ATTENTION TO DETAIL: A NEGLECTED IT SKILL?

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ABSTRACT

It is an interesting irony that in a field fraught with details, attention to detail (ATD) gets little recognition in information systems literature and job ads. This paper examines how ATD is integral to success in the IT field. This study also considers how attention to detail has been addressed in other business-related disciplines to draw parallels to the IT profession. The results of a survey pre-test are also presented to bring industry perspective about ATD and IT work. Some conclusions are also offered about whether giving more recognition to ATD in the IT field might produce benefits for IT practice and education.

Keywords: IT Job Skills, IT Instructional Issues, IT Recruitment, IT Selection

INTRODUCTION

According to a well-known saying, "what is essential often goes unnoticed." A non-technical skill that has received little emphasis in the information technology (IT) literature, despite its apparent, practical importance to the profession, is attention to detail (ATD). Keyword searches of several online databases conducted in the spring of 2002 revealed that ATD has been mentioned far more often in the literature of other business disciplines than in the IT field. The results of compound searches, using ATD and the names of various business-related disciplines, in five online databases are shown in Figure 1. As indicated in the figure, ATD has received substantial attention in the fields of management, marketing, and sales. ATD has also received more frequent mention in the engineering, customer service, and accounting literature than in IT. The results are nearly identical when the term "information systems" is substituted for "information technology" in the compound searches.

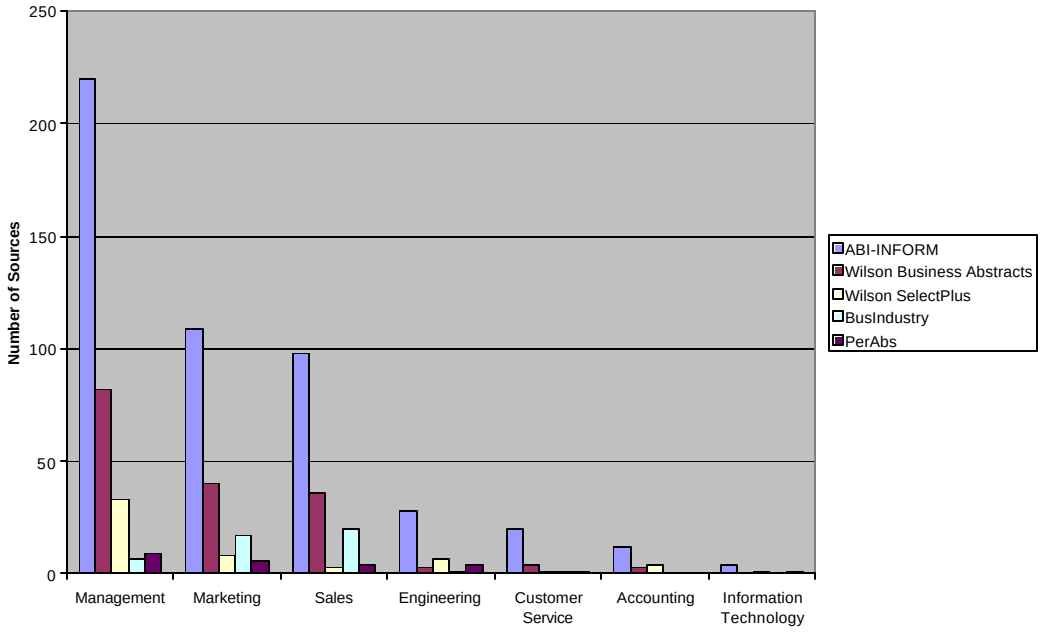
In addition, ATD is infrequently mentioned in IT job advertisements compared to other "soft skills." For example, a recent review of the website www.brassring.com by the authors found that attention to detail was mentioned in only 2.5 % of IT employment ads, compared to 52.3 % for written communications skills, 47.5 % for oral communications skills, 29.5 % for leadership and 28.0 % for interpersonal skills.

