure

The 2012 survey questioned the maturity of a company’s overall system structure. As choices to measure maturity, “individually optimum type,” “standard IT infrastructure type,” “process/data integration type” and “common module type” were given. These types are based on the concept of the enterprise architecture maturity model proposed by J. W. Ross.¹⁹ In particular, the “common module type” is the system structure that enables agile system updates in response to any business change, and is thought of as being an effective IT mechanism for supporting change.

Actually, when the points of only those companies that adopted “common module type” were tallied up and the weighted average point of the extent of implementation of review of business strategy was calculated, these companies recorded higher points than did companies that adopted other overall system structures in all four key areas of the review of business strategy. In particular, the score was high at 4.6 for the “review of markets and customers” and at 4.4 for the “review of company strengths.” However, since only 6 percent of the responding companies were of the “common module type,” the overall impact is limited.

There is no significant difference among G1, G2 and G3 companies in the percentage of each level of maturity of the overall system structure. For all groups, the order ran “standard IT infrastructure type” > “process/data integration type” > “individually optimum type” > “common module type.” However, there is a slight difference: the percentage of G1 companies adopting the “common module type” was somewhat larger than were the other groups at 8.4 percent; the percentage of G2 companies adopting the “process/data integration type” was somewhat larger than were the other groups at 29.3 percent; and the percentage of G3 companies adopting the “individually optimum type” was somewhat larger than were the other groups at 18.3 percent (Table 8).

(2) Adoption of ERP

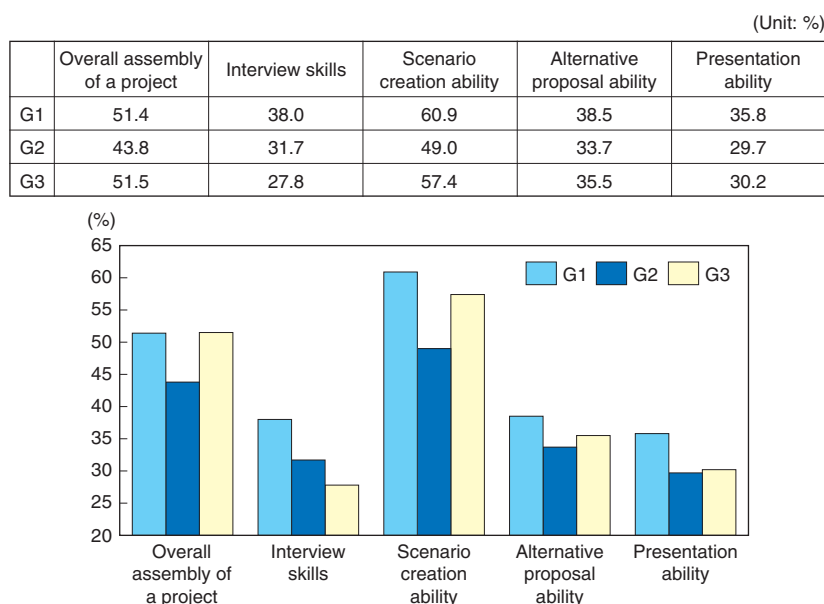
The survey asked about the types of business systems for which ERP (Enterprise Resource Planning) had been introduced, as well as the reasons for introducing ERP.

ERP is thought to provide an effective mechanism for migrating a system to a highly consistent “process/data integration type” system as well as for innovating company-wide business processes.

The survey revealed that in all groups, a large proportion of companies had introduced ERP for their head-office administrative function systems such as “financial accounting,” “administrative accounting” and “personnel management.” On the other hand, the percentage of companies that had introduced ERP for logistics-type business systems such as “sales management,” “purchase management” and “production management,” for which procedures vary from company to company, was somewhat low.

Within G1 companies, more companies had introduced ERP for both their head-office administrative

Figure 13. Human skills that IT human resources lack



Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

functions and logistics functions than in any of the other groups. Compared not only to G1 companies but also to G3 companies, the percentage of G2 companies that had introduced ERP for their head-office administrative functions was low (Table 9).

Regarding their motivation for introducing ERP, many more G1 companies than G2 and G3 companies had adopted ERP for achieving explicit business purposes in a short time such as “responding to globalization” and “responding to change in accounting system.” On the other hand, many G2 companies had introduced ERP for the purpose of building a system quickly at low cost. Among G2 companies, the reason for introducing ERP is not so much as to bring about change, but rather as a means of building a system (Table 10).

