



The Use of Information Technology in Teaching Accounting in Egypt: Case of Becker Professional Review

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EXECUTIVE SUMMARY

The use of information and communication technology has become an integral component and a vital tool in teaching accounting. Over the last few decades, the blend of using state-of-the-art technologies has improved the effectiveness and efficiency of the learning process. Respectively, some predict that physical campuses will decay and crumble in the near future with the continuous growth of borderless societies and the diffusion of extended enterprises leading to a hybrid model for knowledge delivery that extends beyond distance and time barriers. The main emphasis of this case is to study the deployment of technology in teaching accounting in Egypt, using the case of Becker Professional Review in providing trainees with the required training that enables them to pass exams and get professional certification using emerging information technology tools and techniques. The case demonstrates how information technology adaptation can provide a platform for knowledge dissemination and demonstrates a model that can be replicated in similar environments.

Keywords: distance education; Egypt; IT adaptation; IT in education; IT transfer to developing nations; knowledge dissemination

ORGANIZATIONAL BACKGROUND

Becker was established by Newton Becker as in-house training for PriceWaterhouse and Company in Cleveland, Ohio in 1957. In the early 1960s, Newton expanded the activities of the company to cover other cities throughout the United States. In 1996, Becker was bought by Devry Inc., a large publicly held higher-education company whose main objective is to provide trainees with the required knowledge that enables them to be prepared for passing the qualification exams required to obtain professional certification in a variety of disciplines. In 2001, Devry Inc. acquired Stalla, which specializes in finance courses. Today, Becker and Stalla, as a division of Devry Inc., offers courses in three areas: certified public accountant (CPA), certified management accountant (CMA), and certified financial analyst (CFA).

This case covers the Becker Professional Review (BPR), which has around 2,000 employees spread in 325 locations worldwide, of which 290 are in the United States and 35 in the Middle East, Europe, and India. It has more than 45,000 trainees per year, and more than 700 instructors.

Since 1999, BPR trainees have always scored as top three in the CPA exam. One of the activities offered by BPR is the certified public accountant (CPA) examination, which is administered by the American Institute of Certified Public Accountants (AICPA). CPA is the qualification required by accountants who want to enter public practice, that is, to sign audited financial statements in the United States. The globally uniform CPA examination has a long and trusted history in the licensing of Certified Public Accountants (CPAs) since 1917. It is important to note that the essence of this case is the fact that the need for U.S.-based qualification has grown tremendously over the years because businessmen and investors in the market in Egypt view the holders of the CPA as being superior to their counterparts that hold local certification that is not globally accredited and acknowledged.

In view of the increasing globalization of accounting standards and practices, the addition of the credentials mentioned above is becoming increasingly invaluable. Completing the requirements and holding a certification as a public accountant has proven to be very beneficial when dealing with multinationals or local companies. In many countries, the CPA allows credits towards fulfilling requirements of obtaining a local designation. In Egypt, the CPA holder can get to be a member of the Egyptian Accountants and Auditors Society, which is the most renowned accounting certifying body. CPAs on all levels are often called upon to act as management advisors, to use their highly developed and often broad-ranging knowledge to help companies improve its use of resources in order to meet its organizational objectives. CPAs can provide various services including (but not limited to) auditing, tax advisory and planning services, international accounting, financial reporting, internal auditing, management accounting, non-financial positions, and government accounting. It is important to note that the CPA designation is committed to professional excellence and protection of the public interest in a rapidly evolving business and financial environment.

This case focuses on the representation office of Becker that is located in Cairo under the name Becker Professional Review (Egypt). The office was established in 1996 as an affiliate of the Institute of Management Development (IMD) of the School of Business, Economics and Communication at The American University in Cairo (AUC). IMD is the executive education arm of the school. BPR's main line of business is professional development through the conduct of a variety of training courses, awareness seminars, and tutorial sessions in preparation of the qualification exams. BPR uses a wide range of information technology tools to help its candidates pass their exams. Example tools include CD-ROMs, video tapes, flash cards, pass masters, online courses and starter kits that accompany the course textbooks, and materials which enable trainees not attending classes due to working hours or being located in different cities to still go through the review program, reflecting the idea of telecommuting.

The management team of BPR consists of two staff members: the country manager and the program coordinator reporting to the Regional Office in Beirut (Lebanon). Appendix A demonstrates the duties and responsibilities of both personnel. The team is responsible for developing the annual business plan that continuously aims at introducing the tools and techniques that keeps the office competitive in the local marketplace. Appendix B demonstrates the income statement of BPR for the financial year ending 31 December 2003.

