

**IS FORTUNE MAGAZINE RIGHT?
AN INVESTIGATION INTO THE APPLICATION
OF DEUTSCHMAN'S 16 HIGH-TECH
MANAGEMENT PRACTICES**

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Abstract

An article by Alan Deutschman in Fortune (October 17, 1994) presents a list of management techniques which he claims distinguish the innovative high technology companies of Silicon Valley from all other types of organizations. What makes the article so interesting is that Deutschman claims these techniques represent "lessons for *any* manager struggling to thrive in today's fast-changing, info-driven economy".

We decided to test his claim directly. We developed a questionnaire and sent it to 695 Canadian companies from the Financial Post 500 list and the Canadian Advanced Technology Association. Our study results showed that high technology companies were found to use over 60% of Deutschman's management techniques to a significant degree more than low technology companies. However, not all of Deutschman's techniques consistently indicated higher financial performance with higher usage.

Is Fortune Magazine Right?

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Faced with changing markets and increased competition, organizations are grappling with the challenge of ensuring their survival. While projects aimed at raising quality, efficiency, and flexibility levels, are, and remain, essential for a company's survival, they are less and less able to provide it with a decisive edge over its competitors (Kumpe & Bolwijn, 1994). The reason for this is that programs to increase efficiency can be copied, programs to improve quality can be imitated, and programs to enhance flexibility can be mimicked. The key to establishing dominance is to become completely adaptable (de Pury, 1994).

In today's marketplace one must deliver something truly unique to one's customers in order to gain an advantage over one's competitors (Peters, 1994). By selling a unique service capable of incessant, incremental improvement, organizations can develop long-term relationships with their customers. Business based on such relationships is very resistant to "commoditization" or price wars (Deutschman, 1994). Innovation therefore is the key element of competitive advantage (i.e. the sustainment of growth and job creation) (Axelrod, 1993).

Genuine innovation ultimately depends on the existence of an innovative culture which has to permeate the whole company (de Pury, 1994). It is very difficult for competitors to copy an organization that has managed to become truly adaptable as its innovativeness comes from its individual members (Taylor, 1990).

"There is no secret. To be an innovative company, you have to ask for innovation. You assemble a group of talented people who are eager to do new things and put them in an environment where innovation is expected. It's that simple - and that hard." (Taylor, 1990)

There is a lot more to becoming innovative than finding "the pieces of the puzzle" that seem to fit, parachuting these different "foreign" visions/ideas in, and expecting them to work in one's organization (Semler, 1994). Everyone in the organization must be on the same wavelength since the culture of the organization must foster creativity and innovation (Peters, 1994). Certain organizations have managed to develop a culture that fosters such creativity and as a result have achieved a high level of adaptability. They have achieved this by developing organizational structures that "unleash" the creativity and imaginations of their employees.

A recent article in Fortune magazine by Alan Deutschman (October 17, 1994) states that there are sixteen management techniques which distinguish the operations of highly successful innovative organizations. Deutschman's management techniques are:

1. Seek out and delight difficult customers.
2. Build customer loyalty.
3. Promote "cannibalization" within divisions.
4. Use small teams and organize work around projects.
5. Make critical technological decisions significantly ahead of competition.
6. Accept "constant re-organization" as a way of life.
7. Undertake cooperative ventures with your rivals (practice "coopetition").
8. Foster an "egalitarian culture".

9. Seek to sell "unique" products.
10. Promote the use of electronic communication.
11. Put an extraordinary emphasis on recruiting the right people.
12. Share key information with all employees.
13. Glorify the people who create new products/services.
14. Help employees become world-renowned experts in their fields.
15. Base salaries and status on performance and NOT length of service.
16. Grant employees sabbaticals.

To be sure, most - if not all - of these techniques have been cited many times in both the academic and practitioner literatures as being characteristic of either "high tech" or "highly innovative" companies (Peters, 1989 & 1994). Interestingly, Deutschman claims that these techniques represent "lessons for *any* manager struggling to thrive in today's fast-changing, info-driven economy." Yet, the performance impact and implications of these techniques has not been given much attention or subjected to any detailed analysis in the recent past. Because of this, we developed the following research questions which, in turn, formed the basis for our research objectives:

- a.) To what extent are Deutschman's 16 management techniques currently being used primarily within the domain of innovative, high-tech companies?
- b.) To what extent do these techniques make a difference in terms of the financial performance of any firm?

These questions, in turn, helped form the research objectives for this report.

Research Objectives

There were two primary research objectives in this study.

- a. Are there significant differences between high-tech and low tech companies in the degree to which Deutschman's 16 management techniques are used?
- b. Is there a difference in financial performance between companies with high usage levels of Deutschman's 16 management techniques and those companies with low usage levels?