(3) Extent to which a process for evaluating the effects of IT investment has been established

The 2012 survey asked if a process had been established for evaluating the effects of IT investments before and after investments had been made for each purpose of IT investment. Choices given as the purposes included “investment for improving business efficiency,” “investment for utilizing information,” “strategic investment” and “infrastructure investment.” These choices are based on P. Weill’s classification of the purposes of IT investments.²⁰

The trend seen in all groups is that more companies had established a prior-investment evaluation process than a post-investment evaluation process, with more companies establishing processes for “infrastructure investment” and “investment for improving business efficiency” than for “investment for utilizing information” and “strategic investment.”

Compared to the other groups, a substantially large proportion of G1 companies had established both pre- and post-investment evaluation processes. With the exception of the pre-investment evaluation process for “infrastructure investment,” the proportion of G2 companies that had established evaluation processes was either almost the same or less than that of the G3 companies. As such, the survey revealed that the G2 companies were also lagging behind the other groups in terms of the software aspect such as establishing an IT investment evaluation process (Figures 14 and 15).

4 “Resource procurement” for the use of IT

(1) Types of IT outsourcing

The 2012 survey asked a question of whether IT outsourcing took the form of “individual work outsourcing,” “personnel dispatch/residency,” “package outsourcing,” “comprehensive outsourcing,” “joint operation with a vendor” or “other.”

Table 8. Percentage of each level of maturity of overall system structure

(Unit: %)

	Individually optimum type	Standard IT infrastructure type	Process/data integration type	Common module type
G1	13.4	50.8	26.8	8.4
G2	16.5	47.4	29.3	5.6
G3	18.3	49.7	24.9	5.3

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Table 9. Percentage of companies that had adopted ERP for each type of business

(Unit: %)

	Financial accounting	Administrative accounting	Personnel management	Sales management	Purchase management	Production management
G1	68.2	39.1	49.2	23.5	26.3	17.9
G2	58.6	32.1	41.4	22.1	19.7	14.1
G3	63.9	34.9	41.4	21.9	19.5	14.8

Note: ERP = Enterprise Resource Planning.

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Table 10. Reason for introducing ERP

(Unit: %)

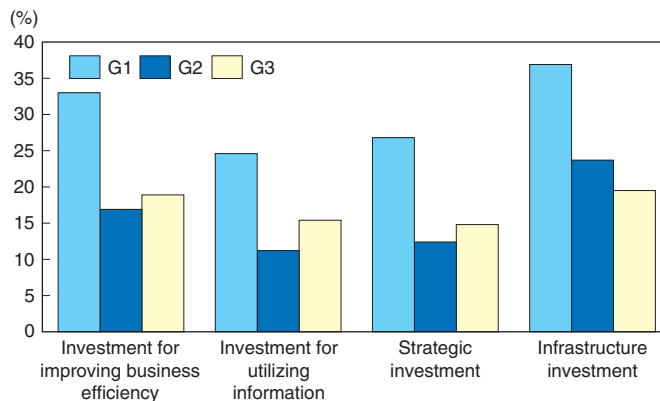
	Business reform	Responding to globalization	Responding to change in accounting system	Introducing best practice	Reducing development period	Cutting development cost
G1	40.4	36.2	36.2	14.9	48.9	41.1
G2	39.1	26.1	28.3	13.6	48.9	48.4
G3	40.0	24.6	26.2	11.5	37.7	43.8

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Figure 14. Percentage of companies that had established a pre-IT-investment evaluation process

(Unit: %)

	Investment for improving business efficiency	Investment for utilizing information	Strategic investment	Infrastructure investment
G1	33.0	24.6	26.8	36.9
G2	16.9	11.2	12.4	23.7
G3	18.9	15.4	14.8	19.5

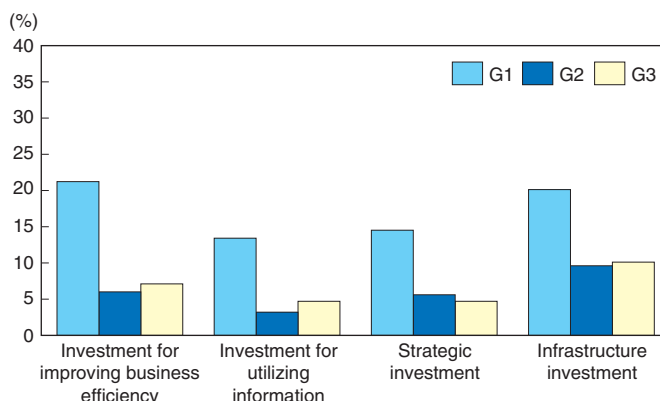


Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

Figure 15. Percentage of companies that had established a post-IT-investment evaluation process

(Unit: %)

	Investment for improving business efficiency	Investment for utilizing information	Strategic investment	Infrastructure investment
G1	21.2	13.4	14.5	20.1
G2	6.0	3.2	5.6	9.6
G3	7.1	4.7	4.7	10.1



Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

In all groups, about 70 percent of responding companies selected "individual work outsourcing" and around 35 to 40 percent selected "personnel dispatch/residency," showing very little difference in the types of outsourcing that they employ. Nevertheless, more G1 companies than those in other groups rely on "package outsourcing," and more G2 companies use "joint operation with a vendor" and more G3 companies adopt "comprehensive outsourcing" than do those in other groups (Table 11).

