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Exploring the Corporate Benefits and Employee Adoption of Corporate E-learning

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Abstract

The roots of e-learning are old, but the e-learning industry itself is relatively new. It has experienced rapid growth and now consists of over 5000 companies worldwide that offer e-learning. Analysts predict e-learning will be a $33 billion industry[1] by 2004 and could reach $46 billion by 2005. These numbers imply growth rates averaging 88% annually for the next two years – equivalent to more than 10 million people taking online courses as either part of their job training or to earn a degree. These numbers suggest that dramatic and highly visible benefits must be behind the rapid and widespread adoption of these technologies. This paper describes a two part research project that explores the experiences of companies with well-entrenched e-learning programs. It seeks to understand first, how such businesses have made the business case for their e-learning investments and, second, how to predict whether employees will take advantage of the systems produced.

Introduction

Historically, corporate training has been classroom-based, perhaps supplemented with review or reference information on disks or CD-ROM. But this method no longer meets the needs of all employers; hence the significant interest in e-learning. In the safety training industry, for example, e-learning has enjoyed widespread popularity. Gilbert and Jones (2001) concluded that e-learning had comprised about 20% of all corporate training delivery methods in1999 and would double to 40% in 2003. Other analysts have predicted that e-learning will be a $33 billion industry by 2004 and could reach $46 billion by 2005 (Anastasi, 2000). These numbers imply growth rates averaging 88% annually for those two years – equivalent to more than 10 million people taking online courses as either part of their job training or to earn a degree.

Of the predicted $62.5 billion budgeted annually for formal training by U.S organizations, approximately 44% was spent on trainer salaries, while 24% ($15-17 billion) went to outside providers of training products and services. The rest paid for facilities, materials, hardware, seminars, and the like. Companies are especially concerned about the 24% of training they outsource (Ruttenbur, 2000). Managers of companies large and small must decide how much to spend, what to spend it on, and how to determine learning needs. These are complex decisions, and making good choices depends on understanding potential benefits and obstacles. At the same time, companies and individuals are exhorted to recognize that "[e]-learning is the only way to ensure that the right information is delivered to the right people at the right time using the right model – in short the engine of the knowledge-based economy." (Bird, 2003, p. 4)

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[1] All figures are in US dollars, unless otherwise indicated.

This paper describes the design and objectives of a project in progress. Undertaken to investigate the value added by investment in corporate e-learning, the project comprises an initial exploratory study of the experiences of four large e-learning projects followed by an employee survey focused on determining the reasons for participating in voluntary e-learning initiatives. By combining these two approaches, we hope to predict the likelihood of employees to use various e-learning systems as well as the potential value of that use.

We begin with a summary of the literature on e-learning as it relates to returns from investments in the technology. The e-learning literature is vast, but much of it consists of trade white papers by e-learning providers. In addition, it tends to be repetitive, reiterating common themes of rapid payback, efficiency gains, and the benefits of learning tailored to individual learning styles. We have tried to condense that literature into a manageable overview, choosing illustrative sources that capture the dominant themes, rather than presenting a comprehensive discussion of the breadth of available sources.

Literature Review

The e-learning industry developed from roots in distance education. Distance education began as correspondence courses and television presentations. It eventually became more interactive but still uses a variety of media, content and delivery methods. E-learning is a narrower concept. It can be defined as "the delivery of content via all electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM" (State of Washington, 2001). Its roots are old, but the e-learning industry itself is relatively new. It has experienced rapid growth, however; it now consists of over 5000 companies worldwide that offer e-learning products or services.

Trondsden (2001) described how the industry has progressed through three distinct phases in its growth. In the first stage, *childhood,* e-learning largely used distributive technologies. The learning was instructor-centered; the methodology focused on learning while the instructor "told" the information. In *adolescence*, interactive technologies were used to develop learner-centered e-learning. Participants learned by doing. E-learning, Trondsden says, has now reached *adulthood,* in which collaborative technologies deliver the learning experience. Learning is team-centered and most often occurs through the use of discussion and reflection.

