Metrics for Innovation: A Report Card Feedback System to Improve Speed to Market and Enhance Innovation Success

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OVERVIEW:

Metrics can play an important role in helping companies enhance their new product development efforts. This paper discusses a new approach for using metrics in several critical areas to measure and improve a new product team's performance.

Introduction

The axiom, "You can't manage what you can't measure," has become the rallying cry of the total quality movement. Measurement and quantification are an integral part of identifying areas in the quality process that need improvement. Examples of quality measures include: percent of customer returns and number of customer complaints for quantifying Defect Rate; number of service calls and percent of equipment downtime for Reliability; and percentage of warranty claims and average product life for Durability, just to name a few.[1] Metrics forms the foundation of a quality assessment that allows companies to compare current practice to a standard or prior performance. The resulting gap between current practice and the standard forms the basis of devising a strategy for improvement. Many scholars and practitioners alike argue that metrics was one of the key drivers in the total quality management's popularity. After all, if you don't know *how* you are doing on a task, you won't know if modifications will help or hurt? This situation would be similar going on a diet without having a scale. Sure, you may be able to tell if you are becoming overweight, but by that time it may be too difficult to correct. Having a scale can give you an early warning signal -- indicating if you are getting off track and if corrective measures are needed. Metrics play a similar role in total quality management (TQM) – they can signal potential problem areas that should be addressed.

Metrics, in the field of innovation, have proven very elusive to develop perhaps because, as several scholars assert, creativity and innovation are softer fields – more complex and difficult to quantify.[2] If you could develop metrics for innovation, what metrics would you want? Possible measures include number of ideas for one launched product or number of ideas for one success. Unfortunately, "number of ideas" is difficult to adequately operationalize. Do you count an "idea" when it is first logged into someone's logbook, or when it has been given the go-ahead

from management, or when someone has a flash of inspiration? Perhaps, the lack of metrics is one reason that the success rate of new product development has not improved appreciably for the past 40 years (see Figure 1). Studies during the 1960s indicated failure rates averaging 31% during the 1960's; during the 1970's it was 41%; during the 1980's 37.5% and in the 1990's 42%.[3] If companies could measure their innovation process, if they had reliable metrics to gage their performance, perhaps specific problem areas could be addressed and then companies could begin to see the same types of improvement in their innovation efforts that they have come to expect with their TQM programs.

One question begs to be asked: Can reliable *and helpful* metrics be developed that can be used to improve a company's new product development performance? The purpose of this article is to explain a new method for measuring new product team performance and comparing that performance to a standard to determine if and where improvement is needed. We have been refining this measurement approach, called an Innovation Audit, over the past seven years. It is by no means complete but rather a work in progress. The objective of the audit is to measure a new product team's performance with the hope that areas of shortcomings can be identified and with this information, management could then begin to systematically address and improve the deficiencies to improve its ability to innovate better and faster.

Innovation Audit Background

Organizational learning, also known as knowledge management, is gaining in popularity today to help companies innovate better and faster. Learning is important to organizations in general, but it is critical in new product development. Innovation spans many functional areas including engineering, marketing, manufacturing, finance, etc. and new product teams frequently must communicate with and learn from others who have very diverse perspectives (engineering, marketing, manufacturing, etc.).

Lynn[4] developed a model of organizational learning for new product development based on constructs from individual cognition and learning.[5] Expanding on his model, we incorporated

additional constructs from a number of different disciplines, including cognition, team dynamics and management strategy. The present study applies concepts from these fields within an organizational learning framework to develop an Innovation Audit to assess how a new product team is performing. We measure several critical practices that were selected for study based on a review of relevant research in individual learning and team performance and because they are 1) concrete actions within a firm's control and 2) practices that are likely to facilitate learning and team performance. These practices include *recording, reviewing, filing, goals/project vision, team stability* and *new product development process.*

Recording and Reviewing

Early research on the effects of recording information, called note-taking in the individual learning scholarship, compared the performance of students who listened to a lecture to students who listened *and* took notes. Hartley[6] and Kiewra[7] reviewed 61 studies, which included this comparison, and reported that 35 studies found better learning, as measured by performance, among students who not only listened but also took notes. There were 23 studies that found no significant difference and three studies reported better performance in the condition in which no notes were taken. This research suggests that people who engage in the recording of information will learn more than those who passively listen.

In addition to recording, reviewing information that has been recorded also leads to better performance. A review of 32 studies by Hartley and Kiewra found better performance for students who both recorded and reviewed notes as compared with those that recorded but were not allowed to review.[8] Kiewra et. al. [44] also included a "borrowed notes" condition in which students were given a set of notes, recorded by another student, to review.[9] They reported that students in the "borrowed notes" condition performed better than students in the record only condition (no opportunity to review) or a listen only condition. This suggests that recording not only would benefit the member engaged in the process of encoding, but other members who can later review the recorded information. Using borrowed notes has direct application to team

settings where team members will frequently have to rely on notes taken by others (e.g. customer requirements documents recorded by marketing and used by engineering). Reviewing has been cited as being important in the organization learning literature as well. For example, Gersick[10] asserts the importance of team meetings to group performance. These studies suggest that team members who record information will learn more if they have the opportunity to review what they have recorded individually and jointly.

The performance of the team will increase when members are actively engaged in learning and the ability of all team members to perform effectively is improved. Previous research on the relationship between the abilities of team members and cumulative team performance has supported an additive model. Increasing the ability of individual members results in better team performance.[11] This link between member ability and team performance has obvious implications for selection but, more important in the context of the present study, strongly reinforces the beneficial effect of fostering individual team member learning.

