

INTERNET MEDIATED DISTANCE EDUCATION AS A DISRUPTIVE TECHNOLOGY: THE POTENTIAL IMPACT ON THE FOUR-YEAR DEGREE MARKET

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ABSTRACT

Demand or competition will result in an increased number of four-year colleges and universities offering distance education courses for the purpose of certification or degree programs (Lamb, 2000). The change from the traditional face-to-face (FF) to internet mediated distance education (IMDE) have generated concerns that include such diverse topics as students' (e.g., Leonard & Guha, 2001) or faculties' (e.g., Ross & Klug, 1999) opinions of IMDE courses; student interactions (Arbauch, 2000); and the evaluation of IMDE courses/degrees in the recruitment and hiring of new college graduates (e.g., Caudron, 2001). With a few exceptions (e.g. Armstrong, 2000) little attention has been devoted to understanding the potential market changes that may occur as universities add IMDE courses. Based on Christensen's (1997) discussion of the effects of innovative technology, the present paper will provide information that may be beneficial in understanding this process.

INTRODUCTION

A growing number of four-year colleges and universities (universities) are adding IMDE classes or programs to their curriculum at, what appears to be, a torrid pace (Arbaugh and Benbunan-Fich, 2006). At the same time, however, some universities continue to concentrate their efforts on traditional face-to-face (F/F) class. Regardless of a university's approach, it appears that its decision regarding inclusion of IMDE classes must include some consideration of the market for the two instructional delivery systems.

Of considerable importance in the university's evaluation of its market position are its assumptions regarding the potential changes resulting from the introduction of IMDE classes. In essence, will increased growth and acceptance of IMDE classes create a bifurcated four-year education market composed of two separate and independent markets? One market defined by FF offerings and the other market defined by IMDE offering. Or, will the four-year education market become more integrated? Resulting in curricula that relies on both FF and IMDE courses?

FF and IMDE as Independent

IMDE. Based on their actions, some universities appear to consider FF and IMDE delivery as two independent markets. Both for-profit (e.g., Jones International and Capella Universities) and not-for-profit (e.g., Western Governors University, United States Open University) universities have entered the education market as virtual universities. That is, these universities solely focus on the development and delivery of IMDE programs. In fact, it is reasonable to conclude that such universities owe their existence to the introduction, development, and increased acceptance of the internet as an educational medium (Caudron, 2001).

FF. Based on data available from the U.S. Department of Education, (Department of Education, 2002) universities that continue to focus primarily on FF delivery are private institutions. The data show that while 8% of public universities continue to offer only FF courses, 44% of private universities do so.

A number of explanations (e.g., cost, demand, size, etc.) might be offered for this large difference; however, private universities may exhibit different missions than those exhibited by public universities. In addition, some universities may believe that FF classes best serve their educational reputation (Howd, 2000).

FF and IMDE as Integrated

A number of reasons might be offered for the integration of FF and IMDE courses by for-profit universities. Two of the more obvious reasons for this integrative approach are the university's history (originally a "brick" university) and federal regulations (50% rule for federal financial aid). Without attempting to identify a reason(s), one example

might be Phoenix University, which continues to provide F/F classes, but has gained considerable recognition because of its aggressive offerings of IMDE programs.

Somewhat surprisingly a large number of state-supported universities, most often recognized for their F/F classes, have begun offering IMDE classes and programs. In fact, Morgan (2001) reports that from 1995 to 1998 there was an increase of 17% in the number of state-supported four-year universities that offered IMDE classes or program.

A 17% growth rate is significant; however, even more impressive is the suggestion that in the near future complete academic programs will be offered by nearly 90% of all four-year state-supported universities (Lamb, 2000). This number may be conservative because it has been reported that 92% of four-year state-supported universities offer or intend to offer some form of distance education courses/programs (Department of Education, 2002).