SETTING THE STAGE

Information and communication technology can develop or hinder the learning process. Therefore, the literature shows that proper planning, rather than the identification and allocation of funds, is a prerequisite for the effective implementation of information and communication technology in education and training (Cradler et al., 1993). The use of technology provides the ability to cut cost; reach a wider audience through tools such as the World Wide Web, electronic

Table 1. ICT issues in the learning process

General Considerations in ICT Implementations in the Learning Process
Instructors should have a reason to use ICT
Curricula must be technology driven
Learn from other successes and failures
Investment in instructors is vital
ICT deployment and updating is a continuous process
ICT goes far beyond that computing
Community and management support is essential

mail, video and desktop conferencing, and moderated class sessions that enables standardization of quality of instruction; and provide each trainee with the opportunity to learn at his/her own pace, confirming that technology is rapidly emerging as a vital component of teaching and learning (Means et al., 1993).

The use of information technology in classrooms allows schools, universities, and training centers to expand their markets both regionally and globally, respond to the business and environmental requirements, adapt to the changing conditions in the global marketplace as well as in the organization, support cross-cultural and cross-functional teams of trainees, encourages them to engage and work together, and allows faster and more practical cooperation between instructors from various nations and different institutions, adding to the benefits of collaborative work in the educational field in general. The use of information and communication technology in the classroom allows more time and space flexibility for instructors and trainees to use the educational material, enables continuous testing of users of the educational content, provides trainees with more freedom in taking initiatives, learn on their own and be more creative individually as well as in teams, helping them to construct their own ideal learning model and environment.

However, the advantages are sometimes hindered by the technology itself due to the need for expensive infrastructure and large start-up costs which can only be solved through a variety of issues. This could include a funding strategy, finding qualified and computer literate instructors, in addition to identifying the investment in staff development. But it should be noted that some issues remain to be addressed such as the lack of face-to-face instruction that may diminish the trainees interpersonal, social, and communication skills, although cultural elements sometimes play a major factor in identifying the extent of the effect of this element. Many studies have been developed recently to react to these issues that are further intensified in developing nations, because the quality of accounting education is relatively lower. Therefore, it is crucial to find ways to speed up the educational process and the knowledge dissemination arms for its citizens. One of the promising venues that capitalize on information and communication technology can be distance learning and computer-based technologies, which could lead to a more effective, deliverable-oriented and relatively less expensive infrastructure for learning. The current literature shows that most of the cases implemented took place in the developed world, and it is inevitable that developing nations could benefit substantially if such a mechanism is available: therefore, there is an urgency to test the environment in a developing setting like Egypt. Table 1 demonstrates some of the issues that need to be considered when implementing information and communication technology in education and training (Cradler, 1992).

The case of BPR represents an opportunity to assess the level of acceptance of technology in teaching accounting in Egypt. The introduction of information and communication technology in the field provides an intriguing example to explore the opportunities presented for teaching

accounting. The case aims to explore the services offered by BPR in teaching accounting, where the hunger for technological advancement in such discipline is hindered by the lack of financial resources needed to develop the basic infrastructure required, despite the recent investments that took place in infrastructure development in the information and communication technology infrastructure (World Bank, 2002). The case addresses a number of questions including (a) assessing the role of trainees as facilitators or barriers to the use of technology in teaching, based on their cultural background, (b) identifying the major advantages and disadvantages of introducing technology to the teaching process, (c) determining the requirements needed to effectively use innovative technology in teaching, (d) providing a benchmark for technology implementation in developing nations, and (e) reporting the lessons learnt from the experience of BPR in Egypt to work as a model for other countries with similar socioeconomic environment.

Information Technology in Egypt

Egypt is the cradle of an ancient civilization dating back to 3,000 BC. It has a population of 70 million with an average growth rate of 1.9%; over 16 million are in different education stages, where 49.4% are students at school level (<http://www.idsc.gov.eg>). In 2004, more than 1.2 million university students graduated; 1.2 million students were enrolled at the undergraduate level, and 25,000 students were enrolled in postgraduate studies (<http://www.mcit.gov.eg>). The public expenditure on education represents 4.1% of GDP (Arab States Regional Report, 2002). Egypt has the second largest economy in the Middle East, and its current economic growth rate stands at 3.1% annually, with an inflation rate of 3.6% as of March 2005 (<http://www.economic.idsc.gov.eg>).

Egypt is trying to modernize itself technologically, and one of the main sectors the government is focusing on is education (Kamel, 2002). There is a low PC penetration rate, standing at 1.6 million stations, although increasing at 50% growth rate annually (<http://www.mcit.gov.eg>). However, the investment and build-up of Egypt's information and communication technology infrastructure has taken massive steps since the early 1990s in different building blocks including human, systems, procedures, and hardware and information infrastructure (IDSC Annual Report, 2000). In June 2005, the number of IT companies exceeds 1,300 working in the sales and technical support of hardware, software, and in the development of IT solutions (<http://www.citegypt.com>) as well as the leading IT vendors and multinationals that are establishing businesses in the IT sector that are growing in number annually as the potential for a large IT marketplace grows (<http://www.idsc.gov.eg>). With respect to the telecommunication sector, there are 12 million fixed lines and over 7 million mobile subscribers (<http://www.mcit.gov.eg>). Moreover, there are 3.6 million Internet users served by over 1,000 cybercafés and IT clubs that represent the outcome of a successful win-win partnership between the government and the private sector. It is important to note that Egypt ranks 119th out of 174 nations in the United Nations Development Program's Human Development Index (HDI), placing the nation in the medium human development category (ITU, 2001).