Filing

For effective and systematic review, information must be accessible in a way that allows easy and fast retrieval, i.e., a good filing storage and retrieval system. The importance of filing on learning and new product success has been discussed in prior scholarship.[12] Lynn, Simpson and Souder [56] analyzed the filing systems used in 38 companies for their new product efforts.[13] They report that recording information, combined with an effective filing system, was positively related to a firm's overall new product success rate.

Goals

Recording, filing and reviewing information are not the only processes that facilitate learning. Scholarship on the importance of goals to individual and group performance indicates that the practice of setting goals facilitates performance. Goals can help establish a direction so that individuals know what to record, file and review. Having a clear goal can lead to better performance by providing a domain of interest, a focus, for motivating a search for a strategy to achieve the goal. At the individual level, research has shown a robust positive effect of setting

specific goals on performance -- individuals with specific goals outperform those with no goals or those simply told to "do their best."[14]

The success of individual goal setting has led to the application of the principles of goal setting to teams. Larson and LaFasto identify the presence of a clear (specific) goal as a characteristic of an effectively functioning team.[15] O'Leary-Kelly, Martocchio and Frink recently reviewed research on the influence of group goals on group performance using both meta-analytic and narrative approaches. In their meta-analysis of ten studies the mean performance of teams with goals was approximately one standard deviation (.92) above the performance of teams without goals.[16] (This large effect size of .92 standard deviation for teams is even larger than the effect sizes of .52 to .82 reported in research on individual goal setting.[17]) In a qualitative review of 29 studies on goal setting in teams O'Leary, et. al.[18] report that 83% of the studies reported a positive effect of goal setting on performance. Not only is it important for a team to have goals, but these goals should also be specific, clear, and supported by others. We refer to these team goals as Vision and distinguish three related variables: Vision Clarity (how clear and specific the goals are), Vision Stability (the stability of the goals over time), and Management Support (the agreement with and support of the goals by management). O'Leary, et. al. reported that the studies reviewed found better performance when the goals were clear and agreed to by others.[19] They also briefly explored the time dimension of goals, but their sample size was too small to draw any generalizable conclusions. For this study, we explicitly investigated the clarity, stability of the vision over time and Management Support, to assess their impact on speed to market and overall new product success.

Team Stability

The importance of having a stable team was raised in prior research[20] For example, Lynn found team stability as one of the critical factors that discriminated between successful and unsuccessful projects at Apple computer.[21] On the highly successful Apple II, the core team stayed together for the duration of its development and release into production. Similarly, the successful Mac+ had a continuity of team members. In contrast, on the unsuccessful projects, each experienced a major personnel shake up. On the Apple III, after the product had failed initially in the marketplace, the company fired approximately 40 people on the team.[22] As a result some of the knowledge accumulated by team members was lost. The pattern on the Apple Lisa was similar to that of the III -- massive personnel changes occurred. Lisa's management underwent several changes during its development. First Ken Rothmueller, who was head of engineering left, then John Couch assumed that role, and then Wayne Rosing. Even during Couch's tenure, he took a leave of absence for 60 days to tend to matters outside the Lisa team. The lack of team stability on the Lisa adversely impacted the effectiveness of the team. Having a stable team can aid in building cohesion and continuity in a team, which can help the team be more successful.

New Product Development Process

While goals can provide direction to a team, having a systematic new product development (NPD) process can provide a framework to help new product teams in achieving their goals. The importance of following a systematic NPD process – especially for the early phases -- has been well documented.[23] Cooper and Kleinschmidt, for example, found that proficiency in several NPD phases was correlated with new product success. Some of the significant phases include: 1) proficiency in pre-development activities including initial screening, preliminary market and technical assessment, and completing a detailed market and business analysis; 2) proficiency in completing market activities, such as, preliminary market assessment, detailed market study, customer beta testing, and market launch; and 3) proficiency in completing technical activities, including, preliminary technical assessment, development, in-

house prototype testing, and trial production.[24] Others have replicated Cooper and Kleinschmidt's results as well.[25] In light of the importance of having a systematic NPD process, including idea generation, screening, evaluation, development, testing and launch, Process was the final practice included in our innovation audit model.

The above literature review suggests that teams can benefit when team members record information, when information is filed in a manner that allows the recorder and other members to review it at a later time, when teams have a vision that includes clear goals that are supported and stable and when a systematic NPD process is in place – called the New Product Development Learning Model. If teams are proficient in the aforementioned practices, they should have a greater probability of succeeding while reducing the time it takes to complete the task (leading to shorter cycle times). Prior scholarship has proposed the impact of learning on cycle time and has indicated the positive influence that learning has on cycle time and new product success. As Meyer and Purser assert, "Increasing the rate of organizational learning is the heart of a fast cycle-time strategy. To become a fast cycle-time competitor, it is essential that senior management embrace organizational learning as a strategic objective."[26] Karagozoglu and Brown found that many of the 31 high technology companies that they studied used organizational learning to speed product development and utilized various practices to foster a climate supportive of learning. They report that benchmarking - a way to learn from other firms - was used by 35% of the companies to reduce cycle time and that building on past experience - an approach to learn from others within one's company - was used by 16% of the companies.[27] Other researchers have recognized the importance of this link between learning and the speed to market.[28]

Developing and Validating an Innovation Audit

Before we actually used the innovation audit to assess strengths and weaknesses of a specific new product team, we empirically validated the model using a variety of quantitative analytical techniques. To measure practices supportive of team learning, speed of development

and new product success, scale items were developed based on past exploratory research.[29] Each construct was measured using multiple items and a Likert-type 0 to 10 scale (0 = strongly disagree to 10 = strongly agree). To assess the reliability of the resulting scales we asked 49 technical managers, in a diverse cross-section of organizations, to select a completed project with which they were very familiar and to report on it. Respondents represented both consumer products companies and industrial companies. Questionnaires were returned by 28 managers yielding a 57% response rate. Results indicated that the measures were reliable: Cronbach's alphas ranged from .63 to .93 and respondents did not have any difficulties understanding the items or scales. Accordingly, the sampling was expanded, and since no changes were made to the questionnaire, or to the target population, the initial sample was included in the study sample.

