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EDITORIAL

The use of new technologies to deliver education at a distance continues to increase rapidly. While this growth provides new opportunities for institutions to widen their geographic reach, it also presents challenges in marketing, as institutions respond to changing and evolving client demands for programming. In this issue of DEOSNEWS, Kenneth Rudich discusses a computer-based market intelligence system and demonstrates its value in tracking different parts of the market. According to the author this approach can provide feedback to decision-makers about changes and/or trends in the provider's market.

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RELIABLE MARKET INTELLIGENCE FOR DISTANCE EDUCATION

Kenneth S. Rudich

Distance Learning Technology

College of Extended Education

Arizona State University

INTRODUCTION

In the market for distance education services, consumer demand constantly changes and evolves. The challenge for a provider, from one performance period to the next, is to somehow keep track of exactly how it has changed and evolved. Such information, often referred to as market intelligence, is the cornerstone to a highly responsive programming strategy.

One approach to building a reliable market intelligence system involves a type of computer database known as a knowledge tree (McCann 1986). Under this approach, a provider's total potential market is organized into a series of progressively smaller but interrelated parts. These parts, when assembled in the database, form a computer tree. As time passes and data is accumulated for each part, the tree is transformed into a knowledge perusal system that permits different views of key numbers and their interrelationships. The key numbers are product and market measures which provide timely, specific and actionable feedback about changes and/or trends that are taking place in the provider's market.

The purpose of this article is to discuss the basic components of a knowledge tree, and to demonstrate its value as a tool for tracking the different parts of the market while striving to:

* build and maintain a customer responsive programming mix;

* identify and attract new customers;

* optimize customer retention;

* maximize revenues over time;

* strategically allocate and control operational resources and costs;

* improve communications with suppliers and other key stakeholders; and

* reliably test the responsiveness of new products and/or new markets.

THE LAYOUT OF THE MARKET

The initial step to creating a knowledge tree is to make sure its basic design captures the layout of the market being served. In my view, the layout refers to the way a provider's distribution system influences or frames the physical characteristics of its market. Because of this relationship, a distribution system (current or planned) can be used as a reference to ascertain or double-check the layout of the market.

For our purposes, a distribution system is comprised of one or more distribution channels. The distribution channels are notable because they represent the first significant manifestation of a market framework. I define a distribution channel as the primary delivery path the courseware travels from the provider, up to and including the type of location where a student accesses it. Types of location include work, home, off-campus site, branch campus, etc. Each dissimilar path indicates the presence of another or separate channel.

For example, Figure 1 (see representation below) illustrates three distribution channels for a television-based distance education service. As can be seen, no two channels are alike -- the courseware either follows a different delivery path, or winds up at a different type of location, or both. The result is that the market as a whole, the total student potential, has been physically partitioned into three discrete sub-populations or domains, whereby each domain has its own unique set of operating requirements, market opportunities and market threats.

Figure 1. Distribution System

Distribution Channels

Channel #1 Channel #2

TV Studio Classrooms TV Studio Classrooms

ITFS delivery ITFS delivery

Work site, Locations (8) Cable Co., Head Ends (4)

Cable delivery

Work site Employees Cable Subscriber Homes

If each distribution channel is then thought of as a market all by itself, that market, by virtue of its physical characteristics, can also be segregated into domains. More often than not, these domains are

an outgrowth of the marketing responsibilities that come with the distribution channel. For example, in the uppermost distribution channel in Figure 1, courseware is delivered over Instructional Television Fixed Service (ITFS) directly to the student's place of work within the metropolitan area. In practice, the provider must first market its services to the employer before the employees can become part of its potential student market. Thus, two different categories of populations exist within this distribution channel: the employers (or the potential work sites) and the employees (or the potential students). Moreover, the physical characteristics of each differ. The population of employers or potential work sites is located within the geographic area served by the ITFS broadcast system (the broadcast system defines the physical boundaries of the population). As such, this population stands alone. Not so, however, with the potential students. They are separated into clusters by virtue of being located at physically different work sites (in this case, the work site defines the physical boundaries of the population). Under this distribution channel, then, the employer population is treated as one population while the students are segregated into individual sub-populations or domains.

At this point, there are no more physical population separations to consider in the uppermost distribution channel. The populations with the end-users or potential students mark the end of the line. Keep in mind, however, that each channel must be viewed as a separate case, and that the provider's channel responsibilities will vary according to the role the provider plays within the channel (i.e., as a supplier to another provider versus as a direct distributor to the students).