In contrast, when IT professionals are queried about the importance of ATD to the profession, the results seem to tell a different story. In a recent study, where IT professionals rated the importance of various job skills for entry-level IT positions, ATD was among the highest rated "non-technical skills," with a mean rating of 4.3 where 5 was highest (2). In this study, employers were also asked to assess the "expected" versus "actual" performance of new IT graduates for job skills. Curiously, the mean gap between expected and actual performance for ATD (of 1.04) was greater than for any of the other 37 technical and non-technical skills surveyed (2). It should be stressed that these are the findings of a single study, so there is a need

to corroborate them in other studies. Unfortunately, other studies of IT job skills to date (e.g., 10, 14) have not considered ATD.

On the whole, there is an irony at work with respect to attention to detail in the IT profession. It is seldom discussed in the IT literature, yet when asked employers acknowledge ATD's importance. Moreover, the findings of the study where ATD was considered at least raise the possibility that students may not be properly sensitized to the importance of ATD when they enter the workplace. This study will take a closer look at attention to detail. It will examine what ATD is, why it is important to the IT profession, and how granting it more emphasis in the IT literature could produce benefits for IT practice and education.

Figure 1. ATD Sources in Different Online Databases



ATTENTION TO DETAIL: AN IT EXAMPLE

In *What Makes Winners Win*, veteran sports broadcaster Charlie Jones chronicles many stories about what sets the greatest athletes apart from others in their profession. A story is told by pro football great Todd Christensen about Hall of Fame receiver Steve Largent. According to Christiansen, when the two were playing for the AFC in the Pro Bowl in Honolulu, Largent was excited as he came running into the huddle in the team's first possession to tell Christiansen and other teammates that the grains of the Astroturf were running east to west. This meant, according to Largent, that the team should be running "the ups and the deep patterns" in the first quarter, while in the second quarter when they went the opposite direction, they should run shorter routes based on ability to cut better based on the direction of the Astroturf. Christiansen found it amazing that in a game that did not count in the standings and where other players had Mai Tais on their breath in the huddle, here was a twelve-year veteran who was all excited to tell others about the direction of the Astroturf. However, Christiansen went on to conclude that this was the approach that Largent brought to the game that made him a hall of famer (5).

Just as attention to detail helps distinguish great performance from good or mediocre performance in football, so too does it impact the quality of information systems. According to *Roget's Thesaurus* (11), ATD means "covering all aspects with painstaking accuracy." As implied in this definition, ATD has qualities of completeness and correctness. It involves taking notice of "little things" that others might overlook. While ATD is important in different ways to different IT specialties, it appears to be a common denominator to all of them.

As an illustration of how IT permeates IT work, consider website development. An array of issues must be addressed at every phase of development. ATD is required for completeness, accuracy, error avoidance, facilitating ease of use, and satisfying user needs. In the planning phase, if important user groups are not consulted, the resulting website may not serve the needs of important constituents. If systems goals are not defined adequately, a company may fail to take advantage of certain possibilities for its site. If ATD is lacking in design, there could be problems such as insufficient color contrasts between screen elements, an inconsistent "look and feel" to screens, confusing interface elements such as underlined text that is not a hyperlink, or the use of too many graphics resulting in excessively long load times. If ATD is deficient in development, screens may be constructed inconsistent with design plans, or systems elements may not work due to inadequate testing. If systems implementation is not adequately addressed, the site may be implemented at an inopportune time for the business. If the site is not regularly maintained, users may get frustrated with outdated or inaccurate information. These are just a few examples of how ATD is essential to website development; a similar list of issues could be raised for virtually any IT specialty.

ATD: LESSONS FROM OTHER BUSINESS-RELATED DISCIPLINES

As noted, ATD has been addressed more prominently in the literature of various other business fields than IT. A number of vignettes are presented below to describe how ATD is important to these fields. Table 1 draws conceptual parallels between these examples and IT work to highlight the importance of ATD to the IT profession. As ATD promotes success in these other fields so too does it impact the effectiveness of IT work.

Management. Burger King has 11,000 restaurants and 360,000 employees who serve 15 million customers daily. The company emphasizes attention to detail particularly with respect to food safety throughout the entire supply chain, from cattle feeding to the consumer. Key elements of the firm's approach are: management commitment to the program, adoption of the latest technology, careful supplier selection, employee training, and attention to detail. According to the company's director of quality assurance, "Little things do mean a lot in our business, and you've really got to make sure you've covered all the bases" (8).

