

THINKING STYLES OF NORTH AMERICAN IT EXECUTIVES

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ABSTRACT

This paper provides a preliminary report of a study of the thinking styles of mid-level and senior information technology executives from the United States. Contrary to popular belief, a significantly smaller proportion of these executives prefer analytic thinking, and a significantly larger proportion prefer holistic thinking, than would be expected. This reality, coupled with a common (mis)perception that holds the opposite view, may preclude IT executives from making optimal contributions to the organization as a whole.

THE QUESTION

In a previous study of high-tech CEOs' perceptions of the senior IT executive within their companies [Delisi, Danielson, and Posner 1998] we discovered that the CEOs believed a CIO needed essentially the same set of skills to succeed in his or her position as did a CEO:

- *General management* – an understanding of the business as well as the company's markets; organizational development abilities; and a broad background in various facets of activities essential to the company's success.
- *Strategic sense* - a "big picture" view of the organization; the ability to synthesize; and the ability to take calculated risks.
- *Interpersonal skills* – communication; education; salesmanship; recruiting/hiring/nurturing staff; leadership.

These executives were unanimous in their belief that the senior IT executives with whom they had personal experience, and IT executives in general, were lacking in these skills, particularly the ability to develop a big picture view of the organization. This observation was in spite of the fact that the CEOs believed that IT executives have greater opportunity to gain such a broad understanding because of the pervasiveness of IT within the organization. This shortcoming caused senior IT executives to be viewed as technical specialists rather than true business executives.

This view of IT executives as heavily analytic individuals interested primarily in technical detail is fairly widespread, frequently surfacing in presentations and the trade press [Hildebrand 1995]. Psychological studies of computer professionals using the Myers-Briggs Type Indicator [Buie 1988; Lyons 1985] suggest that the subjects are typically introvert, intuitive, thinking types (ISTJ, INTP, and INTJ types). Myers-Briggs theory claims such types are highly analytical, detail oriented, and inwardly focused [Myers and Myers 1980]. That is, the studies support the CEOs' perceptions.

However, most of these studies have focused on the lower ranks of the IT organization, rather than senior management. We wondered whether similar characteristics really held among more senior IT executives, or if the continual emphasis on "aligning IT with the business" over the 10-plus years since these earlier studies might have led to different characteristics.

THE INSTRUMENT

We have used the Inquiry Mode Questionnaire (InQ) [Harrison and Bramson 1984] in our consulting and leadership development work for years, to sensitize clients and students to the need to adapt their communication techniques to suit the thinking style of the individual with whom they are working. We chose the InQ for two reasons: it looks at how people process information, something to which IT professionals can easily relate; and it stays away from personality measurements (e.g., introversion or extraversion) thereby avoiding the defensiveness that might result from a discussion of one's personality.

The InQ uses a set of 18 questions in a forced choice ranking format. Each question is followed by five possible responses which the individual must rank from five, which is most typical of the individual's style, through one, which is least typical of the individual's style. The result of the questionnaire is a score associated with each of five thinking styles:

- *Synthesist* – people who focus their thinking on ideas, and find connections among things that other people see as having little or no relationship.
- *Idealist* – people who experience reality as the whole into which new data are assimilated, based on perceived similarities to things they already know.
- *Pragmatist* – people who perceive a world constantly changing and largely unpredictable, requiring a flexible “whatever works” approach to problem-solving.
- *Analyst* – people who see the world as structured, organized, and predictable, and who believe there should be one best method for doing anything.
- *Realist* – people who are inductive, and whose mental models are derived chiefly from observation and their own experience. [InQ Educational Materials 2001]

Results from the InQ have proven to be both valid and reliable in multiple testing events [Bruvold, et. al. 1983].

Scores of 60 or higher in a category indicate a peak or preference for that thinking style. Scores of 48 or below indicate a valley or relative disregard for that thinking style. It is possible to have a single peak, two or three peaks, or no peaks. In the general population approximately 50 percent of the people will have a single peak of 60 or greater. Thirty-five percent have a preference for two thinking styles, with the most common combinations being analyst/realist, idealist/analyst, and synthesist/idealist, and only two percent have a preference for three styles. Thirteen percent have relatively flat profiles, which may indicate an ability to adapt one’s thinking style to a given situation.

THE SAMPLE

The data reported in this paper were gathered from 19 separate groups, ranging in size from four to 56 individuals, totaling 339 subjects. The vast majority were mid-level or senior IT executives, almost exclusively from the United States (fewer than 10 were living or working outside the US when they took the questionnaire) and a majority from California. It is important to note that the subjects in this study were not randomly selected but were chosen from three distinct populations to which the authors had access.

The first group consists of 185 individuals who were participants in the Information Technology Leadership Program (ITLP) workshops that we offer through the Executive Development Center of Santa Clara University. The ITLP is a three-day workshop that focuses on the "soft skills" IT professionals must have at the executive level in order to be successful in their jobs, including executive leadership, relationship building, communication, consulting, strategic vision, sales and marketing skills. For the most part, these individuals self-selected to attend ITLP, and all participants completed the InQ.

The second group is composed of 98 senior level IT executives to whom we administered the InQ as part of our consulting practice. For the most part, these individuals did not self-select to be involved in the consulting experience, and all the participants completed the InQ.