Information Technology in Education in Egypt

There are so many challenges facing Egypt while embarking on its ambitious development plan for the educational sector. Such challenges include the population growth and the deployment of a state-of-the-art information technology infrastructure. The most important building block of the infrastructure is human capital. This could be translated in the fact that to capitalize on the benefits of information technology, there are a number of elements that should be made available, including highly trained instructors, committed leadership, standards, and ongoing professional development opportunities. Therefore, since 1999, Egypt has been working on integrating information technology in different stages of the learning process. There are a num-

ber of elements that are associated with this objective including (a) having instructors effectively integrating information technology into their curricula, (b) encouraging administrators to promote the use of information technology, (c) enticing education policy makers to create modalities that reward the integration of technology into the curricula, and (d) ensuring that all stakeholders of the education community, including corporations and local businesses, collaborate to help ensure that trainees graduate with twenty-first century workplace skills.

Education is the main path of development, progress, and growth. It is an integral part for societal development, especially within a global world led by information and knowledge-based societies. In Egypt, the extent and quality of its human capital will determine its social and economic future development (Kamel, 2000). Investing in human resources will help build an information society that can compete in the global marketplace. Thus, the challenge in the current educational sector is to enable an effective platform that trainees would be exposed to through the use of information technology. The following is a description of the Becker Professional Review program in teaching accounting using information technology tools in Egypt.

CASE DESCRIPTION

The case demonstrates the deployment of emerging and innovative information technology tools while delivering courses in the field of accounting. It covers the conditions in the local marketplace, the tools utilized, and the challenges faced and opportunities created, as well as the conclusions for future implementations. The focal point of the case is the identification of the experiences accumulated in using information technology in teaching accounting, and how such know-how can be replicated in similar environments.

Overview

Accounting instructional methods have recently witnessed rapid changes in a relatively short period of time. Before the mid-twentieth century, the technology used for accounting instruction consisted of nothing more than chalk and talk. The 1950s and 1960s witnessed minor changes, with the rare use of a flip chart on an easel in addition to audiovisual equipment like movies, filmstrips, and projectors. Video tapes and overhead transparencies began to appear in classrooms during the 1970s, and by the end of the 1980s, there was the establishment of computer labs, as well as the adoption and incorporation of computing applications in the accounting curriculum. The progression of the 1990s brought rapid developments in computer technology and its applications. Computers are now becoming more and more user friendly, and a large number of students entering colleges are computer literate. Computer applications like presentation tools help enhance education delivery.

Additionally, the establishment of the Internet and World Wide Web gave infinite access to information and knowledge dissemination. Moreover, the development of CD-ROM-authored courses and tutorials had many advantages in content delivery. All the progression in technology raised the issue of the importance of possessing and developing the necessary technological skills among accounting professionals, professors, and trainees around the world, so as to maintain a competitive edge. Much of such developments was more evident in developed than in developing nations, due to the fact that the integration of information and communication technology in teaching accounting was hindered by the lack of required resources and infrastructures (Apostolou, 2001; Watson, Apostolou, Hassel, & Webber, 2003).

Using IT in Accounting Education

Researchers and educators in accounting education have reported that the use of information technology in the classroom enhances the educational process (David, MacCracken, &

Reckers, 2003; Selim, 2005.). Technology usage provides (a) the ability to cut cost while reaching a wider audience through tools such as the World Wide Web and video conferencing, (b) allows for standardization of quality of instruction, (c) enables each student to learn at his/her own pace, and (d) allows for continuous collaboration between students and their peers, as well as between students and their instructors through a learning environment that extends during the duration of the course and beyond. The use of information technology in classrooms allows schools to expand their markets, responds to the business and environmental requirements, supports cross-cultural and cross-functional teams of students to engage and work together, and allows faster and more practical cooperation between instructors from various nations through the development of a network of learners and education material providers, thus adding to the added-value enabled to the recipient groups including but not limited to students. The use of information technology in the classroom can allow more time and space flexibility for instructors and students to use the educational materials; can allow for continuous testing of users of the educational materials; and can allow students more freedom in taking initiatives, learning on their own, being more creative, and studying at their own pace (Al Hashim, Sankaran, & Weiss, 2003).