The Four-Year Education Market

Historically, universities have been viewed as residence universities, that is, students were “in residence” at the university attending FF classes. With improvements in mail service, some universities began offering a basic form of distance education, generally referred to as correspondence courses. Improvements in various forms of technology (e.g., film, recording media) added to the value of these correspondence courses. More recently other technologies (e.g., telephone, up/down link satellites, internet) have dramatically changed the distance education landscape. Cost considerations may, however, influence the extent to which these newer technologies will replace older technology (Inglis, 1999).

The Department of Education recognizes 11 identifiable forms of distance education. As one might suspect, however, asynchronous and synchronous IMDE appear to represent the technology with the greatest potential for significant growth (Waits and Lewis, 2003). Consequently, IMDE appears to have the potential to not only change, but to possibly, define the four-year education market.

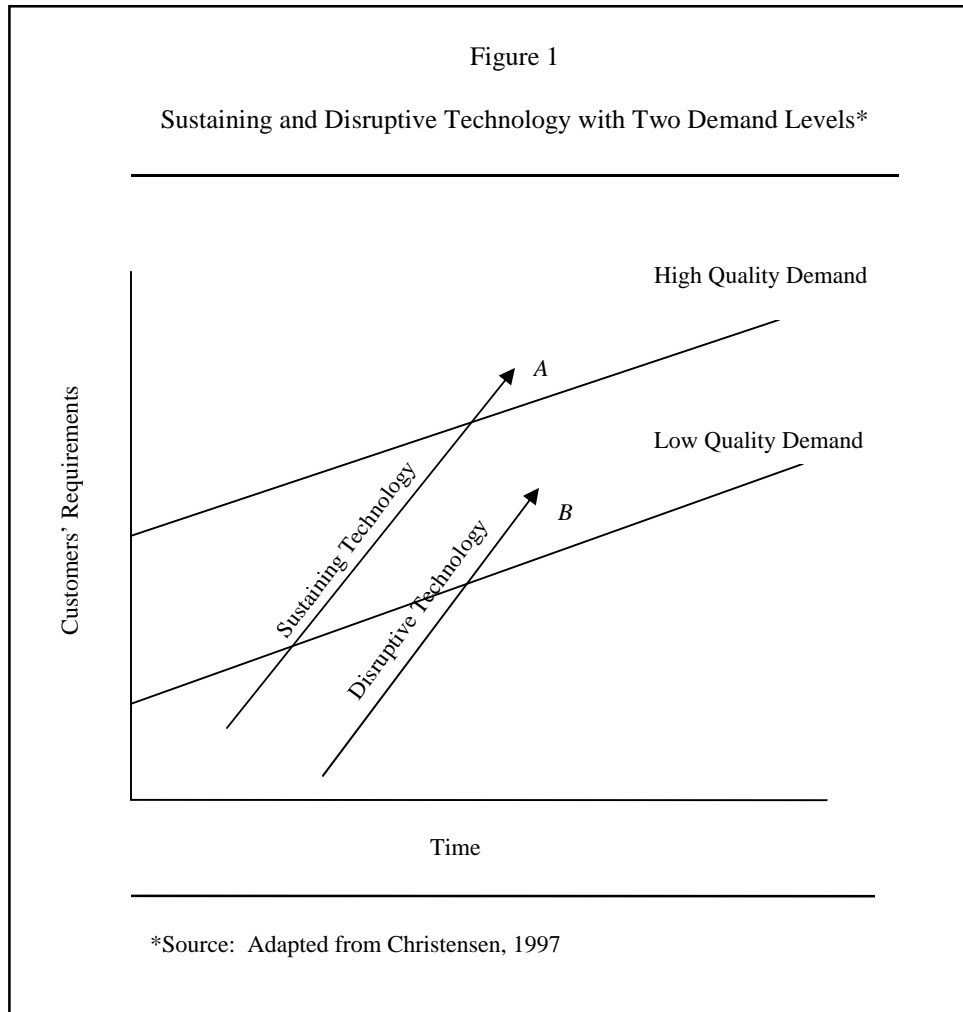
TECHNOLOGY AND THE MARKET

If IMDE has the potential to exert such a serious impact on four-year education, it would be wise to develop a model for understanding the process. A number of models (e.g., economic, structure, strategic planning, etc.) might be proposed as helpful in understanding the process and potential impact. However, an insightful method of viewing the impact of differing technologies on the competitive marketplace (Christensen, 1997) may be appropriate. This is especially true if the relation between FF and IMDE in the four-year education market is seen as the same “product” delivered by competing technologies.

Christensen (1977) characterizes technology as either sustaining or disruptive. The term “sustaining” should not be interpreted as a reference to an unchanging technology, but is best considered as descriptive of a technology’s impact on the product or service in the marketplace. It might be best to consider a sustaining technology as one with the ability to sustain valued attributes (e.g., quality, price, etc.) of the product or service provided. It is suggested that the market for the product or service may be segmented based on customers’ demands for these attributes.

A disruptive technology, similar to a sustaining technology, can exhibit a change that range from incremental to discontinuous and competes in same marketplace as a sustaining technology. The difference is that a disruptive technology taps into a different set of customer values. These values, according to Christensen (1997), generally include a lower quality requirement for the same product or service as provided by the sustaining technology.

A representation of Christensen’s (1997) view of sustaining and disruptive technologies is shown in Figure 1. In a general view, the lower quality provided by the disruptive technology does not have the ability to attract those customers who demand high quality. At the same time, a sustaining technology cannot attract those customers whose quality demands are less stringent.