The final 16% of the sample were attendees at a presentation given by the second author at the Giga World conference in Las Vegas in May 2001. Fifty six members of the audience volunteered to take the InQ questionnaire and report the results. Unfortunately, we do not know what percentage of the audience these 56 subjects represent.

THE RESULTS

Table 1 shows the percentage of the general population that would be expected to show a peak for each of the five thinking styles, the percentage of the sample that did show a peak, the significance of the difference between the two values as determined by Student’s T-test, the range of actual percentages seen across the 19 sample groups, and the standard deviation across the sample groups. Although there is wide variation in the distribution of thinking style peaks across the sample groups, taken as a whole the analysis shows that a significantly larger percentage of the sample had peaks in the idealist and pragmatist styles than would be expected, and a significantly smaller percentage had peaks in the analyst style. It should be noted that the significance evaluation was done with pooled variance, but no results changed when the analysis was done with unpooled variance.

Table 1. Thinking Style Peaks in Sample Population
N = 339

	Synthesist	Idealist	Pragmatist	Analyst	Realist
Expected Percentage	11.1%	37%	18%	35%	24.4%
Actual Percentage	10.6%	45%	27%	20%	20.9%
T-test Probability	0.408	0.008	0.316×10^{-3}	0.111×10^{-6}	0.107
Range Across Sample Groups	0% - 22.2%	31.3% - 81.8%	17.7% - 53.3%	6.7% - 43.8%	7/1% - 38.1%
Standard Deviation	6.7	11.8	13.3	9.5	9.3

Similarly, Table 2 shows the same data for thinking style valleys for the general population and for our sample. A significantly lower percentage of the sample had valleys in the idealist, pragmatist, and realist thinking styles than would be expected, and a significantly higher percentage had valleys in the analyst style.

Table 2. Thinking Style Valleys in Sample Population
N = 339

	Synthesist	Idealist	Pragmatist	Analyst	Realist
Expected Percentage	43%	12.3%	35.4%	18.2%	24.3%
Actual Percentage	44.8%	8.8%	12%	33.3%	18.9%
T-test Probability	0.286	0.048	0.144×10^{-14}	0.231×10^{-7}	0.024
Range Across Sample Groups	21.4% - 61.9%	0% - 25.0%	0% - 35.7%	7.1% - 50.0%	0% - 41.2%
Standard Deviation	12.0	6.8	8.3	12.2	10.2

WHAT MIGHT THIS MEAN?

These data run counter to the popular conception that people working in information technology are predominantly analytical. It is interesting that, when we ask the subject groups (before administering the questionnaire) which thinking styles they will typically prefer, the consensus is that they will be analysts or pragmatists. That they are significantly less likely to use the analyst thinking style than the general population always surprises them. Thus our sample subjects accept the stereotype of their profession even as they contradict it by their own example. What might explain these results?

One conjecture assumes that an individual's thinking style determines his or her suitability for a particular occupation or position. That is, the members of the sample group have been promoted to management positions precisely because they innately possess the more people-centered, holistic view that management requires for success. A second conjecture assumes that, over time, individuals adopt the thinking styles that are necessary to be successful. Thus, while analytical skills are important in the lower levels of the IT hierarchy, once an individual is promoted to management levels they learn to think in ways better suited to the demands of their new role.

Evaluating the validity of these conjectures would require a study with a broader sample (not only mid-level and senior IT managers, but also lower level IT staff), as well as a longitudinal component to determine whether an individual's thinking styles changed to reflect changes in job responsibility and expectations.

In the context of this conference it would be interesting to study thinking styles in other cultures. For example, Bjerke [1999] cites "modes of thinking" (coarsely broken into pragmatic or universalistic modes) as a possible variable with which to classify cultures, although he doesn't pursue that further in his study. How might senior IT executives in Europe, Asia, Africa or the Middle East differ from our North American sample?

Regardless of which of the conjectures above might prove to hold true, these results signify at least two major problems for IT executives, for the IT function, and for the enterprise as a whole. The first is that CEOs expect senior-level executives to have a big picture view and the ability to pull together disparate sources of information to solve strategic problems. A perception that they lack these skills is career limiting for IT executives, and also leads to them not being seen as peers by other executives within the organization.

A second problem is that the perception that IT executives are narrowly focused and analytical means they are not given the opportunity to lead enterprise-wide initiatives, such as e-Business or knowledge management, for which the IT function is an obvious driver. This could well lead to limited success for such initiatives, to the detriment of the corporation.

The reality framed by the data in this study is that the majority of IT executives employ the idealist and/or pragmatist thinking styles, which are characterized by a holistic view and a focus on process and relationships, or by an adaptive ability to deal with complexity and focus on both tactical and strategic initiatives. That is, most IT executives possess exactly the skills needed for high-level, enterprise-wide assignments. That so few of them demonstrate those behaviors so desired by CEOs suggests that executive development programs would be well-served to provide opportunities for CIOs and other senior IT executives to practice employing their innate characteristics to enhance “big picture” thinking and its relationship to strategic planning.

SUMMARY

This paper has presented a snapshot of an on-going research effort to identify the thinking styles of IT executives. The data refute the idea that most IT executives are highly analytical and capable only of narrow, focused work. Indeed, the data suggest that, with greater frequency than in the population at large, IT executives are likely to possess skills that make them capable of broad, open-ended activities that span the range of the enterprise. What remains is for them to be given, or to seize, the opportunity to demonstrate those skills.

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