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Get What You Need from Technology Information Products

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GET WHAT YOU NEED FROM TECHNOLOGY INFORMATION PRODUCTS

"Why don't technology managers want our analyses? And what can we do about it?" This was the title of our effort to contrast the perspectives of analysts and managers in a 2001 SCIP (Society of Competitive Intelligence Professionals) presentation (*1*). The issue struck a chord with both sides. Analysts feel frustrated that their hard work is under-appreciated; managers feel frustrated that they're not getting the information they want, when they need it.

Empirical technology analyses can take many forms, including: competitive technological intelligence, and technology forecasting, foresight, roadmapping, and assessment (*2*). Such analyses can aid various technology managers and professionals, including CIOs, R&D managers, new product development managers, operations managers, IP managers, strategic planners, and the Executive Suite.

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And that leads us to our questions: Why do these empirical technology analyses not play a stronger role in technology management? And what can we do to enhance this role?

Utilizing Research Knowledge

As technology analysts in the mid-1990s, we were bubbling with enthusiasm for our version of empirical technology analyses (*3*). We thought that technology managers would quickly grasp the value and develop an insatiable appetite. Instead, after some hundred studies (conducted for companies, agencies and universities), we recognized something was wrong.

Accordingly, we turned to the National Science Foundation for support to research the issue. The resulting three-year project identified serious impediments to knowledge flow. The Center for Innovation Management Studies (CIMS) supported a follow-on study that elicited 32 case experiences (*4*). This article reports what we learned.

We are not alone in discovering that utilization of technology analyses in decision-making is not automatic. Colleagues in management science and operations research, policy analysis, statistics, program evaluation, and patent analysis have expressed similar concerns. "Knowledge Utilization" can claim to be a field unto itself, with journals dating back several decades (*5*). Issue, content, context, and presentation all affect the utility of findings (*6–9*).

Decision-makers trust familiar sources. In general, knowledge derived from empirical analyses is less familiar—consequently less relied upon—than tacit knowledge from a respected colleague. A 1999 *Harvard Business Review* article (*10*) distinguished use of codified knowledge, stored in databases, from personalized knowledge, delivered face-to-face. Surprisingly, technology managers seem to utilize empirical analyses

much less than some other managers. Examples include: accounting measures that support exacting control over *financial* processes, statistical quality control that informs *production management,* and the use of rapid quantitative assessments to help determine whether to alter *marketing* programs. In contrast, technology managers seem to rely more heavily on expert judgment and managerial intuition.

Getting the Analyses You Need

Our conceptualization of what affects the utility of empirical technology analyses keys on two roles: the prime user (i.e., the manager/customer) and the technology analyst. Each may actually involve multiple persons. In particular, "the user" may involve a sequence of people who authenticate and filter findings that contribute in various ways to complex business decision processes. We label the technology analysis findings as *Technology Information Products* (*TIP*s) to convey the notion that these are deliverables, and they can take multiple forms. Our sole evaluation criterion is the extent to which decision-makers gain value from the TIP—we don't address validity or other considerations.

Guided by this conceptualization, we digested the lessons from our case studies and experiences to yield eight factors that can affect your getting TIPs that make a difference in your decision-making. The Table, next page, presents these in the form of a "TIP-sheet." We now discuss each of the factors.

1. *Know Thy Analysts*—Interact with your analysts to recognize their strengths and figure out how to compensate for their weaknesses (e.g., particular technical bent, communication skills). Don't allow a reclusive analyst to "toss the report over the transom" to you. Conversely, make sure the analysts understand your needs and preferences. Share ideas on how the study can maximize its impact. In our cases, strong rapport between manager and analyst was the best predictor of a useful TIP. Have a beer together!

2. *Get Involved*—Highly-utilized TIPs are characterized by user–managers being involved throughout, both in the study formulation and analytical process. One analyst told us that "the reason the influence was high was because we could so quickly analyze all the different 'what-if' scenarios that the client had and come back with viable data. . . . In some cases, we added to the model when the client was sitting there with us. . . . Hence, the consumer understood the tool and the approach of the analysis well."