The literature contains numerous taxonomies or classification schemes that can be used to describe or compare e-learning systems. The Office for Domestic Preparedness in the U.S. (2003), for example, talks about four levels of interactivity in e-learning, as shown in Table 1, below. When considering the return on e-learning investments, such a classification scheme can be useful in defining desired training outcomes and in estimating the cost of achieving those outcomes.

Jeske and Grant (2003) identified four broad stages to an e-learning implementation: planning, building, integrating, and improving. Companies typically see e-learning projects as heavy on front-end costs, with delayed economic benefits. While it is true that one would expect most of the benefits to be achieved in the integration and improvement stages, there may also be early benefits from planning and building. Identifying early benefits could significantly change the ROI or payback of such a project. For example, the process of planning the system could reveal pockets of untapped expertise in the company that can be used to advantage even before the e-

learning system is in place. Similarly, the building stage could generate increased enthusiasm and loyalty among company trainers and IT staff, as well as develop valuable technical skills that could be transferred to unrelated initiatives.

Level	Cost/module	Description
Level I Passive	$10,000 – 25,000	The learner acts solely as a receiver of information. The learner is required to read the text on the screen, view graphics, illustrations, charts, and use the navigational buttons to progress forward through the program or move back. An example of this type of WBT product may also contain pop-ups and hyperlinks to Websites, materials, and other information interspersed between the text and graphic presentations
Level II Limited Interaction	$25,000 – 35,000	The learner makes simple responses to instructional cues. The WBT product includes learning activities listed in Level I as well as multiple choice and column matching related to the text and graphic presentation. A good example is a WBT product that includes these types of test items at the end of a unit of instruction to test the learner's grasp of the information.
Level III Complex Participation	$40,000 - $50,000	The learner makes a variety of responses using varied techniques in response to instructional cues. The responses may include those listed for a Level II- Limited Interaction, as well as text entry boxes and manipulation of graphic objects to test assessment of the information presented. A good example of this type of WBT is desktop software training requiring the learner to perform as though using the program.
Level IV Real-time Participation	$55,000 – 70,000	The learner is directly involved in a life-like set of complex cues and responses. This involves engaging the learner in a simulation that mirrors the work situation with stimuli-and-response coordinated to the actual environment. An example of this type of WBT product is using artificial intelligence similar to computer games and flight simulators.

Table 1: Office for Domestic Preparedness (2003)

Not all e-learning projects are unqualified successes, however. Many e-learning problems discussed in the literature stemmed from limitations in the organization's infrastructure or resources (see, for example, Gold *et al.,* 2001). An organization's infrastructure defines the context in which the day-to-day processes operate. Its infrastructure capabilities can affect how well it implements and maintains e-learning. Gold *et al.* (2001) argued one should measure infrastructure in three key areas: technological capabilities, structural capabilities, and cultural capabilities. "Technological capabilities" capture the organization's ability to link its information communication systems. The "organizational structure" provides a framework for responsibilities, reporting relationships and employee groups. "Cultural capabilities" captures the organization's ability to learn more effectively. Shortcomings in one or more areas can lead to significant barriers to success in e-learning, with a resulting negative effect on return.

While Return on Investment (ROI) is a common mechanism for evaluating a potential business investment, its use as part of the e-learning business case is not without controversy. Aldrich (2002), for example, argues that ROI evolves from manufacturing processes, a context in which it is possible to define most outcomes in quantitative terms. Successful training, on the other hand, can produce long-term results with strategic consequences. These results may emerge at different rates throughout the organization, making it impossible to measure success or return at a single point. Furthermore, training systems often interact with a broad range of factors in the environment; as a result, it may be difficult to determine which aspect(s) of the system was the cause of a failure.

Another problem with ROI is the practice of comparing investment costs to financial outcomes. There may be numerous intangible factors that are significant goals of e-learning, but which cannot be measured in financial terms. Kruse (a and b, undated) and Feriks (2004) argue that ROI measures drive companies to concentrate on short-term results at the expense of neglecting intangible strategic components. Microsoft (undated) tried to address this shortcoming through its "rapid economic justification" framework, in which key employees try to quantify intangible benefits perceptually.