In addition to the 28 respondents who participated in the reliability analyses we sent mail surveys to 236 technical managers who were members of the American Society of Engineering Management (ASEM). We also distributed questionnaires to 280 middle-level technical managers from technology-based companies in New York and New Jersey. Again, each respondent was asked to select a completed new product development project with which they were intimately familiar. In total 516 surveys were distributed; 224 were returned yielding a response rate of 43%. We received a 27% response rate from the ASEM sample and a 57% response rate from the middle-level technical manager sample. The majority of respondents were senior executives, product managers or senior technical professionals. The sample of respondents in this study was similar to samples used in other studies on innovation.[30]

Because technology intensive products are more difficult to develop and commercialize successfully[31] we sampled primarily from high technology industries. In the organizations sampled, 82% were considered high technology:[32] 51% were in computers, electrical and electronic machines and equipment, 12% in telecommunications, 11% in fabricated machinery and metals, 8% in chemicals and selected chemical products, and 18% were in various other industries.

The New Product Development Learning Model

We used structural equation modeling techniques to assess the validity of the model. Because the analytical procedures required complete data our results are based on a sub-sample of 214 cases with complete data on all variables. The resulting model is shown in Figure 2.[33] All path coefficients are significant indicating that to create teams that learn it is important first, to establish a clear vision of the project, to refrain from changing the vision prior to launch and to secure management support for the vision. If company and team management does not buy into the project's vision, the team may want to modify the vision so that both management, as well as those on the team, can agree to and support it before proceeding with the project. Second, teams should establish an information capture system that includes procedures about documenting, filing and reviewing. Documenting encompasses more than technical specifications and engineering change orders. It also includes information on customer reactions to early product concepts and prototypes. The information that is captured should be stored and organized in an easily accessible location. Computerized information retrieval systems, such as Lotus Notes or a project Web site may facilitate in the information storage and transfer process. And third, teams that desire to correct problems uncovered along the way need to keep a stable team and institute a systematic NPD process to help translate information into actionable knowledge. This model formed the foundation for developing our innovation audit.

Applying the Innovation Audit

We then wanted to put our money where our mouth was. We decided to apply the model to several real project teams in different companies to try to identify areas of strengths as well as areas of weaknesses that need improving. This analysis we call an Innovation Report Card. The concept was that a project team would be graded in each of 12 categories: Recording Systems (Rec), Review/Meetings (Rev), Filing Systems (Fil), Project Process (Process), Vision Clarity (V-Clar), Vision Stability (V-Stab), Management Support (M-Supp) or Agreement to the Vision,

Team Stability (T-Stab), Organizational Learning (measures as two variables: Information Acquisition [I-Acqu] – the ability of the team to learn about errors and Information Implementation [I-Impl] – the ability of the team to correct errors), Speed of Development (Speed), and Overall Project Success (NPS).

We constructed a reference distribution for each category using our database of 224 new product teams. The database allowed us to convert a category score (e.g., Process) to a percentile score by referencing our database. To highlight and simplify feedback we also assigned "grades" to the project team in each category using normal distribution assumptions - "A" for teams receiving scores in the top 10%, "B" for scores between 70 and 90%, "C" between 30 and 70%, "D" between 10 and 30%, and "F" for scores below 10%. This allowed teams to quickly compare and review their performance and identify areas of high priority for improvement. Since all of the factors are important, teams should first identify those areas *most* in need of improvement – those receiving grades of "Ds" or "F's" -- and then devise an action plan for improvement.

This paper will now discuss the application of the Innovation Report Card to 12 projects from two companies. Six of the projects were from a low-tech consumer products company that manufactures very expensive consumer durables costing thousands of dollars, and six were from a very high-tech industrial electronics R&D organization. For each company, we sampled from two divisions, three projects in each division, to give us a comparison across projects as well as across divisions. We created individual report cards for each of the projects and a summary report card for each division. For the consumer products company, the division summary report cards are shown in Figures 3 and 4. For the industrial firm, the division report cards are shown in Figures 5 and 6.

For the consumer products company, we observed several consistent themes between projects within each division but these themes were different from one division to another. Division #1 had very different challenges as well as strengths compared to Division #2.

From this analysis of the differences between divisions, we learned that each division could help the other because their areas of strengths and weaknesses were different. More specifically, Division #1 had problems with team stability (see Figure 3). One manager reported having to finish 70 projects he did not start. One result of this high turnover in team membership was a deficiency in clarity of vision—because nobody had been around long enough to get a good sense of the vision of the project—and stability of vision—because nobody had a full view of the project from beginning to end. Another result of low team stability was that the review process was inadequate. The members of the teams were so unstable that it was not readily apparent who was on the team that should be included in the review.