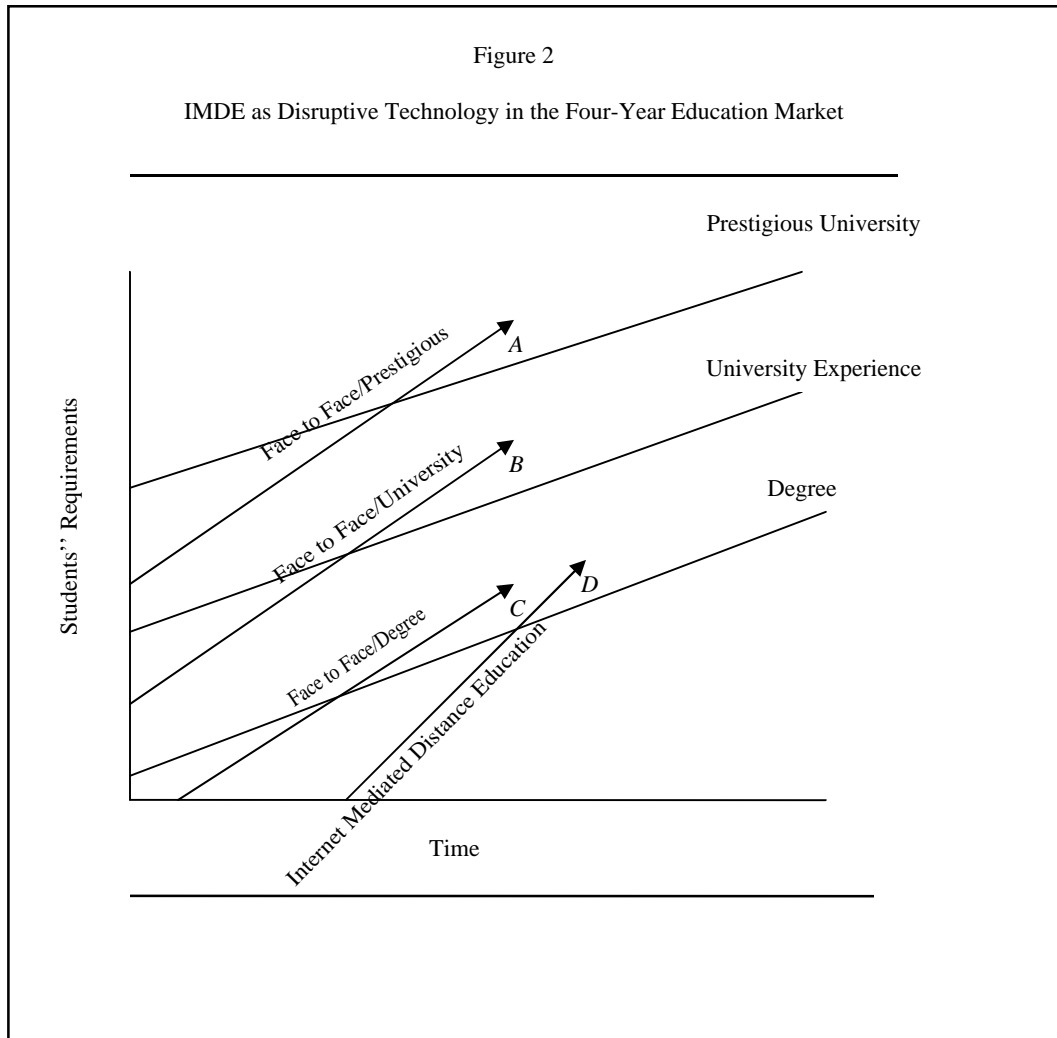


The areas designated as *A* and *B* in Figure 1 represent possible shifts in demand or a potential loss of customers in the marketplace. Each area represents the potential that the technology may provide attributes that surpass customers' demands. For instance, area *A* shows that the sustaining technology provides attributes that exceed the requirements of the high demand customer. These increased attributes are expected to be associated with a proportional increase in price, which may cause the high demand customer to shift to the disruptive technology. In other words, a sustaining technology that provides a product or service that exhibits attributes that are not wanted or exceed the demands of the high demand customer may result in the loss of customers.

The same loss of customers might be observed for area *B* associated with the disruptive technology. However, without the availability of another competing product, these customers would be "forced" to continue purchasing this product or leave the marketplace. Another significant consideration is that area *B* also represents an improved quality of the product or service, which has the potential to attract customers from the higher quality product.

IMDE AS DISRUPTIVE TECHNOLOGY

Consistent with the model proposed by Christensen (1997), Figure 2 represents the educational market for a four-year degree. Figure 2 is based on information presented above and represents the higher education market as composed of three segments.



The three segments are identified by the providers in each market segment: Prestigious University, University Experience, and Degree. The three segments are described here as:

The Prestigious University Market (PM) is composed of mostly private, highly selective, and extremely costly universities.