The benefits of e-learning may accrue to both the student and the organization. Kirkpatrick (1975) proposed a classic four-step model of training evaluation. The first three steps of the model measure characteristics related to the students: (1) the extent to which they are satisfied with the training; (2) the extent to which they learned the material; and (3) the extent to which they are using the material. The fourth step in the model calls for measuring the extent to which the training led to the expected business results. Clearly, each successive step of this model is increasingly difficult to measure with any reliability or validity. The measurement difficulty is apparent when one notes how rarely businesses try to measure the third or fourth categories of this model.

When an organization decides to implement e-learning, it is typically the result of a need for employee training, professional development, organizational knowledge management, or customer education (Gilbert and Jones, 2001; Gomolski, 2001; Knowledge Planet, 2001). The motivation for introducing e-learning is a significant factor in identifying potential or desired benefits. For example, customer education systems may reduce support costs, increase sale of complementary products, or increase customer satisfaction. Professional development investment, on the other hand, could improve staff morale, reduce turnover costs, and strengthen the internal pool of successors for management positions. Thus, identifying value-added opportunities in terms of the corporate learning objectives is an important element of predicting or measuring returns.

The use of e-learning to train customers has just begun; we will not see its full potential for some time yet (Barron, 2000). Some companies, such as Home Depot, see the benefits of using e-learning to educate customers about products and how to use them, while others, including General Motors, extend e-learning through the entire supply chain. The banking industry has also leaped at the opportunity use technology to educate customers in self-service techniques (Gomolski, 2001).

There are numerous authors who advocate evaluating e-learning success in less financial, more behavioural terms. In such arguments, the system is seen as a mechanism to change behaviour. Thus the authors in question contend that one should measure elements that resemble the third step in Kirkpatrick's model. Michael Allen (in Ellis, 2004), for example, asserts that successful e-learning should change behaviour. That result, he says, is most likely to be obtained when the training has the following qualities:
1. Learners understand what they can accomplish and why that will be of value to them.
2. The activities the learner carries out are as similar as possible to performance expected on the job. Furthermore, it should not be possible to appear proficient through lucky guesses.
3. Feedback isn't merely a pat on the back or warm fuzzy message. Instead, it demonstrates the value of good responses and the ineffectiveness of poor ones.

Clearly, there is a need to investigate the probability of behavioural outcomes, as well as financial results when making the case for e-learning. This suggests the importance of examining or comparing both mandatory and voluntary-use initiatives. In addition, when considering the business case for voluntary-use systems, it will be important to consider the likelihood that a system will have high acceptance and adoption among employees.

Our discussion now turns to the progress of our research to date.

Observations to Date

The remainder of this paper focuses on the design and progress of our current research project. This section discusses the objectives and findings of the initial exploratory phase of the project, while the subsequent section presents the plan for the employee survey phase that will commence shortly.

E-learning means different things to different people. To some, it is any system based on, or supported by, one or more digital technologies. To others, it is only e-learning if it uses online, interactive delivery of learning material. Still others, use a definition somewhere in between these two extremes. For the purposes of this research project, we have limited our definition of e-learning to web-enabled delivery of content for online, learner-paced learning by individuals or groups, including delivery via Internet, intranet or extranet. This removes from consideration computer-supported face-to-face learning, video or audio conferencing, and standalone tools such as CD-ROM.

In addition to the limited definition of e-learning, we have restricted our focus to corporate training intended to facilitate performance of employees in their current position or their immediate career path. This restriction eliminates systems designed primarily for knowledge management, customer training or long-term professional development (such as online MBA or CA programs). While we know that limiting our definition will prevent studying many significant student groups and applications, such focus in necessary when studying a field as broad and varied as e-learning. We are more interested at this point in findings that can be generalized to a particular type of e-learning, than in results that can be generalized across a broad range of applications and users.

Phase 1 of this project focused on exploring the motivations and expectations of companies with major e-learning initiatives. We concentrated on the experiences of four large companies, each of which had been identified in the literature as an example of successful e-learning programs. During the exploratory phase, we wanted to look at successful firms; we believed they offered the best insight into the potential benefits of e-learning.