Division #2's results were not nearly as uniform as the results from the study of Division #1. Project 1 had poor reviewing and filing; Project 2 had problems with information implementation; and Project 3 had very poor vision clarity, vision support and team stability. Division #2's problem boiled down to one of communication. Team members said that this division received over 200 faxes every day and that they frequently were misfiled or lost. The project teams were like the three blind men in the story who come upon the elephant. The first man feels the leg and thinks it's a tree. The second man feels the tail and thinks it's a vine. The third man feels the trunk and yells, "look out, a snake!" Depending on what information was getting to a particular project the team would perform in different ways. We can see this problem manifest in the low score in the filing system for the summary report card of Division 2 (Figure 4). Interestingly, Division #2 did not have the same problems with personnel turnover that we saw at Division #1.

When we presented the CEO with the report card results he said that what was really delinquent in Division #2 was filing. He asked if we could develop a filing system for Division #2. We told him that we would like to think about it. We wanted to see if the report card could do what it was supposed to do: to help the company use the knowledge it already possesses and to foster cross-team learning. So we reviewed the report card from Division #1 to see if that Division could provide some assistance (Figure 3).

Division #1 had a filing system that worked, so we visited both divisions to compare filing systems. Division #2's filing system consisted of one large folder with several manila folders inside: one folder for the specifications, one for the project plans, one for change orders, etc. As we inspected two observations emerged: 1) a great deal of the information in the files was misfiled – specs were in the change order section, etc. and 2) some information was missing entirely from the files. For example, frequently the blueprints were missing because; "people used them a great deal and would forget to put them back into the files." We looked at about a dozen project files from Division #2 and invariably they were in total disarray. In contrast, Division #1's filing system scored a "B+" (Figure 3). We investigated further and found that this division used a different type of filing system. Each project had one multi-section file folder – the kind where each section had two metal prongs to hold the papers. People could not simply "stuff" papers into this file. It was necessary to take each file out and conscientiously put the piece of information into the correct place.

We reported back to the CEO that he did not need to hire us to devise a new filing system for Division #2 because Division #1 had already figured out how to do it effectively. We then facilitated a discussion between the General Managers of both divisions on the filing system as well as on team stability. Division #1 was deficient in team stability, but Division #2 had figured out how to keep its people, despite being in the same city and industry as Division #1 -- where new job offers were plentiful. The CEO was pleased that we stimulated a focused dialog within and between divisions and division managers.

The second company that applied the innovation audit was a high technology industrial firm that designs and develops extremely sophisticated electronics equipment. Again, we studied six new product projects – three projects from two different divisions, or as they called them, R&D Centers. The summary report cards for each center are shown in Figures 5 and 6. What we uncovered was that there existed several systemic problems that were consistent across projects in both centers revolving around team stability and vision stability. The problem was that the company would rotate project managers approximately every three years to different projects.

When a new project manager would be assigned, s/he would have to understand and buy into the vision of the project. This buy-in would frequently not happen. As a result, the project manager would change the vision of the project and cycle time would increase. Our recommendation to this firm was to try to keep teams more stable, but if this were not possible then: 1) adhere to formal structured NPD process so when new personnel were added to the team, they would know the current status of the project, 2) ensure the vision is clear to people on the team so that less disruptions would occur when personnel changes, 3) keep good records and documentation of the project's progress so new people could be brought up to speed quickly, and 4) store the records in an easily and rapidly accessible manner so new people could retrieve them easily and review the history of the project.

We also provided this firm a "Best-in-Factor" and "Worst-in-Factor" analysis that compared projects across centers to determine best-in-house and worst-in-house practices. As shown in Table 1, Team #6 scored the highest in Recording/Documenting Information and Team #4 was the worst. Here, Team #6 could serve as an example of best practice for implementing Recording Systems and Team #4 should avail themselves to this information. Interestingly, although Team #6 is proficient in recording information, its Filing System was the worst of the group – meaning that the team was good at capturing information, but the information was difficult to find when it was needed.

Conclusion

Frequently, when we present our results to company executives, they ask, "Which factor is most important? Our resources are limited and if we were to concentrate on one area which should it be?" The answer is that it depends. It depends on the goals of the new product team. [34] If the team wants to reach market (speed) quickly, then NPD Process, Vision Stability, and Team Stability are have been shown to be the most important. [35] If the team is trying to develop self correcting, self-directed teams (information implementation) then NPD Process, Team Stability, Management Support, Recording, and Reviewing and are critical.[36] And if the goal is simply

successful innovation (NPS) then NPD Process, Management Support, Reviewing, and Vision Clarity are most important.[37]

For companies to compete in today's turbulent markets, they must continuously innovate better and faster. To improve their new product development efforts, they need to learn how to learn. Metrics can help a team to focus on areas needing improvement. The innovation report card is one step in helping teams learn by assisting them in measuring and quantifying their performance. It is our hope that teams will use the innovation report card during a new product effort so areas of deficiency can be identified and improved. An alternative approach is to hire a consultant to fix a company's innovation team's problem. What usually happens? The consulting company completes a report. The new product team or company executives read the report (sometimes) and then it goes in the drawer, never to be seen again. This approach is not overly effective in bringing about change in an organization -- it does not promote learning within the organization.

Reading a report is an ineffective way to affect change in an organization. As Pike asserts, in good faith attempts to learn, people remember only 10% of what we read and 20% of what we hear -- but we remember 90% of what we teach or do.[38] In contrast to a consulting report, the innovation report card comparison offers a fundamentally different approach to allow companies and new product teams to learn. By identifying best-in-factor teams – teams that excel in one or more areas, the people who managed these exemplary teams can become teachers to current and future teams. This will enable people to internalize and transfer critical organizational knowledge, so that teams will be able to help themselves -- to diagnose their own problems and make corrections. Tools such as the innovation report card is one step in that direction.