The layout of the market is completely known when the same kind of assessment has been performed for each distribution channel. Incorporating the market layout into the design of the knowledge tree is important for three reasons: 1) it allows the knowledge tree to factor in the market characteristics which are attributable to the physical framework of the distribution system; 2) it allows the knowledge tree to differentiate between the market characteristics the individual domains have in common and those which are unique or domain-specific; and 3) it establishes a navigational reference for tracking where, and the extent to which, something is happening within the provider's market.

THE POPULATION ASSESSMENT

Once the layout of the market is known, the next step is to gather raw marketing information for each population or domain found within the distribution channels. Much of this information will be in the form of numerical estimates. In the knowledge tree, these estimates serve as ballpark references, or benchmarks, for evaluating the actual product and market outcomes which occur over time -- for determining what is happening in conjunction with the where. (As an aside, it is worth noting that the process for collecting this data need not necessarily entail the use of expensive or labor-intensive methodologies. In most cases, the desired information can be obtained from expert sources and/or other databases.)

Whenever possible, the raw marketing data should cover four distinct areas of concern. Insofar as the basics for collecting these kinds of data can be found in any marketing text, I will simply summarize them below:

1. Population Analysis - Segregates the population or domain into groups on the basis of common or shared characteristics. Quantitatively estimates the size of each group. Identifies tentative relationships between each group and each separate courseware category.

2. Demand Analysis - Creates quantified estimates of demand for each courseware category, including the potential for product cannibalism. Product cannibalism occurs when one product category steals potential customers from another product category. For instance, when an engineer takes a business course instead of an engineering course.

3. Environmental Scan - Identifies key environmental factors or influences which enhance or hamper enrollment potential. These factors may be of internal origin, or they may be external forces. They include, but are not limited to, economic, political, social, cultural, and technological trends. Unlike the other categories, this information will be qualitative in nature.

4. Competitor Analysis - Identifies and analyzes key competitors associated with the population, especially as it concerns the offering of comparable services.

THE ORGANIZATIONAL STRUCTURE OF THE KNOWLEDGE TREE

The raw information that goes into building the knowledge tree is drawn from the work that was done in the two previous sections. Generally speaking, this information can be categorized as either product-oriented or market-oriented. In addition, it tends to possess characteristics which naturally fit into a hierarchical structure (both the layout of the market and a university's courseware exhibit these qualities). When constructing the knowledge tree, the idea is to deploy or partition these attributes so the database includes the entire range of consumer behavior outcomes (all combinations of product-market interactions) which could occur over time for each type of quantitative analysis: demand, population, and competitor. The result is an organizational structure in which the product-market characteristics within an analysis start out broad in scope and then gradually become more specific. For instance, the quantified estimates of demand for credit courseware might be organized into the following levels:

* total estimated demand for credit courseware

* estimated demand for credit courses within each distribution channel

* estimated demand for credit courses for each college within a distribution channel

* estimated demand for credit courses for each discipline within a college

* estimated demand for each courseware level within a discipline (undergraduate, graduate, doctorate)

* estimated demand for each course type within a courseware level (traditional, short course, seminar)

Accordingly, Table 1 illustrates what the user would see for estimated demand/credit courses/ITFS Employees/College level (In other words, these are the potential students from the uppermost distribution channel in Figure 1).

Table 1. ITFS Employees College Level Credit Demand

Companies Bus. Engr. Comp. Sci. Tot. Est. Pot'l

AAA 576 225 325 865

BBB 210 175 122 310

CCC 850 521 370 1200

DDD 385 370 310 800

EEE 310 420 210 725

FFF 925 470 253 1020

GGG 188 270 191 575

HHH 973 710 372 1800

College

Potential 4417 3161 2153 7295

PM

Ratios 0.45 0.32 0.22 9731

In this example, the work sites (the market-oriented information) are listed on the vertical axis and the different colleges (the product-oriented information) appear on the horizontal axis. Each cell in the body of the matrix provides a different piece of product-market information. Estimated demand for engineering courses at Company CCC is 521. Total estimated demand for credit courses at CCC is 1,200. Total estimated demand for engineering courses at the college level is 3,161 (Note: the estimates include the potential for product cannibalism. Product cannibalism is tracked in the population analysis part of the knowledge tree). In the row labeled "PM Ratios" (programming mix ratios), the individual college courseware categories are represented in proportion to the total estimated demand for credit courseware in this distribution channel. These ratios are calculated by dividing a college's total estimated potential into the sum of the estimated potential for all the colleges. Thus, they suggest an initial programming mix for this channel.