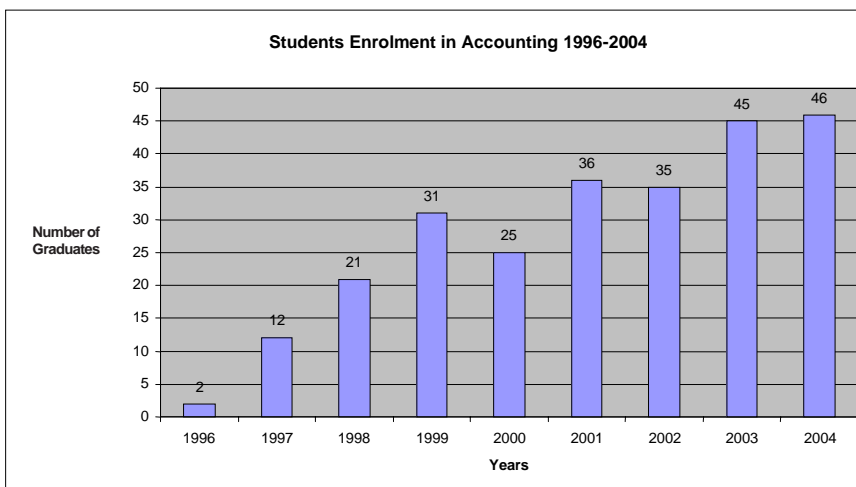
However, such advantages are hindered by the presence of several hurdles that arise from the use of various information and communication technologies including the need for expensive infrastructure and large start-up costs, finding qualified instructors, and the lack of face-to-face instruction, which may diminish the students interpersonal, social, and communication skills. Many studies have been developed during the period 2000-2002 to react to these issues (Watson et al., 2003). Such issues are further intensified in developing nations where it has been documented that the quality of accounting education is rather low. Therefore, it is crucial to find ways to speed up the educational process of its citizens, and one of the venues could be distance learning and computer-based technologies that could lead to a cheaper process and at the same time, capitalize on the large number of trainees that could be accommodated (Kantor, Roberts, & Salter, 1995). However, a question always presents itself, "What could be the added values of introducing information technology in teaching accounting?"

Accounting Education in Egypt

The state of accounting education in Egypt is imperfect. According to a set of interviews conducted with a number of senior administrators in the Ministry of Higher Education and the Higher Council of Education, Egypt has approximately 1.6 million students attending 12 public universities, including 50,000 students studying accounting in public universities and about 6,000 students attending 4 private universities that offer accounting degrees. Appendix C demonstrates extensive statistics on accounting students both graduating in 2004, and registered in 2005 across all universities. It is important to note that accounting education is still mainly dependent on face-to-face teaching, with minor dependency on common overhead projectors. Most universities have computer labs, but the ratio of computers to the number of students is minimal. The instructor in the classroom is basically a lecturer who delivers his lecture through a one-way communication from his end to the recipients. Due to the large number of students in the classroom, ranging between 3,000 and 6,000, the possibility of individual interaction between the instructor and students is virtually impossible. Moreover, due to cultural elements, students are not used to being interactive in the classroom. The teacher-student ratio in accounting departments of large public universities is about 1 to 1,000, which hinders instructional quality and constrains essential teacher-student communication.

Moreover, the quality of accounting education further suffers from the lack of modern curricula, and the fact that there are few teachers for too many students. Additionally, the accounting curriculum has not changed for many years and needs to be updated. Most courses

Figure 1. Student enrolment in accounting at AUC (1996-2004)

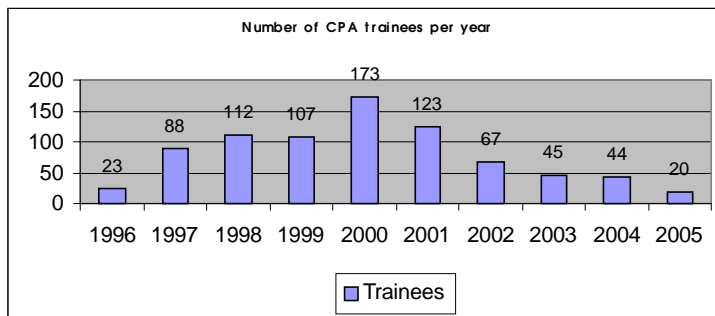


focus on elementary topics and application of standards, but do not include international standards and practices. Although many faculty members have been educated in the United States and Europe, they lack appropriate textbooks and educational materials in international accounting and auditing standards. Respectively, as a result of outdated curricula and lack of appropriate learning materials, the student's knowledge of modern accounting and auditing is diminishing, and all available academic programs are not improving students' critical thinking (World Bank, 2002). Such a problem is better handled within private universities and at the American University in Cairo (AUC), which offers an accounting major within the Department of Management of the School of Business, Economics and Communication. This program combines American teaching systems while accommodating to the requirements of the market. Its graduates become well-rounded accountants who are frequently employed by multinational organizations. However, the problem still prevails because only a limited number of students join the program, leaving the majority of the students not qualified or possessing the knowledge to join the public accounting profession in Egypt. What could be the competitive advantage such small cluster of students have over their competitors in the local marketplace?

The accounting program at AUC started in 1996 with only two students and has been increasing since then: in 2004, the number of graduates reached 46 students. Figure 1 demonstrates the growth rate in the number of students since the inception of the accounting program. However, with so few graduates, the program has no impact on the national accounting profession. Recently, some private universities started offering accounting programs using internationally comparable curricula. However, high tuition fees are prohibitive, giving access mostly to selected students in the community capable of affording the tuition requirements.