(2) Degree of achievement of goals of IT outsourcing

The survey also asked companies to evaluate, themselves, the degree to which they thought the goals for outsourcing had been achieved. As choices of goals, the survey offered "supporting company strengths," "ensuring speed

of change" and "ensuring proper QCD (quality, cost and delivery)," all of which expect outside experts to provide high added value, as well as "reducing a company's IT personnel," "cutting system costs" and "variabilization of system costs," all of which help minimize a company's IT resources.

Looking at the total percentage of those companies that had "achieved their goals" and "achieved their goals to some degree," the survey revealed that surprisingly, the percentage of G2 companies was the highest for all goals (Figure 16). It may be fair to assume that G2 companies are adept at leveraging outside resources.

While all groups give importance to the minimization of a company's IT resources as the reason for outsourcing, this trend is particularly pronounced among G2 companies. In addition, the percentage of G2 companies

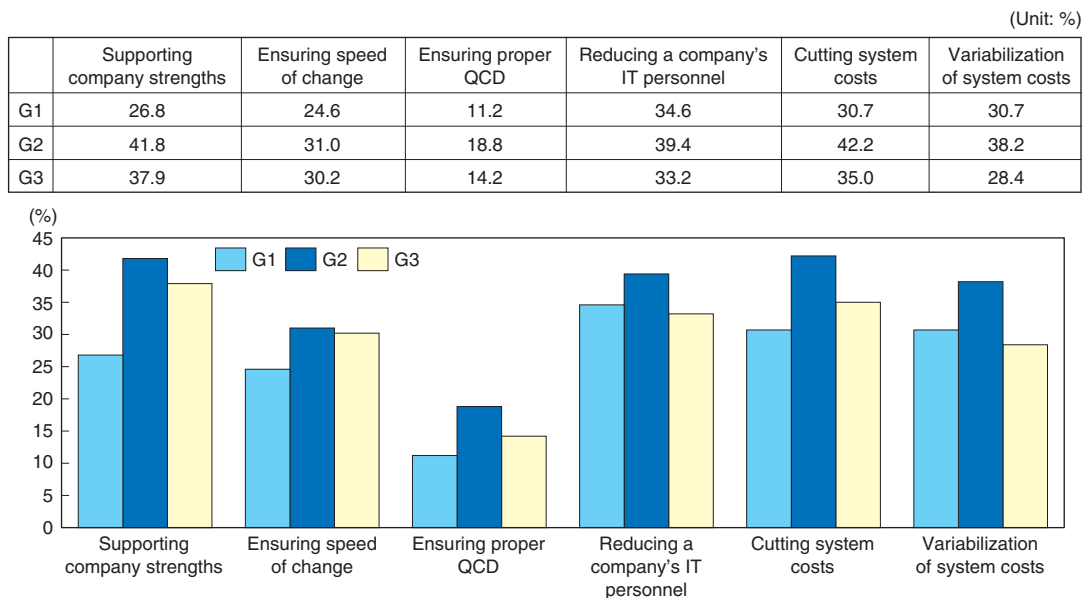
Table 11. Types of IT outsourcing

(Unit: %)

	Individual work outsourcing	Personnel dispatch/residency	Package outsourcing	Comprehensive outsourcing	Joint operation with a vendor	Other
G1	73.7	45.3	28.5	18.4	6.7	4.5
G2	75.5	41.4	21.7	18.9	12.9	4.4
G3	69.2	33.7	21.9	23.1	8.9	3.0

Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

Figure 16. Extent of achievement of goals of IT outsourcing (percentage of companies that "achieved" plus those that "achieved to some degree")



Note: QCD = quality, cost and delivery.

Source: "Survey on the Actual Status of the Use of IT by User Companies" conducted by Nomura Research Institute in 2012.

evaluating that they "had achieved these goals" was high, at around 40 percent. Many G2 companies rely on outside experts, even for the realization of high added value, which is a matter that a company's own employees should assume. In this sense, they seem to think highly of outside experts.