Although the firms have been the subject of various trade and popular press articles, they asked not to be identified in the current study. The sensitivity to identification arose because we were asking questions about financial performance and accessing data about employee behaviours. We were quite willing to withhold their names in exchange for such openness about internal performance. Thus, we can only say that the firms included an aircraft manufacturer, an agricultural equipment company, a consumer products firm, and a consulting engineering firm.

This phase of the project explored two questions:

1. What tangible and intangible benefits were promised or anticipated as a result of investing in e-learning solutions – in other words, how did the company make the business case for investing in e-learning?
2. Were the companies realizing the expected benefits, and how did they explain shortfalls in areas where benefits were not being achieved?

We gathered data in this phase via lengthy (one to two hour) telephone interviews with the executive(s) most directly responsible for the management of the e-learning project. We followed up with two-day site visits to the aircraft manufacturer and agricultural equipment company.

None of the companies studied made an explicit business case before starting their e-learning projects, even though such justification was invariably required for other major projects. They had a number of reasons for not doing so. In some case, e-learning was the only feasible way to deliver the training in question. For example, one company had to disseminate new product information to a sales force spread across North America. In others, the sheer number of employees who needed training made face-to-face delivery impossible. An example here was the company that hundreds of staff requiring numerous, consecutive courses in safety compliance and legal requirements. Although the staff were all physically co-located, the company did not have the physical facilities for such extensive training. In other situations, the tendency of the material to change frequently and on short notice made printed material a poor option. Finally, some projects were initiated because the company needed to provide training on short notice and with limited funds.

In addition to situations that made online delivery clearly preferable, managers pointed to benefits they considered "obvious". Virtually all such benefits related to quantifiable efficiency improvements in delivering training. There was little, if any, discussion of qualitative, "effectiveness" benefits of e-learning, such as the ability to integrate high levels of interaction, repeat training modules until they are mastered, or tailor content to the needs or learning styles of an individual employee.

We were somewhat surprised to find that none of the companies had relied on an explicit business cases. However, that did mean that we were less surprised to see an absence of plans or tools to measure outcomes. None of the companies we studied had yet instituted robust measurements of behavioural impact of their e-learning projects. Only one of the companies we interviewed had included evaluation planning in the initial development of the e-learning project. The remainder either did not measure results (except in terms of number of employees who took or passed online modules) or did so as an afterthought.

There was evidence the firms paid attention to employee satisfaction with the courses, but the indicators of satisfaction tended to be informal or unreliable. In one company, for example, employees had to take a quiz to pass each online module. At the end of the quiz, they answered questions about the effectiveness and quality of the course. No one could pass the course without completing the "satisfaction" questions and the employee's identity was attached to his or her answers. Both of these factors undermine the reliability and validity of the assessments of the project, yet the corporate training staff rely on them to demonstrate the system's success.

The one exception to the tendency to neglect measurement is at a company that planned in advance for a four-level approach to evaluating course effectiveness. The four levels were:

1. **Perceptual** – A standard questionnaire asking participants to report their attitudes about the quality and effectiveness of the training;
2. **Learning** – Comparison of pre- and post- test scores for individuals doing the online training
3. **Behavioural** – Surveys to capture changes in productivity and efficiency of the employees who took the courses since completing the online training
4. **ROI** – Measures to capture the impact of the training on the bottom line of the units employing the participants.

The company in question has implemented levels 1 and 2 as a routine part of its online training program. However, there had only been a few surveys of behavioural change (level 3) and the ROI measures were still being developed when we visited the site, so we cannot point to results in those two areas. The company can, nonetheless, demonstrate an average 30% increase in post-test scores over pre-test scores and point to units that have been able to increase the number of employees trained six-fold because of the reduced cost of training online vs face-to-face.