Moreover, a few public universities, including Cairo University, Ain Shams University, Helwan University, and Alexandria University, have started their own English-language section in the accounting department; but the few graduates from these programs are unlikely to have significant impact in the public accounting profession. More are expected to be introduced in the years to come to realize the critical mass of students that are qualified, and that can make an

Figure 2. CPA trainees (1996-2004)



impact in the sector and in the community at large. What could be the strategy that can help realize a multiplier effect that can lead more qualified personnel to join the accounting profession?

Case of Becker Professional Review, Egypt

When BPR started, the teaching method was simply based on handouts and slide presentations. The main advantages of this approach were that instructors delivered the courses live with no complex technological interference, and trainees were used to this approach. In 2000, BPR introduced its new, live, multimedia system and new textbooks. Although the number of trainees was not large, it represented a role model for other institutions, and management believed that the strategy was effective, allowing wider market penetration taking the operation into another level in the following years.

During its inception, BPR only offered the Certified Public Accountant (CPA) designation. There was only one class running twice a year with a total of 10 to 15 trainees per term. In 1997, the volume expanded to two CPA courses running at the same time, with a total of 44 trainees per term. Unfortunately, the number of trainees studying for the CPA decreased to around 40-60 trainees per year after the September 2001 events because the exam had to be taken in the United States, and trainees were facing problems trying to get their entry visa to the United States. The average passing rate was 70%, which was a very high passing rate when compared to other courses offered in Egypt (as indicated earlier that BPR passing rate is superior in the United States and in Egypt). Figure 2 demonstrates the change in the number of trainees in the CPA program in BPR (Egypt).

In 1999, BPR introduced the Certified Management Accountant (CMA) designation, with 28 trainees per year. In 2001, the number of trainees in CMA increased to 109 trainees per year, due to the fact that the CMA exam was offered in Egypt. Figure 3 demonstrates the change in the number of trainees in the CMA program in BPR (Egypt).

Additionally, in 2001, BPR introduced the Certified Financial Accountant (CFA) designation. The trainees studying for the CFA had constantly stayed at around 8-9, with 2005 being the best year, increasing by 20% to around 11 trainees. Figure 4 demonstrates the change in the number of trainees in the CFA program in BPR (Egypt).

Figure 3. CMA trainees (1996-2004)

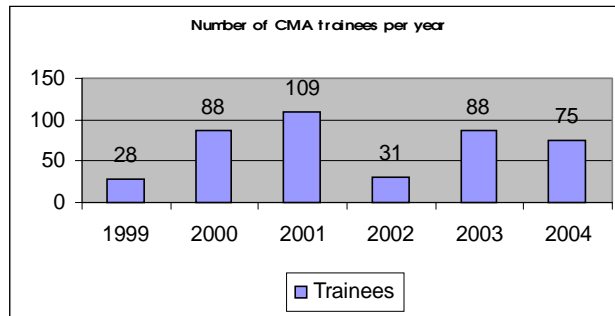
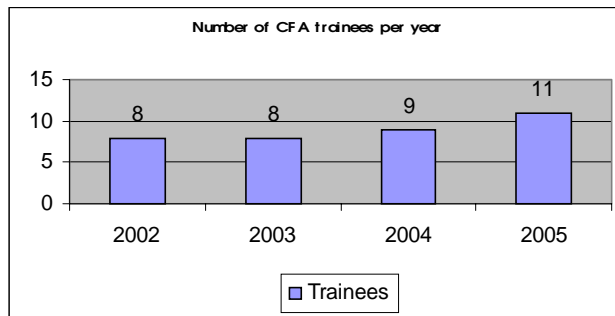


Figure 4. CFA trainees (1996-2004)



Introducing Information Technology (Case of Becker Professional Review-Egypt)

In terms of information technology deployment, BPR (Egypt) started using the new teaching methodology that incorporates different information technology tools in 1999. This in itself represented a challenge in the context of a developing nation like Egypt, where the barriers of introducing and diffusing information technology usage relate to technology deployment, technology acceptance, and human development readiness, amongst other elements. What other elements could be considered as building blocks to smoothly introduce and diffuse the use of information technology?

With respect to teaching technologies and tools, BPR (Egypt) mainly depended on prerecorded CDs that offer comprehensive explanation; examples; and problems that cover the concepts, constructs, and information needed to be accessed by trainees. The CDs usually run in the classroom, and are used as the primary source of instruction by different moderators and facilitators, who are always available to explain the issues that might not be self-explanatory or that need further in-depth coverage. The CDs are developed to ensure that all trainees from around the world receive the same quality of education as well as similar content, although adaptable to the local conditions and needs of the marketplace. However, it is important to note that trainees with

English as their second language frequently find it difficult to keep up with the tutorials without the moderator, since they have been set for native English language speakers. Respectively, the presence of the instructor becomes vital in the classroom due to the need to introduce some translations, usually for some technical terms. Moreover, from a cultural perspective in some markets, in-class interaction and class discussions are still favored due to the personal contacts trainees develop with their instructors. How is technology accepted within different market-places, how is it valued from a cultural perspective, and what are the conditions for its successful penetration and adaptation?