The University Experience Market (UM) is populated by residential universities that satisfy the socialization dimension of higher education. These universities may be private or public and range from “near prestigious” to simply “acceptable.”

The Degree Market (DM) includes all other universities that offer a four-year degree. These universities range from virtual to residential, vary as to quality, and may focus on student convenience. The size of this market is unknown, but may grow to be extremely large as more “non-traditional” students are attracted to the market.

Obviously, these markets exhibit significant overlap. Students, based on student/parent/employer decisions, can move “freely” among the three market components.

Figure 2 also includes four possible technologies. The technologies are identified and described as:

Face to Face Prestigious (FF/P) represents the classic delivery technology, noted because of its delivery by highly qualified faculty who possess terminal degrees. Faculty assistants may provide significant “personal” attention.

Face to Face University (FF/U) includes a mix of terminally qualified faculty and those with lesser qualifications. Personal attention tends to be limited.

Face to Face Degree (FF/D) includes terminally qualified and lesser qualified faculty. A significant number of the faculty will be employed on a part-time basis.

Internet Mediated Distance Education (IMDE) is the “newest” technology and varies significantly based on the mission of the university. The greatest variation may be in the faculty qualifications, which may range from terminally qualified to “techies” presenting “canned” material. Because IMDE builds on FF experience, the slope of this curve suggests its ability to more quickly surpass the attributes of FF classes.