Although innovation metrics can be helpful, they are only part of the innovation improvement equation. The Innovation Report Card is not THE answer. Companies must combine measurement with a process of turning insight into action. After all, if measurement were the only answer, nobody with a scale would be fat.

Figure 1[39]

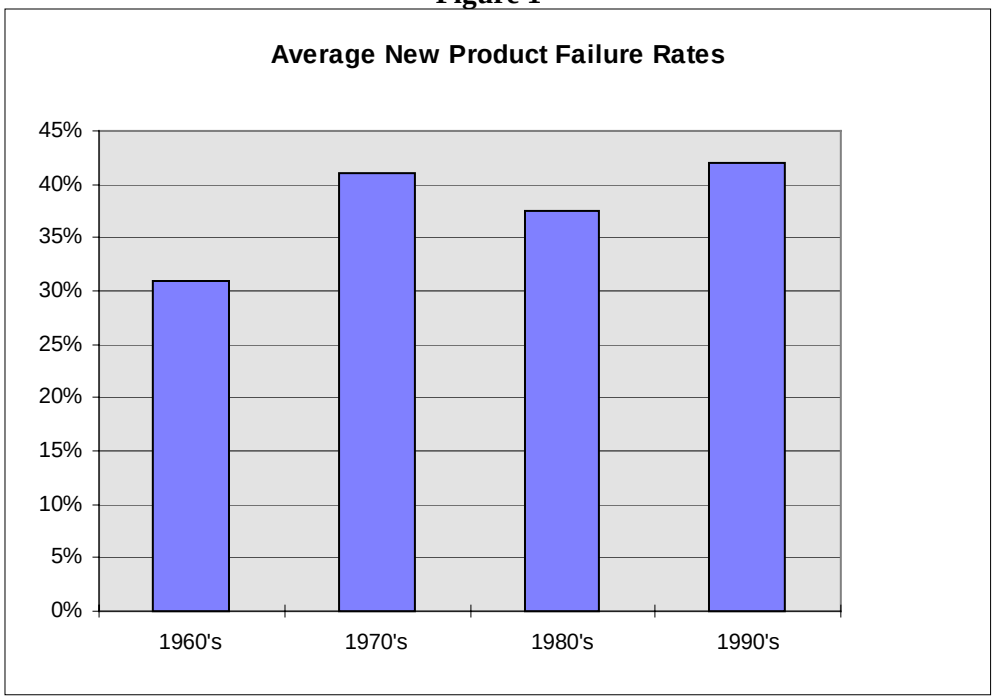
Average New Product Failure Rates
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
1960's
1970's
1980's
1990's

Figure 3 - Consumer Products Co.
Summary Div. #1 Report Card

3 Projects Total

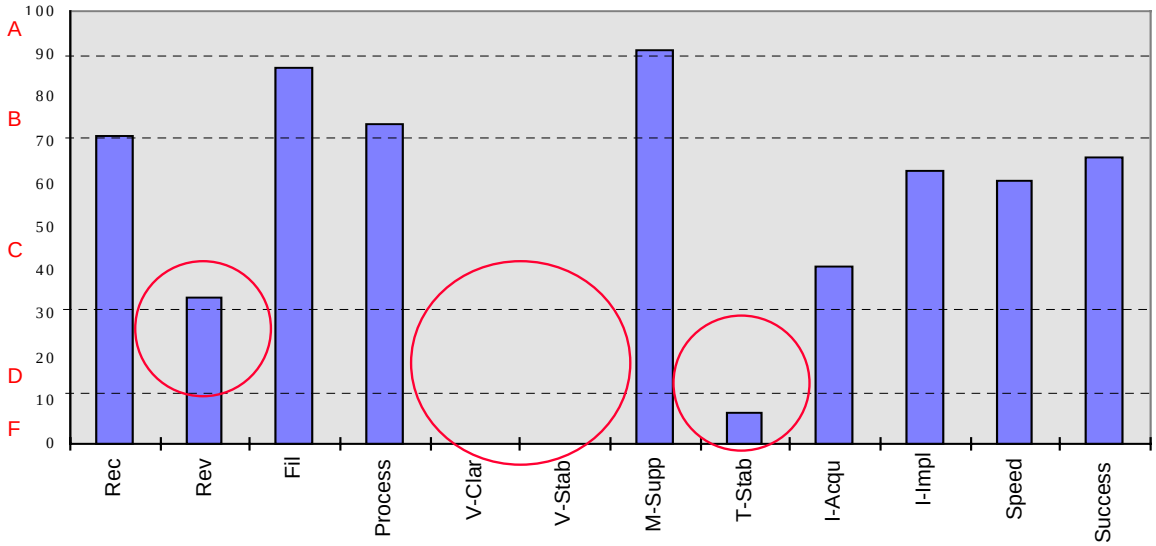

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Figure 4 - Consumer Products Co.
Summary Div. #2 Report Card