Marketing. Bell Atlantic Mobile is proud of the success of its online store, which reportedly was accomplished through careful planning and attention to detail. A cross-functional team from information services, finance, public relations, marketing and advertising was set up to develop the project and to make sure no detail pertaining to any area was left out. The project was a success; it was launched in time for the busy holiday season and it helped to significantly increase the company's sales (9).

Retailing. ATD also plays a major role in the success of retailing. Retailers who pay attention to detail in designing a store are more likely to convert casual browsers to buyers. For example, lighting can influence sales through creating a mood and dissipating subtle messages to shoppers. The height of the ceiling, the shape of a counter, and the selection of materials also send sub-conscious images about the store to customers. For example, the use of recycled materials in store furnishings sends a positive message to environmentally-conscious customers (13).

Table 1. ATD Insights From Other Fields and Their Application to IT

Reference Areas - Where ATD is said to be important	ATD concepts - Pay attention to detail to:	Why these concepts are applicable to IT work	Examples of how to apply these concepts to IT work
Management	Adhere to standards at every level; Continuously improve and innovate	Most IT shops have standards to follow in systems development and other IT operations	-Follow procedures and standards diligently - Strive to continuously improve practices
Marketing/Retailing/ Marketing Research/ Customer Service/ Hospitality/ Home construction/ Furniture making/ Craftsmanship/ Engineering	Understand customer needs; Delight the customer; Deliver value; Exceed expectations to gain new customers and to keep current customers; Build quality products or systems that meet user needs	IT professionals work for customers either internal or external to the firm. IT must deliver value and meet customers' needs	- Listen to users at every stage of development - Incorporate features and functionality consistent with systems goals and user needs - Strive for completeness, and correctness in systems, not just a system that is good enough - Finish a project on time and at or under budget
Underwriting	Assess and manage risks; Perform pre-qualification and risk negotiation	Systems developers and project managers perform project feasibility analysis, cost-benefit analysis, and risk management	-Develop operationally, economically, and technically feasible systems -Assess and manage risks at every stage of development to ensure systems success
Space Programs/ Aircraft maintenance/ Hazardous Waste Shipment	Perform work effectively; Avoid doing harm to others	Systems designed inadequately or ineffectively could result in financial losses or harm to others	- Perform thorough systems testing - Build in systems controls for security, privacy, etc. - Perform detailed problem analysis so that new systems will operate as intended

Marketing research. The airline, Midwest Express, attributes its success to two factors: understanding customers and attention to detail. The company uses marketing research tools such as the Customer Values Analysis, where customers are asked about their expectations from airlines versus how well these expectations are being met. This approach helps the company

understand customers better. Midwest has been able to create a service-oriented culture that stresses the importance of ATD and giving customers their very best (6).

Underwriting. Technology supports and accelerates the process of insurance underwriting today, but it does not replace human decision-making. According to experts, what distinguishes great underwriters is their ability to look for details that others might ignore. Their ability to spot critical issues and promising opportunities while analyzing each account helps underwriters make the right kind of decisions, whether it involves pre-qualifying a customer or negotiating the final terms and conditions (7).

Space programs. It might be surprising that tiny amounts of water from someone's fingerprint accidentally trapped in an orbiter tile can result in disasters of monumental proportions. Disasters can also result if a mechanic inadvertently leaves a small tool in an engine compartment. Thus, companies such as United Space Alliance (USA) pay attention to detail. USA is the prime contractor for NASA's Space Shuttle Program and is responsible for the day-to-day operation and management of the U.S. Space Shuttle fleet. USA's approach towards ATD is manifested in their attitude toward safety and quality, and in the application of risk principles to decisions. For example, under the Risk Associated Trouble Spots program, USA rewards employees for reporting any condition or situation inconsistent with the program goals identified in the risk assessment scorecard used by the company (1).

Aircraft maintenance. The absence of attention to detail has been attributed to cause a number of maintenance-related aircraft accidents. For example, the failure to install a cotter pin led to the loss of an Air Force aircraft worth $35 million. In another case, when the maintenance crew left out the fasteners during a wing repair, the aircraft crashed. In yet another incident, high-pressure air was used instead of the required low-pressure air during a repair. It damaged the honeycomb structure and a major portion of the aircraft's tail came off during flight. The maintenance personnel involved in these incidents were well-trained people who never would have imagined that their unintentional mistakes would result in such mishaps (3).