Effective TIPs respond to expressed user needs rather than having the analyst decide what's interesting. As Joe Coates puts it, a goal is to avoid surprising the client. Continual interaction can avoid being "jolted" by a report (*11*).

Express explicitly what you need and when. Discuss the types of information to be used, analytical methods and assumptions, so you are comfortable with them.

3. *Enhance the Organizational Climate*—This factor warns not to assume that others will be receptive to the technology analysis. Assess the likelihood of resistance, determine its roots, and take appropriate advance action to warm the climate.

Well-used TIPs apply familiar, credible methods. Also, one analyst noted that the study was accepted by the organization because "the report was respectful of people (getting them involved, their opinions were respected and used, the threat of the results was respected), and the report was factual and realistic. I had my boss' backing, and the report provided meaningful options."

Some warning signals:

* New technologies tend to be perceived as disruptive.

* Successful units tend to be less receptive to new ideas.

* People are likely to feel threatened by a call for change, such as different skills or downsizing.

In a politicized environment, get senior management buy-in ahead of dissemination and open deliberations. For a strange, new technology, directly explore its implications for your organization.

4. *Work together to build credibility*—The Table spotlights three facets: respect for the analyst, authority given the information product, and acceptance of the methods used.

The majority of interviewees perceived the analyst's credibility and that of the methods used as a necessary condition for acceptance. Reputation and experience are critical if the analyst is from outside the organization. One interviewee, whose TIP was not effectively used, stated that "what affected the credibility of the study was the mismatch between users and presenters in terms of interests, age, experience, etc."

Respondents overwhelmingly confirmed that including experts in the development and analysis of a TIP adds to credibility. A way to boost credibility is to enlist trusted associates, especially internal experts, to help sell the analysis. Start small—successful projects can be expanded. Evaluate technology analyses to determine what worked and why. Then, tout your analysts' successes to the organization ("this study led to that decision, which made us $1 billion!").

5. *Encourage vivid reports*—At least ten interviewees claimed vivid findings caught their users' attention. Convince your analysts that you and other users should take away an explicit, memorable finding or action implication from every TIP.

Manager-Analyst Environment:

1. Know thy analysts:
- Understand their skills and orientation; adjust or team as needed.

2. Get involved:
- In formulating the analysis.
- In the analytical process.

3. Enhance the organizational climate:
- Get your organizational unit(s) receptive to new information.
- Interest significant others in formulating and using the study too.
- Reassure those you worry might feel threatened by the study.
- Budget the TIP appropriately.

Information Characteristics (the TIP itself):

4. Work together to build credibility:
- Assure the analyst's credentials are properly appreciated.
- Endorse the TIP and seek endorsement of other pivotal executives.
- Understand the analytical methods and be sure they are clear to other key users.

5. Encourage vivid **#@!#*!! (memorable) reports.

6. Assure the TIP is on time for decision-making.

7. Be clear on what TIP content is needed:
- The right blend of information for taking action.
- Answers (as opposed to raising more questions).

8. Assure the best possible communication:
- Be clear as to the right level of detail for each key user.
- Get analysts to personally communicate with each key user.
- Arrange to have findings presented interactively (2-way feedback).
- Demand TIPs customized to each key user's preferred style, as feasible.

As one interviewee related (paraphrased): We analyzed the patent portfolio of another company whose technology development clashed with our own. We showed that the potential payoffs of acquiring this company far outweighed those of working around their patents. Presentation of sharp contrasts in the benefit/risk ratios served to change the mind of the senior manager. What was striking, that senior manager had opened the meeting to decide on action by categorically rejecting this possibility.

One key to vivid presentations is information visualization. Paul Germeraad, former V-P at Aurigin Systems, related the success of their patent analysis software to its compelling 3-D landscapes of a patent environment. Executives could immediately comprehend the threat in overlapping interests or the opportunity posed by an empty "whitespace." The message here is clear: analysts ought to work to provide "hooks" that their users grab onto.