Prior to the use of technology, BPR depended on tapes and CDs, but only for the self-study program. In 1999, it introduced in-class CDs. The new tool consisted of an in-class CD with a videotape delivered by a Becker instructor from Becker, who presents all topics and reviews them. The CD includes a set of presentations with highlights on keywords, phrases, and concepts, with salient points being stressed so trainees learn exactly what they need to know to pass the exam. The tool mainly depends on prerecorded CDs that offer comprehensive explanations; examples; and problems that cover the concepts, constructs, and information needed by the trainees. CDs usually run in the classroom, and are used as the primary source of instruction. However, during the class time there is always a local instructor who acts as a moderator to explain some of the issues that might not be self-explanatory in the CD. The concept of the CDs is developed to ensure that all trainees from around the world receive the same quality of education. Would such a model be successful in a marketplace like Egypt, and if not, what are the key factors needed to render it a successful model?

The use of CDs in the classroom was expected to introduce dramatic change in the management of the program during the early stages because they were not sure how the instructors and the trainees would receive technology, and how they would react to it. The BPR manager in Cairo reported that she was not sure if trainees would be able to adapt to the use of the technology introduced. The starting point of the change required a plan to coordinate the needed equipment, such as the LCD projector, and the layout changes that are required in the classrooms and in the labs used in training. These changes included the setting-up hardware and software on all workstations. It is important to note that almost all the instructors used in the delivery of the programs were not familiar with the use of computers, and it was invaluable to organize training sessions for the instructors, which made them more relaxed because the introduction of the new technology made them very uncomfortable. Some even viewed the new technology as a threat to them and their value as the sole disseminators of knowledge. BPR personnel had to spend many hours with the instructors in additional public and private sessions to convince them of the added values and advantages of the new technology. The central focus of these sessions was mainly to convince the instructors that the use of technology can help them in the classroom and allow them to be more creative and innovative.

The CDs introduced new features and facilities to the classroom, but it also introduced the feature of a moderator that can help the local instructor pace the lecture and manage it more efficiently. The role of the recorded instructor was to maintain the quality of the program, and to ensure that all issues are covered by the local moderator, following the content of the CD. One challenge that was faced was the fact that local moderators, to some extent, perceived the recorded instructor as a threat to them rather than an element of support. It is important to understand that the use of the CD was not optional for the instructors. However, BPR found that not all the instructors make use of the features available, and some of them believed that it was even more complicated, making things more difficult instead of facilitating the process. However, such belief was only felt among those instructors who had not attended the training sessions, because it is also worth noting that the instructors who had taken the time to learn how to use the new tool

used it in classes, and mentioned that they felt that it was a good and effective supportive tool to help them manage the program. It is important to note that BPR gives each instructor a free personal copy so that he/she can get prepared and become familiar with the topics, inserts, and interjections. Would a full-fledged self-training model be more successful in a developing nation like Egypt, or would a hybrid model be optimally more effective?

Since the start of using the technology in 1999, and when the exam was computerized in 2004, BPR were the pioneers since they were the only program providers that were able to give trainees examples of simulations and search-engine tools just like the ones available in the exam. As for the trainees, most of them were not comfortable in the beginning, since most BPR trainees come from Egyptian universities such as Cairo University and Ain Shams University, where there are no labs and no technology used such as the ones used at the American University in Cairo with respect to similar programs offered. Most of the trainees wanted the interaction and the live lecture that they are used to. As a result, BPR changed the style of the lecture and the total hours so that it could accommodate both (hybrid model) including the CD, and the local moderator offering full lectures. BPR Egypt was the only location outside all the Becker Professional Review locations worldwide that provided extra total hours and also extra revision sessions. It was an attempt to adapt the program to the needs of the trainees to realize optimal quality delivery possible.

BPR realized that the accent used in the CD was very difficult for some of the trainees, and the examples and jokes made-up by the Becker instructor were not understood, due to the difference in cultures and backgrounds (some of them were localized). As a result, the local moderator used to stop the CD whenever he or she felt necessary, and started to explain in his or her own words using personal experience and his or her own jokes, which could be understood. BPR reported that after a while of using the CD, the trainees were used to it, and did not want to go totally live as they did in the beginning. They realized that this was better as they were introduced to a new culture, and they were getting more familiar with the language that they will be using in the exam.

Using the technology had other obligations from BPR's side because when the instructor used to give the lecture live, the program coordinator did not have to stay the whole lecture: he or she was able to start the lecture and then finish any pending work in the office. But now with the CDs being used, the program coordinator has to be available all the time just in case something is needed or things are not going smooth. This is because sometimes the machine stalls or the CD sometimes does not work properly, and the program coordinator should handle the problem on the spot. Additionally, there is the pass-master, a CD that has hundreds of multiple-choice questions that the trainee takes home and practices on. This is a very important tool, as it gives trainees the experience they need before sitting for the exam. Moreover, it should be noted that the pass-master is an effective tool, because if a trainee answers a question incorrectly, the CD automatically takes him/her to the part of the textbook where this point is explained, so that he/she can recheck it. As for the self-study CD, not all trainees were interested in it as it was very expensive, and also trainees prefer the interaction with the local moderator. However, the CD was very important for the trainees who do not live in Cairo, and also for those who cannot leave their work during class hours and prefer to study on their own, capitalizing on the use of emerging technologies.