All projects had a strong champion and top management support. While projects may have been initiated or proposed at a business unit or departmental level, each one rapidly garnered the support and enthusiasm of senior management in the organization. This enthusiasm and commitment may be responsible, in part, for the lack of post-project assessment. When senior management has made a strong commitment to e-learning investment, or describes the business case as a "no-brainer", the project team and users may quickly conclude that post-hoc measurement of success is unnecessary (or even undesirable). We certainly saw some of this in one company: despite the absence of reliable measures of quality or satisfaction, management firmly rejected to suggestion that independent or confidential measures of effectiveness and satisfaction would provide useful information.

Organizational objectives varied from company to company, with no single objective shared by all those we studied. Qualitative benefits anticipated included significant human resource benefits. Among those cited were increases in comfort with technology, employee motivation and morale, pride in and identification with the company, and the sense that company valued its employees. Employers believed these results would, in turn, mean that the e-learning system itself became a new recruiting tool. That tool would improve the company's public image and give it a competitive advantage over others in the industry who didn't offer online training.

Quantitative benefits varied by company, but generally included efficiency gains in the delivery of training and reduced delivery costs and lower travel expenses. On the employee side, quantifiable benefits cited included higher retention, productivity gains, and enhanced employee skill levels. Finally, executives pointed to benefits that could ultimately be quantified, but which they treated as largely qualitative. These included reduced travel time, improved work quality and improved customer service.

None of the companies that cited these factors as anticipated benefits had planned or instituted any devices to measure whether they had been achieved to any degree, although the company with the four-level evaluation system could point to anecdotal evidence that they had realized various benefits. Most companies believed they could, if pressed, find the data within the company to assess the impact on travel expenses and direct cost of training. Few, however,

were sure that they had reliable data on retention, productivity, and skill levels. Again, the company with the four-level assessment approach could report on changes in skill level, which had increased measurably after the training.

Employees' reasons to complete online courses varied widely. In some companies, completion of the online modules was mandatory and formally tracked as part of the employees HR file. Employees were expected to complete a specified number of minutes of training in the areas covered by the online modules each month and were reminded regularly if they had not done so. In other companies, completing online courses was voluntary, but led to certification and qualified employees for raises, promotions or reassignment to different projects.

Moving Into Phase 2

As we move forward with this research, we are most interested in the employee use and impact of voluntary training. Results can only be achieved if employees use the e-learning systems effectively. We also believe that issues of usability and motivation can influence the effectiveness of any system – whether mandatory or voluntary. As a result, studying the factors that motivate employees to use an e-learning system and help them achieve their learning goals will also provide valuable information for companies investing in mandatory systems. Indeed, when companies launch e-learning projects without an explicit business case or evaluation plan, it may be that the most useful input to the decision-making is the likelihood that employees will use the system.

Venkatesh et al. (2003) reviewed the literature on user acceptance of technology in order to derive and test a unified model of acceptance. We believe that this model provides a robust framework to predict the acceptance and use of e-learning systems, and propose to test that belief in Phase 2 of this research. We have made minor modifications to Venkatesh *et al.*'s UTAUT instrument to make the terminology more specific to the e-learning system, but have otherwise used the instrument as reported in the literature. Venkatesh *et al.*'s model appears below. The instrument will be administered via a web-based survey of participating employees. [2]

Employees will be invited to participate via an email message from senior management introducing the researchers and the project. An active hyperlink will take participants to the survey site, where they will read a brief introduction to the project and then be guided through the survey. A user id in the email will prevent multiple responses from a single employee, but will not be stored with those responses to ensure respondent anonymity. There will be a company identifier stored with the responses, however, to enable us to analyze and compare results by company.