On the other hand, G1 companies consider that high added value should be achieved by their own employees, with very few G1 companies taking on the use of outside human resources for these purposes. In particular, 41.8 percent of G2 companies versus 26.8 percent of G1 companies place emphasis on the purpose of "supporting company strengths," indicative of a major difference.

V Breaking through IT Barrier Hinder Corporate Change

1 Conclusions that can be drawn from the survey

The following sections reaffirm the percentage of the three groups of companies defined in this paper by industry and sales.

Looking at the percentage by industry, for G1 companies, the service industry and information service industry constitute 28.0 percent, for G2 companies, the distribution industry constitutes 18.1 percent, and for G3 companies, the manufacturing industry constitutes 45.7 percent. The percentage of companies in these industries was somewhat larger than that of other groups, respectively. Nevertheless, in all groups, companies from every industry are represented in the order of manufacturing industry > service industry > distribution industry (Table 12).

In terms of sales, G1 companies include a slightly larger number of large-scale enterprises with sales in excess of JPY 100 billion, while G3 companies include a slightly larger number of small businesses with sales of no more than JPY 30 billion. Nevertheless, every group includes both large- and small-scale companies (Table 13). G2 companies include somewhat more small-scale businesses. However, a large proportion of G2 companies is not adequately implementing IT management as compared to G3 companies that include more small-scale companies than G2 companies, pointing to the fact that a difference in business size is not necessarily a factor behind inadequate IT management.

As such, differences that are seen between G1, G2 and G3 companies in the use of IT are not thought to be attributable to differences between industries or in business size.

Because the survey classified companies that consider that “review of business strategy is not necessary” as Group 3, G1 and G2 companies are obviously those that similarly consider that review of business strategy is necessary. The survey also confirmed that, compared to G1 companies that actually reviewed their business strategy, the following trend can be seen in G2 companies that did not review their business strategy: “a large proportion of G2 companies did not use IT for change, did not achieve the desired effects through the use of IT and did not implement IT management.” These

findings can be interpreted as the following law of cause and effect: “because G2 companies are not adequately implementing IT management, the desired effects through the use of IT cannot be achieved. One of the effects that cannot be achieved is the ability to use IT for change. As a result, the companies are unable to review their business strategy and implement change (Figure 17).

2 IT management must be established as a means of achieving change

Factors that prevent a company from reviewing its business strategy and from implementing change include inadequate change management and the use of IT that

Table 12. Percentage of responding companies by industry

(Unit: %)

	Manufacturing	Distribution	Finance	Service	Information service	Other	No answer
G1	42.4	14.0	8.9	20.7	7.3	2.2	4.5
G2	37.9	18.1	10.0	19.6	4.8	5.2	4.4
G3	45.7	11.8	12.4	18.3	4.1	3.0	4.7

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

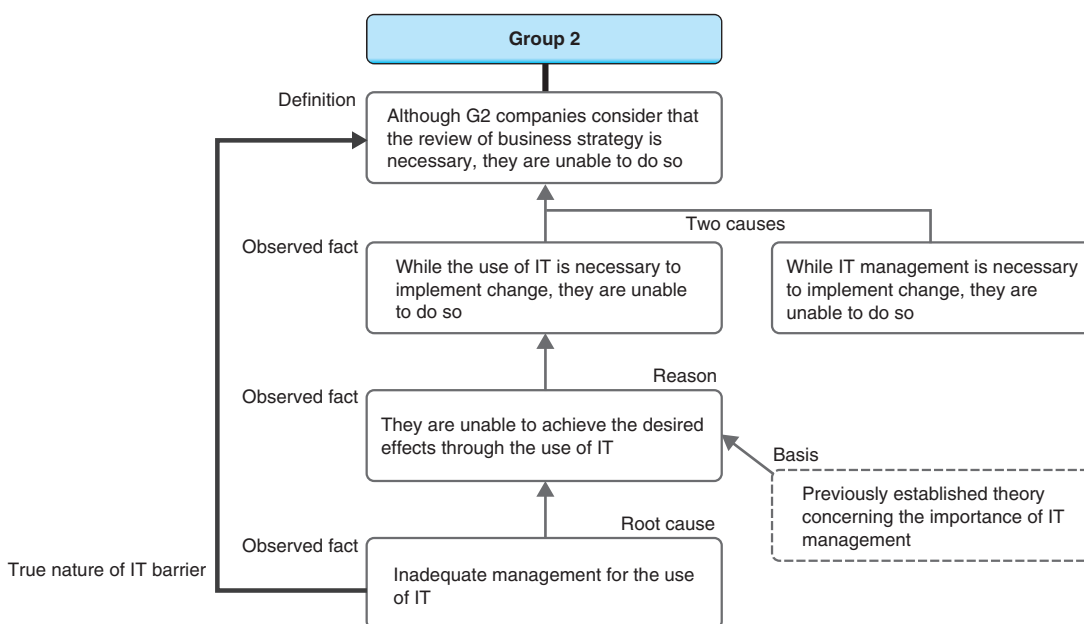
Table 13. Percentage of responding companies by sales