Hazardous waste shipment. When hazardous waste is shipped, standards of the Environmental Protection Agency, Department of Transportation, and Occupational Safety and Health Administration have to be closely followed. ATD is needed in the analysis of waste to segregate different waste streams, the pre-shipment handling of the material, shipment, and disposal. Only specified containers can be used for transport, with the proper name of the waste clearly labeled along with other details mandated by law. All necessary documentation has to be done with careful attention, so as to leave no room for ambiguity about the contents of the shipment (4).

Home construction. The average household spends 25–33% of its income on housing, making it the largest single expenditure. To protect their investments, customers expect quality. According to a survey of California real estate agents, the four factors that have the biggest impact on housing quality are: design, materials, the skill and experience of the construction personnel, and attention to detail. Among these, the two highest determinants of quality were found to be the use of high quality materials and attention to detail (12).

ATD SURVEY PRE-TEST RESULTS

To gain further industry input on ATD and its application to the IT profession, a survey pre-test was conducted with several IT professionals as a preliminary step toward what may be a larger study. The most notable findings of this survey were: (1) All respondents reported that they thought ATD is "very important" to IT jobs, the top response on a five-point scale. (2) Most participants (80%) felt that ATD is a skill that can be improved significantly over time, as opposed to a personal quality that a person either tends to have or not have. (3) Most respondents (80%) were only "somewhat satisfied" (or less) with the amount of ATD that most new IT employees bring to the job; none reported that they were "very satisfied." (4) The responses were divided about how ATD is used in IT hiring decisions: 60% reported that ATD is not an explicit selection criterion but implied in other criteria used, 20% said ATD is an explicit hiring criterion, while 20% said ATD is not considered in hiring decisions. (5) Among the effects respondents reported that they had observed in projects where ATD was lacking were: important elements were not included in a system; systems requirements were gathered incompletely or incorrectly; IT standards of the company were not followed; the resulting system lacked ease of use; a system was developed that did not meet user needs; and a project was delivered late or over budget. For example, one respondent said that, "a developed application contained 'landmines' that would cause it to fail in the future and require rework." (6) If ATD were mentioned more prominently in IT job ads, all respondents agreed that it would better communicate company work expectations; 60% agreed it would draw more attention to relevant job requirements.

DISCUSSION AND CONCLUSIONS

In summation, all indications are - from available employer input and as well as conceptual parallels drawn from other business disciplines - that attention to detail is very important to IT work. Yet, it is a curious anomaly that ATD falls "under the radar screen" in the IT literature and job advertisements. If preliminary employer input about this issue is to be believed, ATD is very important to IT work, many new IT employees tend to lack it, and ATD is a skill that can be significantly improved over time with the proper care and consideration. These factors suggest that granting greater focus to ATD in the IT literature and job ads may produce important benefits to IT education and practice, by sensitizing IT professionals, educators, and students about its importance.

In particular, the IT literature could investigate to what extent ATD is considered or assessed by employers in selection decisions or the assignment of employees to projects. Future writing could also seek to identify the most effective methods to improve employees' ATD skills. Examples of project successes or failures, where ATD was present or lacking, respectively, could also stress the importance of the concept to IT work. It may be argued that ATD has already been implicitly addressed in other ways in the IT literature through topics such as quality assurance. However, other business fields such as Marketing and Management have also written extensively about quality but have recognized the value of stressing ATD to improve organizational practice.

Meanwhile, the more frequent mention of ATD in IT job ads would more fully and accurately reflect company job expectations. While companies cannot be expected to include a "laundry list" of skills in each ad, ATD appears to be so important and fundamental to IT jobs that it seems appropriate to include it along with communications, leadership and interpersonal skills. Perhaps, some IT professionals feel ATD is simply a "given" for the profession, so there is no need to point out it out in job ads. However, communication skills, which could also be assumed to be a given to any IT job, are typically included in IT job ads. In the final analysis, it seems most accurate to say that ATD has not been a neglected skill to the IT world, but an implicit one. The time has come to make it more explicit.

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