Methodology

Created a Questionnaire. One question was created for each management technique. Respondents were asked to score their company on a scale from 0 to 9. A score of 0 meant the company had very low usage of the technique in the company and a score of 9 meant the company used the technique to the greatest possible extent. Information was also collected on company characteristics and financial performance. A personal hand-signed letter accompanied the questionnaire.

Pretested the Questionnaire on one dozen Canadian companies. No significant difficulties were detected.

Mailed the Questionnaire to the CEO or president of 700 Canadian companies using both the 1994 Financial Post 500 list and the CATA (Canadian Advanced Technology Association) top 200 list. 75 usable questionnaires were returned. Of these 47 contained complete financial information.

Methodological Limitations

Sample size. The number of companies used in analyzing the usage of Deutschman's 16 management practices was 75. However, 28 of these companies had incomplete financial information that was not possible to obtain. Therefore, the analysis of performance was based only on 47 companies. An analysis based on a larger sample size would have been more desirable.

Characteristics of Companies that Responded. In our analysis of company technology levels, the number of companies in the groups compared was not even.

Biased Answers. One source of bias in the answers is that, in an effort not to appear too far behind, some respondents could have inflated their scores. Also, different people have higher standards in their interpretation of usage than others. Finally, because senior level managers completed the questionnaires, it is possible that such individuals may be removed from the day-to-day operations of the company and are unaware of the actual level of usage of techniques in their companies.

Results of the Study

A. High vs. Low Usage of Deutschman's Management Techniques.

Outline of Data Analysis

In the analysis of the data, companies were divided into two groups i.e. high technology companies (technology score between 9 and 5) vs. low technology companies (technology score between 4 and 0). A comparison of usage levels of each management technique between the two groups was then performed. The results are shown in Table 1 below.

The statistical tool used to determine if there was a difference in usage levels between a set of groups was the Mann-Whitney U Test. The Mann-Whitney U test is similar to the T-test; however, unlike the T-test which is for normally distributed data only, the Mann-Whitney U test can be used on any type of distribution. This lack of restriction on the distribution of data was required since the data in this study was not normally distributed.

Analysis Highlights

- There was a significant difference in usage between High-tech and Low-tech companies for 66% of Deutschman's management techniques. In most of these cases, the difference in significance level was 5% or less.

- For the remaining one third of techniques, there is *no* difference in usage levels between High Tech and Low Tech Companies

- There were *no* management techniques which Low Tech Companies appeared to use more (or "to a greater extent") than High Tech Companies.

- Surprises:
 - No significant differences between high and low tech companies were noted in terms of (a) the use of small teams and (b) salary/status based on performance.

 - Low usage of cooperation and salary based on performance was found for both High Tech and Low Tech Companies.

TABLE 1

Summary of Significance Levels for Mann-Whitney U Test for

High Technology Companies

vs.

Low Technology Companies

$N_{\text{Total}} = 75$ Companies $n_{9-5} = 65$ Companies $n_{4-0} = 10$ Companies

Deutschman's 16 Management Techniques	High Tech (9-5) vs. Low Tech (0-4)	Mean Score for High Tech Companies	Mean Score for Low Tech Companies	Difference in Mean Scores
Q1 Satisfy Customers	+ (0.0154)	5.8	3.9	+ 1.9
Q2 Loyalty	+ (0.1100)	7.9	7.4	+ 0.5
Q3 Cannibalization	+ (0.1835)	3.9	2.5	+ 1.4
Q4a Small Teams	ns	7.3	6.5	+ 0.8
Q4b Project Oriented	+ (0.0082)	6.5	4.6	+ 1.9
Q5 Tech. Decisions	+ (0.0020)	6.6	4.2	+ 2.4
Q6 Reorganize	+ (0.1893)	6.5	5.6	+ 0.9
Q7 Cooperation	ns	3.8	3.5	+ 0.3
Q8 Egalitarian	ns	6.4	5.5	+ 0.9
Q9 Product Uniqueness	+ (0.0345)	6.4	4.4	+ 2.0
Q10 E-Mail	+ (0.0280)	6.3	4.6	+ 1.7
Q11 Recruiting	ns	7	6.5	+ 0.5
Q12a Str. Info.	+ (0.0209)	6.5	4.7	+ 1.8
Q12b Fin. Info.	ns	6.1	5.4	+ 0.7
Q13 Honour Creators	+ (0.0354)	5.8	3.8	+ 2.0
Q14 Expertise	+ (0.0567)	5.5	3.9	+ 1.6
Q15 Salary and Year	ns	4.7	4.2	+ 0.5
Q16 Sabbaticals	+ (0.0914)	2	1.3	+ 0.7