BPR (Egypt) was faced with problems such as the delay of the CDs, whether from headquarters in the United States or when being held in customs. Due to copyright infringement, CDs have a validity of 8 months; afterwards the CD expires and does not work, which yields complaints from trainees that CDs do not work; that they did not get a chance to finish the whole program. Also, some of the trainees do not adhere to the CD booklet guide where all the points are

elaborated. One of the major issues is that trainees cannot install the CD on two different PCs; however, trainees do not take that into consideration and try to install it at home and work. Respectively, the authorization disk does not work and so they are delayed. Usually trainees have to contact the headquarters to get an extension access code to have the CD running if it expires. With respect to the customs problem, the material is always delayed due to the very high-value customs requests, and also because the material goes through customs clearance where they have to check the CDs to make sure that there is not anything illegal in them. Sometimes BPR had to postpone the programs due to such delays. Moreover, some other times there were mistakes in the CDs and it was not easy to fix these problems, which had to be fixed in collaboration with headquarters. Another technology element deployed was the computer-based testing that made the knowledge of technology an integral part of studying for the CPA examination, making the exam self-scheduled with preregistration. The exam contains multiple-choice questions and case-based simulations.

PROBLEMS AND CHALLENGES

The use of information technology created several challenges for BPR (Egypt) that related to language, culture, information technology usage, curricula, cost and trainees, or the recipients of the knowledge disseminated, among others. The first challenge was language-related in the sense that trainees with English as their second language frequently found it difficult to follow up the tutorials that are set for native English language speakers. The Becker instructor usually had an accent that the local trainees were not familiar with and therefore, they missed a lot of what was said as they did not understand it. The second challenge was culture-related, whereas the examples, cases, and even jokes used were from a completely different culture, and therefore local trainees did not understand them and did not comprehend the idea or get what the instructor wanted to say. As a result, the local moderator had to stop the CD more often to either repeat what the Becker instructor said or translate it, and also give other local examples. The need to cater for the local cultural background and needs proved to be very important in order to entice the instructors and the trainees to engage with the technology and promote its use and effectiveness in learning.

The third challenge was information technology related because as a result of using information technology, many instructors refused to deliver the program either because of lack of the required technological knowledge, or because they believed that it has resulted in wasting valuable time. Many of the qualified local instructors were not skilled to handle the new technology introduced, or were unwilling to learn it due to the time required. Also, instructors that accepted and delivered the programs asked for higher fees that increased BPR financial liabilities. The fourth challenge was curricula related since the instructors that accepted the technology and learnt how to use it suffered from time and duration of lectures problems because they had to stop the CD more often, leading to the fact that the time needed for the lectures was extended more than planned by the international standards of BPR. Therefore, BPR had to run extra review sessions to cover the material that was not covered in the allocated time. The fifth challenge was cost related, whereas the amount of investments that was needed to get classes ready was substantial, amounting to around 50,000 USD to equip each class, which can accommodate up to 20 PCs. Other options included renting space that had the required equipment already installed. Both scenarios resulted in higher fixed costs as compared to the American University in Cairo. As a result, BPR programs are considered very expensive when compared with other competing programs being offered in the market in Egypt by other competitors, a problem that needs to be handled in the short-term or else it will greatly affect its competitive position in the marketplace.

The sixth challenge was trainee-related, whereas there was a need to identify the critical mass of trainees that would be willing and capable to go through the curricula, possess the skills and capacities needed to pass the exam, and effectively join the accounting profession.

CONCLUSION

The case of BPR (Egypt) reflects the introduction and use of information technology in education in the context of a developing nation. It was implemented in the field, teaching accounting as a model that could be replicated in other disciplines. The challenges faced and the opportunities created mainly related to design and delivery of the newly introduced hybrid teaching methodology. The case has shown how culture and local adaptation of the use of technology is important for its proper and successful use. Learning from the implementation and fine-tuning the tools, whether digital or traditional, becomes vital for the continuation and its effective use. The findings of the case also indicate that more studies need to be made before the implementation of technology tools within the teaching methodology that do not only relate to the technology itself, but also to the language used, the skills of the instructors delivering the knowledge, and the trainees attending and using the technology. Investing in human capital is extremely vital as a building block in successful technology deployment that complements state-of-the-art technology together with effective financial resources and a workable strategy of implementation. The case of BPR use of technology in Egypt could be used as a model for future implementation within similar environmental conditions, although it is important to note that variations in socioeconomic and infrastructure conditions always entails adaptations and transformations to meet the local needs and requirements.