Studying voluntary-use systems will let us compare outcomes of those who used the system to those who did not. We are currently in negotiations with two significant e-learning providers to gain access to a limited number of their clients. We hope to engage two to five of those clients in a web-based survey of employees who have and have not used the company's e-learning system. If negotiations prove difficult and we can only survey employees in one company, we prefer that it be a group with a voluntary e-learning system. However, if we have the participation of units with mandatory and voluntary e-learning programs, we will be able to also compare

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[2] A copy of our survey is available upon request from the second author.

outcomes of mandatory use systems to those of voluntary systems. Our objective is a minimum population of 500 employees across all participating companies, with a minimum of 100 employees per company.
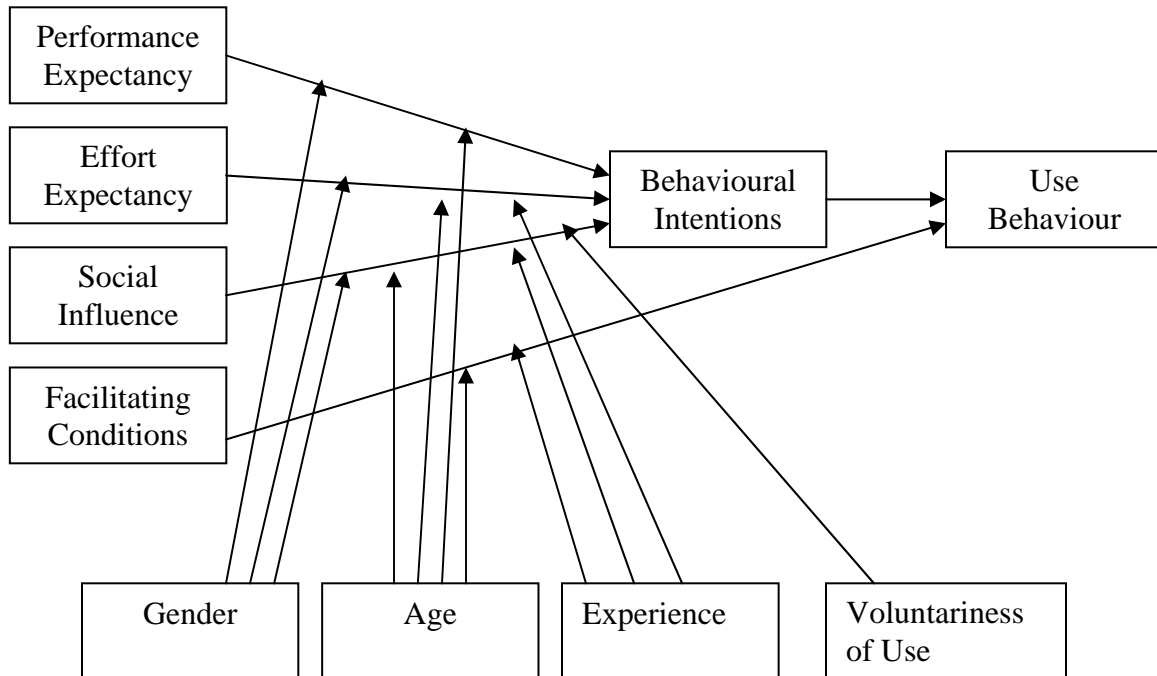
Figure 1: UTAUT (Venkatesh et al., 2003, p. 447)

Once the data have been gathered, we will use PLS to test the hypotheses embodied in the UTAUT model. Our intention is to use a holdback sample – testing the model first with half of the data and, if necessary, refining the model on the basis of those results. We will then use the holdback sample to test the refined model. This approach does depend on the number of responses we receive. If the quantity is not sufficient for holdback testing, we will test Venkatesh *et al.*'s original model, using the complete data set.

Conclusion

The e-learning industry has seen an explosion in demand for its products, as companies seek to enliven training and make it more efficient through the use of new techniques. For companies that have been limited in their delivery of training as a result of high costs or dispersed workforces, affordable "anytime/anywhere" education can help the organization overcome real barriers to training. For companies with a long history of traditional training programs, e-learning seems to offer significant opportunities to enhance internal education. At the same time, the prevailing wisdom of e-learning as a no-brainer and benefits as obvious merits serious study. E-learning development costs can rapidly skyrocket, systems require technical and subject matter

expertise, and employee use can be influenced by a number of factors. Unless companies can specify (and quantify) expected returns, an e-learning initiative can become an uncontrolled expense with little demonstrable return. Our exploratory work suggests that there is still considerable work to be done in validating the assumptions of business and claims of e-learning providers when it comes to the return on e-learning investment.

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