6. *Assure the TIP is on time for decision-making—* Certainly, TIPs must be available in time for strategic

decision-making. For 18 studies, the time to conduct and finish the analysis was rather short (e.g., two days to six months, with an average at about two months). Don't let your analysts get away with their tendency to analyze to death, no matter how long that takes. Providing first-cut results, on a schedule, helps the timing and targeting of issues, with e-mail as an alternative rapid delivery vehicle. We find great promise in software that can automate routine processing steps, thereby dramatically speeding up many technology analyses. One multinational reported reducing the time of a key competitive technology intelligence report from three months to three days. That makes a qualitative change in what analyses can be relied upon in technology management.

7. *Be clear on what TIP content is needed*—How should analysts package and present their findings? We discern multiple dimensions, including proper scope, the right decision focus, and "hooks." The best hooks explicitly associate analytical findings to issues known to be of concern to the target user. For instance, it's good to report back on whether the "option suggested by Vice-President VP" makes sense. Or, to show how a technology development strategy is likely to affect our unit's bottom line.

Highly-utilized TIPs match users' preferences. In fact, the majority of favorable cases indicate a concern not only for technical issues, but they also cover the business strategy and cost implications essential to the decision at hand. In contrast, less-utilized TIPs are more apt to report negative outcomes.

We distinguish three types of TIP focus: routine, anticipatory and responsive. Our case results support the desirability of explicit responsiveness. In one instance, an Executive Suite advisor described his deliberate efforts to convert anticipatory or routine work to responsive by actively engaging the customer in interim reviews. Put another way, he worked hard to make the report "belong to" the prime customer. Conversely, we suggest you, as user-manager, be proactive in expressing what you want.

Spell out what constitutes directly usable information. For many analysts, this means suppressing copious auxiliary information, making it available on request. Our cases suggest that analysts should restrain themselves in posing many new questions. Have analysts address uncertainties and estimate risks to help you assess the TIP and reach decisions. Demand that analytical processes be as transparent as possible, with a suitable blend of numerical, text and graphical materials for the target user community. You may want to receive analytical results in "bite-size" pieces to avoid information overload and to provide interim feedback.

8. *Assure the best possible communication*—In most successful TIP cases, the analyst communicates directly to

the prime customer and to other users. Dynamic presentations can allow users and analysts to perform "what if?" analyses in real time during a meeting. Encourage your analysts to suitably tailor their TIPs. For example, one interviewee mentioned, "The format used for presentation depended on the group. Some presentations were open discussions; some were interactive discussions with the model; and some were high-level outcome presentations with several main points for executives."

Don't accept a "one size fits all" solution if it's just the easy way out. As one analyst/manager cautioned us—we need to revise analysts' natural tendency to allocate "95 percent" of their energies to the analysis and "5 percent" to presentation; a better target is closer to 50–50.
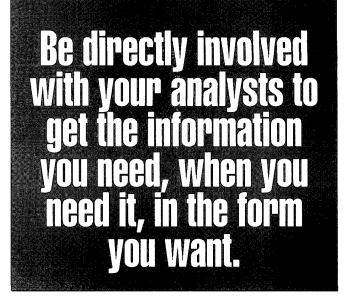
To Sum Up

Get directly involved with your analysts to ensure you get the information you need, when you need it, in the form you want.

One of the most exciting changes we see taking place is the standardization of decision processes. We have observed two multinationals introduce required TIPs into their strategic business decision processes. In one company, R&D and IP management use stage-gate processes. These require explicit technology analyses and explicit TIP forms at each decision stage. This standardization, while not without dangers, offers huge gains in analytical efficiency and managerial familiarity.

Our bottom-line message is that empirical technology analyses can enhance your managerial performance. But this takes proactive collaboration with your analysts. You probably need to change their behavior, in line with the TIP-sheet's eight considerations. And taking full advantage of the knowledge derived from the amazing repositories of R&D and business information entails change on the part of technology managers too.

Empirical technology analyses do improve decision processes. We predict that, within a decade, gains from this richer technology management information will cause managers who avail themselves of it to succeed, while dooming exclusively "intuitive" managers to failure. As analogies, we note the advent of empirical

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decision support that has revolutionized financial, operations and marketing management. ◉

References and Notes

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