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APPENDIX A

City manager duties and responsibilities:

- Developing business plans and annual reports
- Writing reports and studies on new programs to be launched
- Communicating with other Middle East branches and headquarters in the United States to ensure quality and standardization of courses, procedures, and mechanics
- Developing a database for the trainees' records
- Evaluating and reviewing the unit's performance with respect to instructors, administrators, and competition
- Managing the logistics and administration
- Registering trainees
- Following-up with trainees post program's completion for career advice and planning
- Supervising trainees' applications and examination's processes
- Handling accounting and financial duties for the operations in Cairo including collections and disbursements
- Interviewing and recruiting new staff
- Training courses' instructors
- Promoting courses and following up the marketing and advertising plans
- Organizing seminars and company presentations to promote the different services

Program coordinator duties and responsibilities:

- Preparing classes for different programs
- Following up with different instructors
- Handling trainees' evaluation and analysis of feedback
- Keeping record of the inventory and machines' maintenance
- Helping out instructors during different classes with respect to their different needs
- Following up with potential candidates and promoting different services and programs

APPENDIX B—INCOME STATEMENT (SPRING 2003)

Becker Professional Review (Egypt)	
Income Statement	
Spring 2003 Term (January 03 to June 03)	
All figures in US Dollars	
Revenues	
CPA tuition revenues	41,911
CMA tuition revenues	21,264
CFA tuition revenues	13,869
Total Revenues	86,089
Expenses	
Variable costs	
CPA royalties	(12,992)
CMA royalties	(6,592)
CFA royalties	(3,467)
Staff commissions	(2,400)
Live instructors	(16,421)
AUC sponsors commissions	(13,653)
Contribution Margin	28,028
Fixed Costs	
Total marketing expenses	(6,791)
Other Operating fixed Costs	
Salaries and benefits	(5,349)
PTT expenses	(272)
Customs and clearance	(1,287)
Courier and postage expenses	(257)
Stationery expenses	(254)
Office supplies	(467)
Repairs and maintenance	(9)
Miscellaneous	(1,371)
End of service indemnity	(258)
Finance charges	(30)
Transportation	(19)
Exploration and travel expenses and entertainment	(2,790)
Total Fixed Cost	19,155
Earning	8,873

APPENDIX C—REGISTERED AND GRADUATE STUDENT STATISTICS 04-05

University	Major	Registered January 05	%	Graduates June 04	%
Zagazig University	Accounting	3,825	46.98%	2,647	46.80%
	Business	205	2.52%	135	2.39%
	Economics	16	0.20%	26	0.46%
	Statistics	25	0.31%	20	0.35%
	Other	4,071	50.00%	2,828	50.00%
Suez Canal University	Accounting	2,219	90.09%	788	95.63%
	Business	196	7.96%	27	3.28%
	Political Science	27	1.10%	5	0.61%
	Economics	21	0.85%	4	0.49%
Ain Shams University	Accounting	12,348	93.34%	4,538	95.56%
	Business	881	6.66%	211	4.44%
Assiout University	Accounting	2,366	85.88%	1,268	90.31%
	Business	160	5.81%	43	3.06%
	Economics	17	0.62%	3	0.21%
	Statistics	20	0.73%	9	0.64%
	Political Science	33	1.20%	19	1.35%
	Information Systems	62	2.25%	32	2.28%
	Financial Markets	97	3.52%	30	2.14%
Cairo University	Accounting	12,497	93.81%	5,348	94.74%
	Business	753	5.65%	268	4.75%
	Insurance	58	0.44%	18	0.32%
	Actuarial Studies	13	0.10%	11	0.19%
Port Said University	Accounting	1,595	84.04%	1,529	86.83%
	Business	202	10.64%	123	6.98%
	Economics	4	0.21%	0	0.00%
	Statistics	60	3.16%	52	2.95%
	Political Science	5	0.26%	7	0.40%
	Statistics	32	1.69%	50	2.84%
Suez University	Accounting	773	92.91%	443	92.87%
	Business	45	5.41%	22	4.61%
	Political Science	14	1.68%	12	2.52%
October University	Accounting	46	4.80%	6	5.56%
	Business	318	33.19%	72	66.67%
	Economics	30	3.13%	13	12.04%
	Management	36	3.76%	17	15.74%
	Other	528	55.11%	0	0.00%
Sohag University	Accounting	2,050	92.68%	1,091	89.87%
	Business	24	1.08%	13	1.07%
	Economics	6	0.27%	0	0.00%
	English	132	5.97%	110	9.06%
Mansoura University	Accounting	5,113	92.53%	2,977	93.94%
	Business	319	5.77%	141	4.45%
	Economics	37	0.67%	16	0.50%
	Statistics	36	0.65%	21	0.66%
	Insurance	21	0.38%	14	0.44%
Tanta University	Accounting	6,724	96.04%	4,441	96.99%
	Business	277	3.96%	117	2.56%
	Statistics	0	0.00%	21	0.46%
Alexandria University	Accounting	4,885	78.16%	1,913	76.70%
	Business	421	6.74%	204	8.18%
	Economics	77	1.23%	41	1.64%

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