Consistent with the earlier discussion of FF (FF as Independent) it is expected that the PM will primarily focus on the delivery of course material by FF. While area A may indicate that the education quality exceeds students’ requirements, the limited number of universities that populate the PM and the increasing population of student age applicants suggest that there will be no loss of students. In fact, it can be suggested that the slope of the PM curve will increase, accepting the increased quality provided by the FF/P technology. Because of the mission of these universities, it is not expected that IMDE will have a disruptive effect.

Again, because of the increasing number of student age applicants, the UM curve may reflect a similar, but a more modest increase in its slope. The UM curve will also be changed as some students shift from the UM to the PM. However, the significant overlap between the UM and the DM suggests the potential for major migration to DM from UM. Area B suggests that the FF/U technology used by these universities significantly exceeds Student Requirements, thus, some loss of students to the DM can be expected. Consistent with the earlier discussion (FF/IMDE Integrated), it is expected that universities with high enrollment goals will begin to offer some IMDE courses. However, the focus of the IMDE efforts will not be off-campus students, but initially will be used for on-campus enrollment.

The DM has the greatest exposure to IMDE as a disruptive technology. As shown in Figure 2, IMDE technology matches the attributes of FF classes suggesting that students may be indifferent to the two technologies. Since students in this market are simply seeking a four-year degree, it can be suggested that convenience and, possibly, cost are the driving force in this market. As a result, students might easily be seen to prefer the time-convenience of IMDE over more time-regimented FF offerings and consistent with the earlier discussion (FF/IMDE Integrated), these universities will attempt to offer a fully integrated FF/IMDE curricula.

The potential size of the DM, see above, and the ability of IMDE technology to satisfy the convenience factory suggest that some universities will focus solely on IMDE. Such a concentration is consistent with the earlier discussion (IMDE/Independent) and suggests that universities that populate the DM and UM may experience significant competition for students. It is reasonable to expect these universities to aggressively respond by offering an increasing number of courses and programs by IMDE.

SUMMARY AND CONCLUSIONS

The increasing number of courses and programs offered by IMDE (Department of Education, 2002) might be explained by a number of factors (e.g., student demand, changes in strategy, etc.); however, Christensen’s (1997) concept of sustaining and disruptive technology appears to provide an alternative explanation. Applying this model to the four-year degree market (Figure 2), three market segments (Prestigious, University, and Degree) can be identified. Sustaining technology, noted here as FF technology, was defined for each of the three markets based on the mix of faculty qualifications (FF/P, FF/U, FF/D). The disruptive technology was identified as IMDE.

It was noted that the PM was somewhat immune from the effects of the IMDE technology and it is expected that only a small number of the universities that populate this market will adopt this disruptive technology. Universities

that populated the UM are somewhat protected from the effects of IMDE; however, they may adopt this disruptive technology for their on-campus students. These universities, because of their need to increase enrollment, may attempt, in the future, to extend IMDE to off-campus students. The success of these efforts may be impaired by increased levels of direct competition with other similar universities, cost, and a lack of fit with the mission of the university.

IMDE as a disruptive technology has its greatest potential impact on universities in the DM. To some extent, IMDE provides attributes that compare favorably to those provided by the FF technology. Students who consider convenience as a significant attribute will be naturally attracted to IMDE. Universities that do not adopt IMDE will eventually lose enrollment to those that do adopt IMDE.

The convenience factor associated with IMDE may serve as the central reason for some universities to concentrate solely on this disruptive technology. It is expected that these universities will be significant competitors for the universities that populate the UM and DM, but especially those in the DM.

A last point must be drawn from Christensen's (1997) model. That is, over time, disruptive technologies tend to improve so that they are direct competitors with any sustaining technologies. As such, unless otherwise protected, an organization that stays too long with a sustaining technology places itself in jeopardy.

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