B. Performance Results under High vs. Low Use of Deutschman's 16 Management Techniques.

Outline of the Data Analysis

For each management technique, companies were divided into two groups: a high usage level group for the management technique and a low usage level group. A comparison on each of the following financial performance measures was performed on each set of groups for each management technique to see if there was a difference in performance between companies with high usage and those with low usage of a particular management technique:

1. Percentage Change in Sales for 1991-1992
2. Percentage Change in Sales for 1992-1993
3. Percentage Change in Profits for 1991-1992
4. Percentage Change in Profits for 1992-1993
5. Percentage Change in Return on Sales for 1991-1992
6. Percentage Change in Return on Sales for 1992-1993
7. Percentage Change in Return on Assets for 1991-1992
8. Percentage Change in Return on Assets for 1992-1993.

For similar reasons to the first research objective, the statistical tool used was the Mann-Whitney U test. The results are summarized in Tables 2 and 3 below.

Analysis Highlights

● A difference in financial performance between "high" and "low" usage was found for many of Deutschman's management techniques, but not for all.

● The two management techniques that consistently indicated significantly higher financial performance with higher usage were:

1. Salary and Status based on Performance (16.)
2. Project oriented work (4b.)

● Additional noteworthy management techniques with superior performance consequences were:

3. Technical Decisions ahead of the competition (5.)
4. Cannibalization of own products before competitor reacts (3.)

Summary of Results and Conclusions

1. High tech versus low tech and level of management technique usage.

● For more than 60% of Deutschman's management techniques, high-tech companies were found to use such techniques significantly more than low technology companies.

● Not surprisingly, a significant difference in usage levels was not found for *all* of Deutschman's management techniques.

Our analysis and results suggests, therefore, that many of the 16 management techniques

TABLE 2

**Is there a Difference in
SALES or PROFIT Performance (dependent variable)
between High and Low
Usage of Management Technique (independent variable)?**

$N_{\text{Total}} = 47$ Companies

(Size of n_{High} and n_{Low} depends on the management technique)

Deutschman's 16 Management Techniques	Sales		Profits	
	1991-92	1992-93	1991-92	1992-93
Q1 Satisfy Customer	+ (0.0626)	+ (0.0811)	ns	ns
Q2 Loyalty	ns	+ (0.1312)	ns	ns
Q3 Cannibalization	ns	+ (0.0922)	+ (0.1593)	ns
Q4a Small Teams	ns	ns	ns	ns
Q4b Project Oriented	+ (0.1516)	+ (0.0660)	ns	+ (0.0366)
Q5 Tech. Decision	+ (0.1941)	+ (0.0113)	ns	+ (0.1307)
Q6 Reorganize	+ (0.1006)	+ (0.0861)	ns	ns
Q7 Coopetition	ns	ns	ns	ns
Q8 Egalitarian	+ (0.1104)	ns	ns	ns
Q9 Unique Products	+ (0.0042)	+ (0.0069)	ns	ns
Q10 E-Mail	+ (0.0704)	+ (0.0083)	ns	+ (0.1508)
Q11 Recruiting	+ (0.0190)	+ (0.1555)	ns	ns
Q12a Str. Info.	ns	ns	ns	ns
Q12b Fin. Info.	ns	ns	ns	ns
Q13 Honour Creator	ns	ns	ns	+ (0.1642)
Q14 Expertise	ns	+ (0.1776)	ns	ns
Q15 Salary/Year	+ (0.0094)	+ (0.0957)	+ (0.0386)	+ (0.1168)
Q16 Sabbaticals	ns	ns	ns	ns

TABLE 3

**Is there a Difference in
RETURN ON SALES or RETURN ON ASSETS
Performance (dependent variable)
between High and Low
Usage of Management Technique (independent variable)?**

$N_{\text{Total}} = 47$ Companies

(Size of n_{High} and n_{Low} depends on the management technique)