3 Projects Total

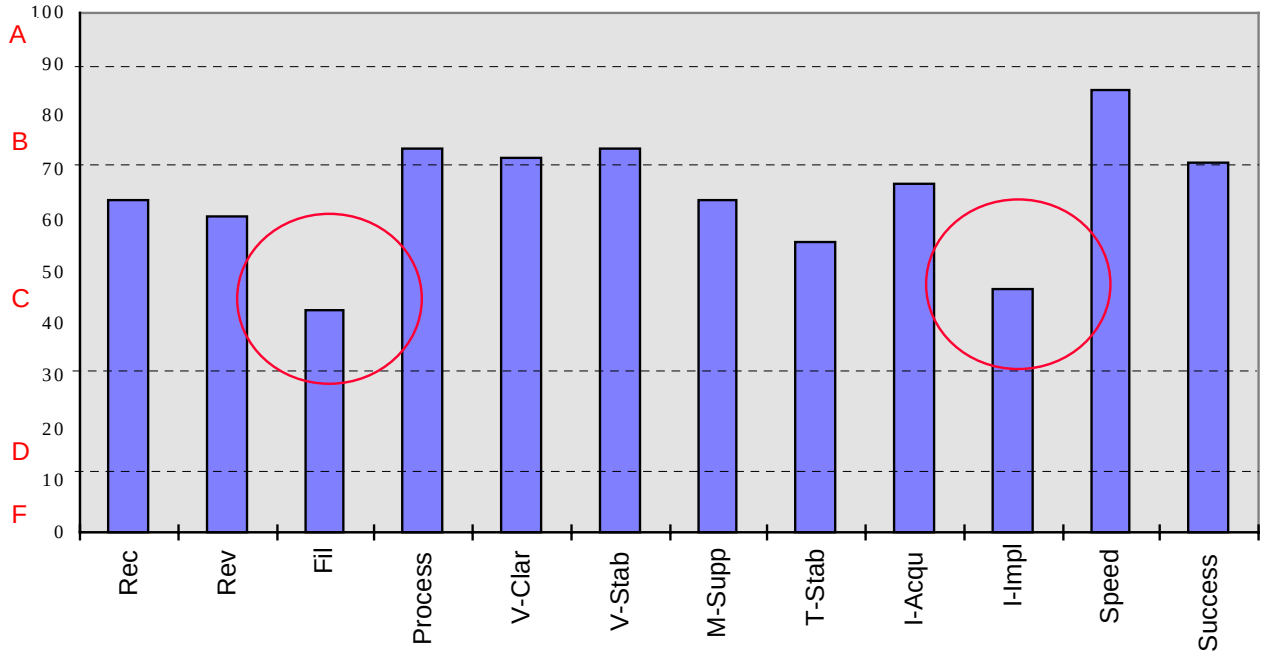


Figure 5 - Industrial Products Co.
Center 1 - Summary Report Card

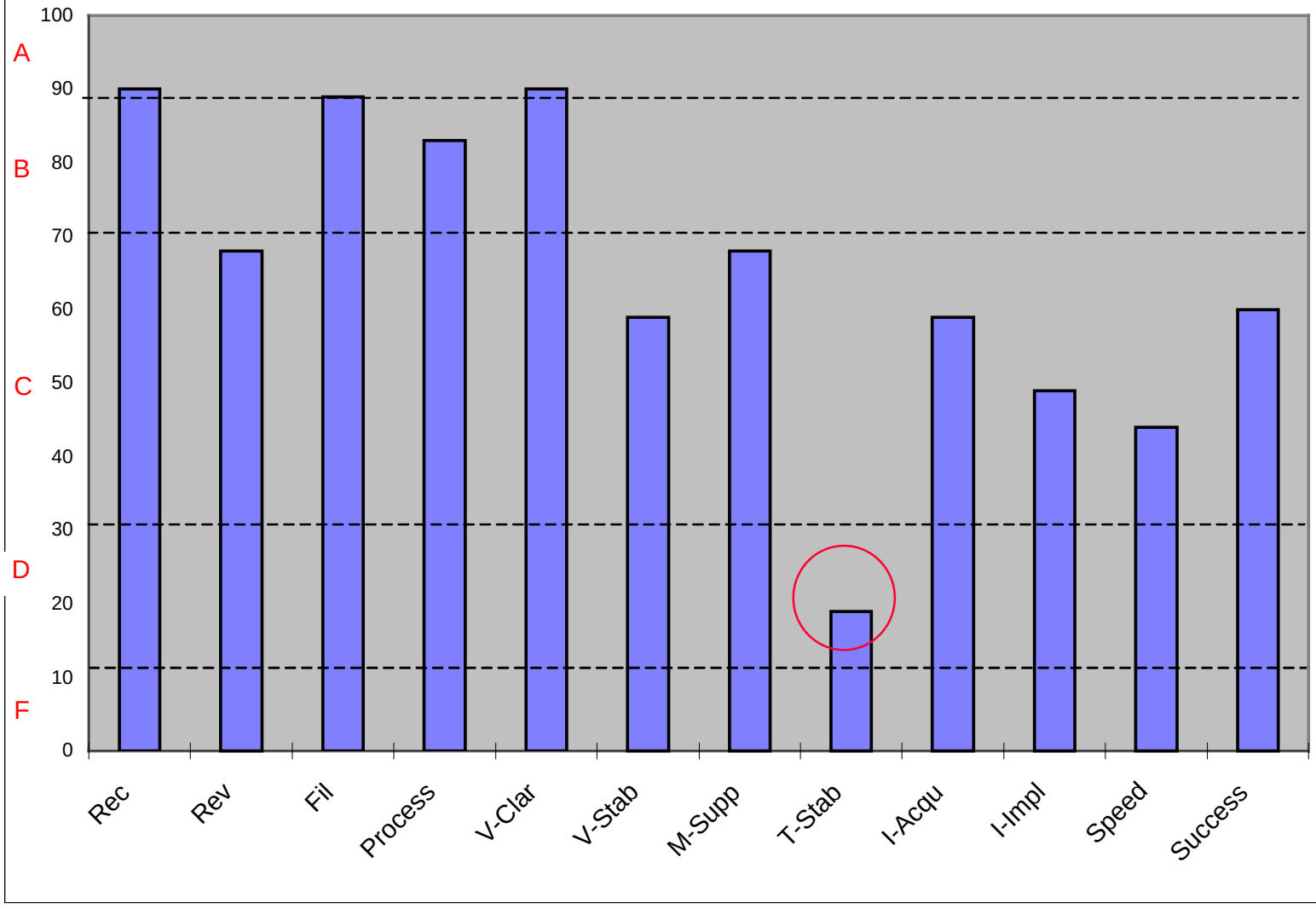