(Unit: %, JPY)

	Less than 30 billion	30 billion – 100 billion	100 billion – 300 billion	300 billion – 1 trillion	1 trillion or more	No answer
G1	35.8	16.8	17.3	14.0	10.1	6.1
G2	43.4	26.6	13.3	8.0	3.2	5.6
G3	45.6	21.3	13.6	6.5	5.3	7.7

Source: “Survey on the Actual Status of the Use of IT by User Companies” conducted by Nomura Research Institute in 2012.

Figure 17. Structure of verifying the hypothesis of IT barrier



IT Barrier Stands in the Way of Corporate Change

does not produce results. To embark on change, a company must first establish the four types of management, namely, “value governance,” “change capabilities,” “change mechanisms” and “procurement of change resources.” In order for the use of IT to enable the creation of business value and to contribute to change in business, a company should establish the four types of management for IT as well, which are defined by the existing frameworks as explained at the beginning of Chapter IV. The survey revealed that the companies that are unable to review their business strategy are also inadequately implementing the four types IT management.

However, in addition to G1 companies that reviewed their business strategy, G2 companies that considered the review of their business strategy was necessary but were unable to do so have also implemented for form’s sake the four types of IT management that were defined by the existing frameworks. As such, the analysis made it clear that simply looking at whether IT management is implemented does not reveal a major difference.

For example, matters such as the participation of the CEO/president in IT-related decision making, the implementation of internal system audits, the fostering of IT professionals, the development of overall system structure and the use of external expertise through IT outsourcing are being undertaken not only by G1 companies but also by G2 and G3 companies with little difference.

In concluding this paper, the author would like to stress the necessity to move away from cursory management efforts and instead make a more essential drive toward change that goes one step beyond usual efforts as a means of overcoming the obstacles that hinder the implementation of change. Therefore, the author offers the following recommendations for the four types of IT management.

(1) IT governance

The CEO/president should make it clear within the entire company that IT is an important tool for change, and should himself/herself understand the company’s IT operation down to the practical level. Merely having formal approval and audit systems does not constitute valid governance of IT. Rather, the appropriateness of a company’s IT operations should be objectively evaluated, and all concerned personnel including the CEO/president should share the results of evaluation so as to improve the transparency of IT operations.

(2) IT capabilities

The CEO/president should make company-wide efforts to foster upstream IT human resources that can play a central role in IT operations and drive the efforts toward change through the use of IT. Because these human resources must have high levels of human skills that enable them to be leaders in pursuing change, it would

not be possible to foster these personnel if the training of experts were confined to the IT department.

(3) IT mechanisms

The adoption of “common modules” and “ERP” in the system structure provides effective hardware-based mechanisms to ensure system agility and improve response capability in pursuing change. However, these mechanisms will only be effective if they are introduced with the clear purpose of engendering business change. It is not only a hardware-based approach that is effective, a software-based approach is also effective, such as the establishment of processes for evaluating the effects of IT investment. Because the development of hardware-based mechanisms takes time, software-based mechanisms that are quick in demonstrating their effectiveness should be introduced in advance of the hardware.

(4) Procurement of IT resources

IT outsourcing provides an effective means of flexibly operating a system while minimizing the amount of resources that a company needs. However, for those companies that intend to implement change, their own employees should play a central role in “supporting company strengths,” “ensuring speed at which change takes place” and “ensuring appropriate QCD.” They should not be overly dependent on external experts for these matters.

3 Future research themes

In this paper, the author clarified common issues in implementing IT management that act as barriers to companies trying to review their business strategy. However, it would not be necessary to develop the same level of IT management in every company. Depending on the situation facing a company, more detailed studies are necessary. For example, what change is necessary to review business strategy, and what is the specific content of IT utilization and IT management to implement the determined change, to which priority should be given.

To this end, rather than looking at G1, G2 and G3 classifications, it would be more effective to classify the types of business change and the use of IT at companies according to their business characteristics and management performance. This paper has presented the following basic structure.

- Four key areas of review of business strategy
- 3 × 3 types of change
- Four types of change management
- Three areas of IT utilization
- Four types of IT management

While using the above structure as a basic framework, the author would next like to focus as a research theme

on how change and the use of IT should be depending on the business characteristics of a company.

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