Deutschman's 16 Management Techniques	Return on Sales		Return on Assets	
	1991-92	1992-93	1991-92	1992-93
Q1 Satisfy Customer	+ (0.1368)	ns	+ (0.0389)	+ (0.1516)
Q2 Loyalty	ns	+ (0.1787)	+ (0.1836)	ns
Q3 Cannibalization	+ (0.0785)	+ (0.0237)	+ (0.1557)	+ (0.0515)
Q4a Small Teams	ns	ns	ns	ns
Q4b Project Oriented	+ (0.0659)	+ (0.0311)	+ (0.0541)	+ (0.0071)
Q5 Tech. Decision	+ (0.1730)	+ (0.1978)	+ (0.1128)	ns
Q6 Reorganize	ns	ns	ns	ns
Q7 Coopetition	ns	ns	ns	ns
Q8 Equalitarian	+ (0.0885)	+ (0.0738)	+ (0.0641)	+ (0.0166)
Q9 Unique Products	+ (0.1404)	ns	+ (0.0442)	+ (0.1967)
Q10 E-Mail	+ (0.1477)	+ (0.1152)	ns	ns
Q11 Recruiting	ns	ns	+ (0.1162)	+ (0.0111)
Q12a Str. Info.	ns	ns	+ (0.1260)	ns
Q12b Fin. Info.	ns	ns	ns	ns
Q13 Honour Creator	+ (0.0298)	ns	+ (0.1133)	ns
Q14 Expertise	+ (0.0020)	+ (0.0261)	+ (0.0047)	+ (0.0934)
Q15 Salary/Year	+ (0.0215)	+ (0.0940)	+ (0.0361)	+ (0.0248)
Q16 Sabbaticals	+ (0.0501)	+ (0.0502)	+ (0.0167)	+ (0.0131)

investigated may, in fact, be unique to high tech situations. These management techniques are not applicable to all types of companies - especially low techs. Now, one reason for this may be that low tech companies experience difficulties (or barriers) in implementing many of these techniques. However, it should be noted that among those management techniques where no significant difference in usage was found (e.g. use of small teams; an egalitarian culture; striving to recruit the "right" employees, etc.), the actual reported usage rates for both low and high-tech companies was quite high. Thus, it may be just a matter of time and persistence which is keeping usage rates of low among the low-tech companies in our sample. Nevertheless, there may still be some very practical reasons why low tech companies would resist adopting many of these practices. This issue needs to be considered more in any future studies

2. Usage Level & Financial Performance

● While some of Deutschman's management techniques demonstrated significantly higher performance with higher usage, not all techniques were found to make a difference to performance. Thus, contrary to Deutschman's epithet, not all of these practices constitute "lessons for any manager struggling to thrive in today's fast changing, info-driven economy". This, in turn, suggests that readers of Fortune magazine ("The magazine that America's CEO's love to read.") need to be cautious in subscribing to any solutions which Fortune's writers happen to promote. (The same probably holds true for most popular press management publications!) While Fortune's stories are always extremely well written and the case histories impressive, the articles still constitute "journalism" and not "traditional research". And so, caveat emptor!

● Our analysis showed that some of the 16 management techniques appear to play "specialist roles" in terms of performance - influencing some performance indicators but not others (e.g.,

satisfying difficult customers; constant re-organization; staff recruiting; etc.). This represents both good news and bad news. The good news is that our analysis suggests that there are specific performance techniques which might be called upon to encourage specific performance results. The bad news is that senior managers need to consider especially carefully the types of management techniques that they promote within their organizations. Not all of these techniques appear to offer the same promise - or results - and may lead to un-intended effects.

●The management techniques that were found to consistently demonstrate higher financial performance with higher usage were:

1. Salary and Status based on Performance (16.)
2. Project oriented work (4b.)
3. Technical Decisions ahead of the competition (5.)
4. Cannibalization of own products before competitor reacts (3.).

Thus, of all of Deutschman's techniques, these four appear to be the most powerful and generic. While Deutschman is to be congratulated for including them in his original list, they were not highlighted as deserving any special attention or consideration. Because of this, there is a danger that practitioners may not focus on them and thereby miss the benefits from those techniques which seem to provide the most universal impact and appeal.

So, in answer to our original question "Is Fortune Right?", we believe that such publications do an outstanding job in "scouting the terrain" and identifying potential leading trends in management practice. In other words, they perform the valuable service of narrowing the terrain. However, once they have finished their mission, it is time to send in the research specialists whose job is to "lower the microscope" and provide the necessary rigour through

which true advancement in management knowledge can only be obtained.

Questions for Future Research

The results presented in this paper are preliminary - and even cursory. The purpose of this study was to challenge the notion that all of the management techniques identified by Deutschman have application in all types of companies and that using any of these techniques will "make a difference." The preliminary results suggest that further investigation on this topic may produce some interesting findings.

Some of questions raised from this study for future research include:

- Will the management techniques that currently have low usage, such as cooperation and sabbaticals, increase in usage with time?
- What barriers, if any, exist in terms of implementing those management techniques that were found to have significantly lower usage in low-tech companies?
- If a sample of companies were divided into high tech and low tech groups, would we see any significant differences in performance based on managers usage of Deutschman's 16 management techniques?
- Is usage of the management techniques investigated in this paper related to the quality of management in a company?

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