Figure 6 - Industrial Products Co.
Center 2 - Summary Report Card

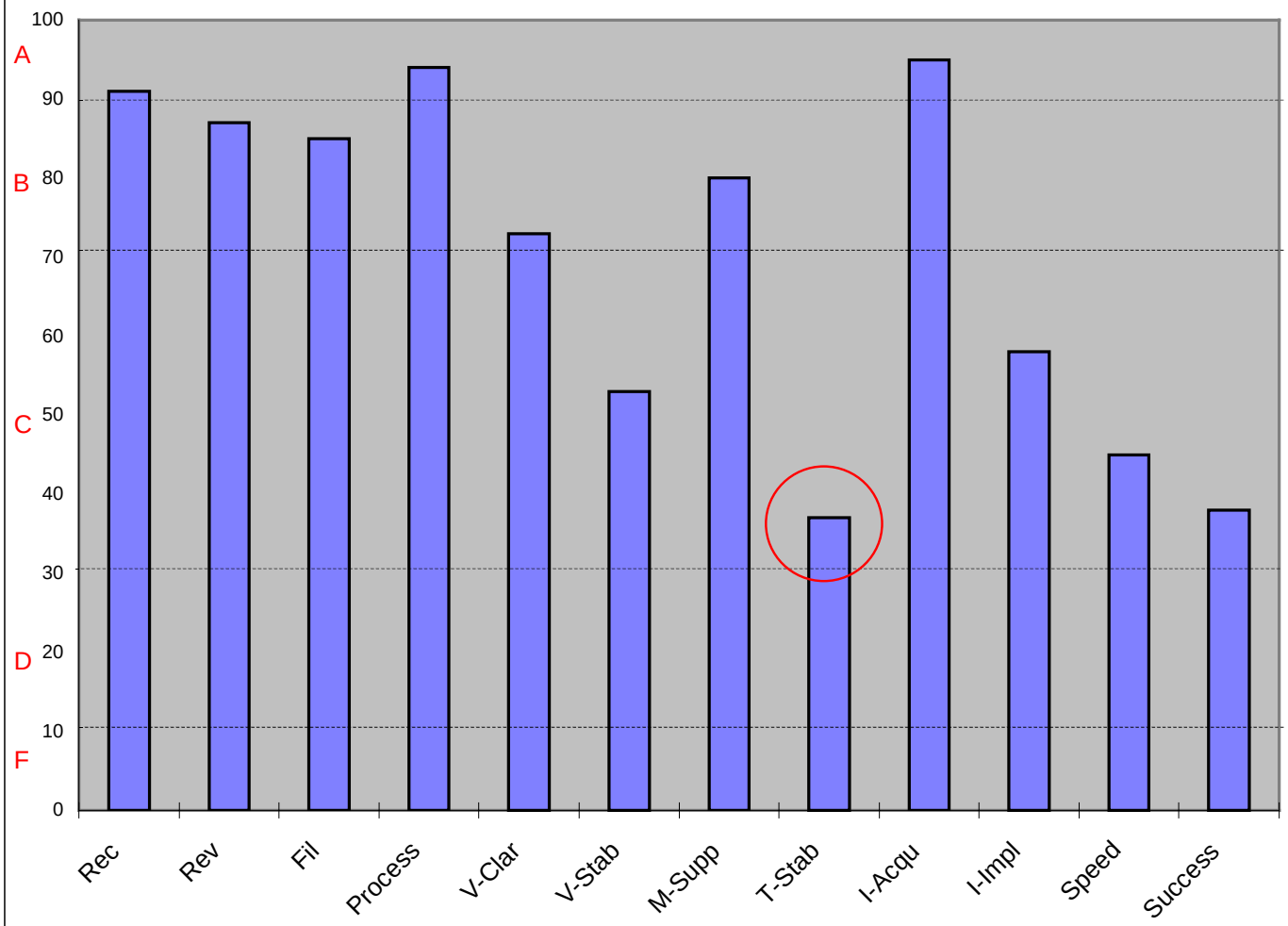
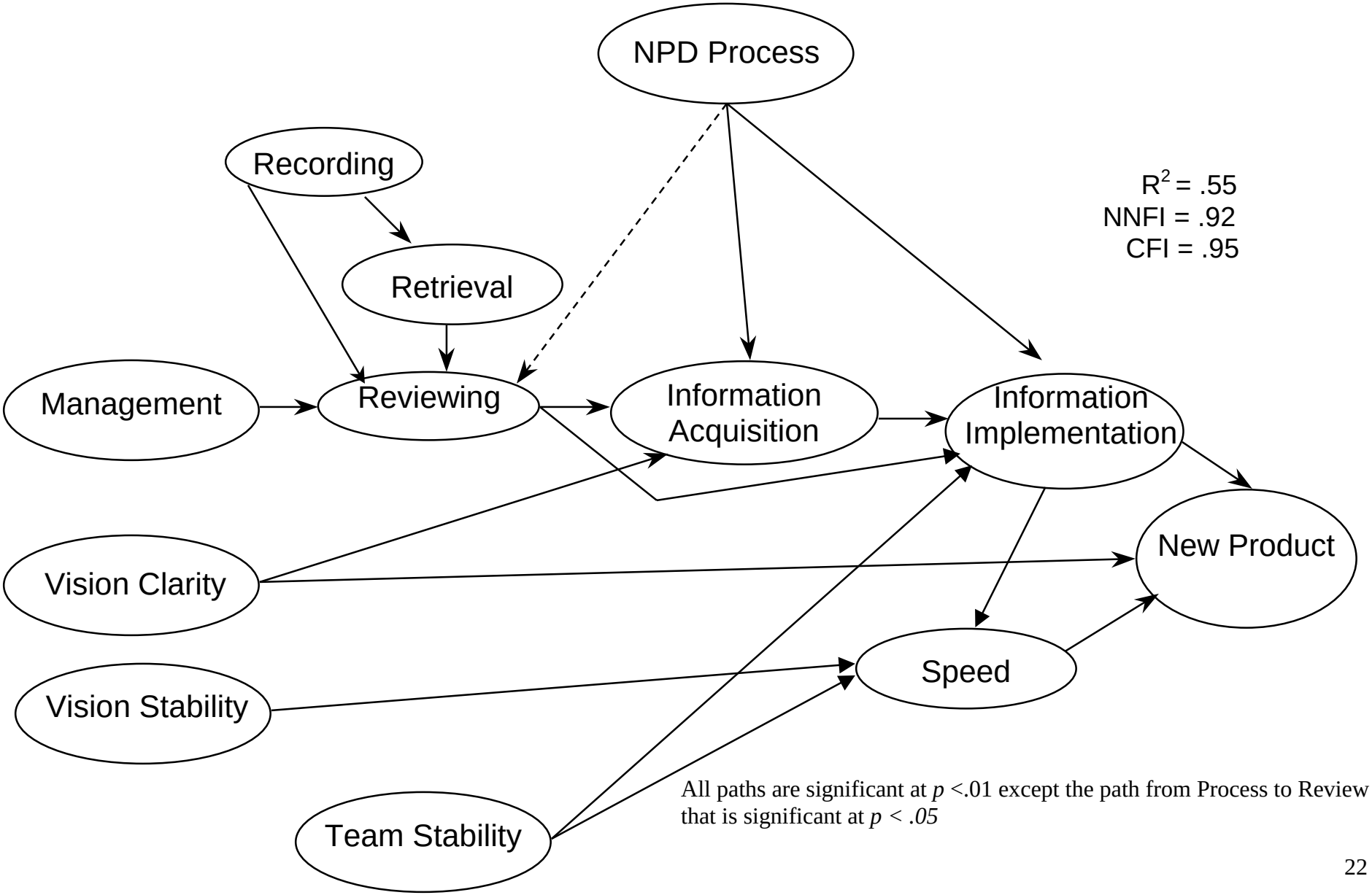


Table 1 - Best- & Worst-in-Factor for Company

Factor	Best	Worst
Recording Systems	6	4
Reviewing/Meetings	2	3
Filing Systems	3	6
Project Process	5&6	1
Vision Clarity	3	2
Vision Stability	3	1
Management Support	4	6
Team Stability	5	1
Information Acquisition	2	1
Information Implementation	5	1
Speed of Development	6	2
Project Success	5	4

Figure 2 – New Product Development Learning Model



All paths are significant at p <.01 except the path from Process to Review that is significant at $p < .05$

Footnotes

[1] See Tenner, Arthur, R. and Irving J. DeToro. *Process Design*. Reading MA: Addison-Wesley.
[2] Shumann, Paul A., Derek L Ransley and Donna C. L. Prestwood (1995) "Measuring R&D Performance," *Research-Technology Management* (May-June 1997):45-54.
[3] These estimates were aggregate of results of credible studies performed during each of these time periods.
[4] Lynn, G. "New Team Learning," *California Management Review*, 40 (1) (1998):74-93.
[5] See Divesta, F. J. and Gray, S. Listening and Notetaking II. *Journal of Educational Psychology* 64 (1973):278-287; Fisher, J. L. and Harris, M. B. Effects of notetaking and review on recall. *Journal of Educational Psychology* 65 (1973):321-325; Hult, R. E., Cohn, S. and Potter, D. An analysis of student notetaking effectiveness and learning outcome in the college lecture setting. *Journal of Instructional Psychology* 11 (1984):175-181; Kiewra, K. A., DuBois, N. F. Christian, D. and McShane, A. Providing study notes: Comparison of three types of notes for review. *Journal of Educational Psychology* 80 (1988):595-597.
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[33] Using the measures and items noted, we developed a path model shown in Figure 1. This model was validated using structural equation modeling. Indices demonstrated that the model provided a good fit of the data (CFI, NNFI, etc. > .9). For a more detailed explanation of this analysis, please see, Lynn, Gary and Richard Reilly (1998) "Knowledge Management in New Product Teams," Working Paper, Hoboken, NJ: Stevens Institute of Technology.

[34] To develop the following recommendations we ran three regression equations with Speed, Information Implementation and New Product Success as dependent variables. All regression equations were significant at the $p < .000$ level – indicating that the models provide a good fit of the data.

[35] The significance levels of the regression coefficients are as follows: NPD Process (p = .02), Vision Stability (p=.000) and Team Stability (p=.007).

[36] The significance levels of the regression coefficients are: NPD Process (p=.03), Team Stability (p=.04), Management Support (p=.02), Recording (p=.03) and Reviewing (p=.004).

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