With the raw data structured in this way, the knowledge tree can respond to three different kinds of data queries when analyzing the performance results it has collected: 1) it can be asked about the performance results for any specific combination of product-market characteristics; 2) it can be used to explore the key interrelationships or trends that emerge among the performance data within a specific type of analysis (i.e., demand, population, competitor); and 3) it can cross-reference performance data and information between the four major types of analysis. From the standpoint of an intelligence tool, this capability, sometimes referred to as data mining, greatly facilitates the planning and evaluation of market strategy and tactics, from one performance period to the next.

THE PERFORMANCE MEASURES

Once the basic structure of the knowledge tree has been established, performance measures are added. The performance measures are designed to track the key aspects of each product-market partition. For each performance period, the measures: 1) compare actual data with estimated potential to determine

current market status; 2) compare current actual data with past actual data to evaluate current consumer trends; and 3) use current consumer trends to predict short term future consumer trends. The data will also provide clues for determining whether consumer behavior changes are due to market conditions or product performance.

Performance Measures/College Level

The following descriptions illustrate the type of information which could be gathered from a query to show the product-market performance data at the college level, for example, engineering credit courses at a specific company in the ITFS distribution channel.

* Company - Contains the name of the employer.

* Performance Period - Indicates the performance period by semester and year for that row of measures. The performance periods conform to the start/end of the spring and fall semesters, and also to an eight week summer session.

* Estimated Potential - Indicates estimated potential consumer demand as per the population analysis.

* Actual Customer - Indicates actual enrollment.

* Market Share - Measures percentage of actual customers relative to estimated potential. When a current market share is compared to past market shares of the same cell, a consumer trend emerges. This trend will indicate growth, stability, decline or inexplicable fluctuations. It may also reflect explainable fluctuations such as those due to seasonal or environmental scan factors.

* Repeat Customers - The number of current customers who have been retained from the previous performance period.

* Repeat Rate - Measures the actual percentage of repeat customers relative to the known potential for repeat customers. The repeat rate gives feedback about customer retention and the tactics that aim to produce it. (In this case, an adjustment was made to the Fall rates due to extreme seasonal dips during the summer session. Thus, Fall reflects repeat customers from a combined spring/summer.)

* New Potential - The estimated potential for new customers. A new customer is anyone who is not returning from the last performance period, even though he or she may have been enrolled in this courseware category during a performance period prior to the last one.

* Actual New Customers - The number of new customers enrolled in the current performance period.

* New Customer Rate - Measures the percentage of new customers vis-a-vis the estimated potential for new customers. The new customer measures yield feedback about the strength of new customer growth and also the estimated potential for future new customer growth. In addition, by tracking these results over time the provider can get a sense of how well the service is being promoted within the population (especially when cross-referenced with target group percentages in the population data); the effect a key competitor may be having on new customer potential (when cross-referenced with competitor market shares); and/or it can be one indicator of whether consumption has reached a

plateau for the current mix of courses.

* Net Loss or Gain - Compares the potential number of repeat customers which were lost to the number of new customers which were gained to determine if there was a net loss or gain for the current performance period.

* Attrition Rate - Measures percentage of students who had enrolled at the beginning of the performance period, but also dropped out before the end of the performance period. When compared with other site results, it provides key clues for assessing whether attrition is due to product or market circumstances.

Consumer Trends/College Level

When the same or similar measures as discussed above are applied throughout the knowledge tree, the market dynamics -- the interplay of its different parts -- can be observed over time. Typical ways of monitoring market dynamics include the cross-referencing of various performance results, and the tracking of trends within trends.

For example, Table 2, which is represented in two parts, summarizes the consumer trends for the ITFS Employees/credit courses/college level. The letter in each cell is related to the key at the bottom of the table. Table 2a presents data from the left side of a horizontal chart, and Table 2b presents the data from the right side of the chart. Column totals represent data for all companies, as shown in Table 1.

Table 2a. College Performance Breakout, Credit Courses, ITFS Employees

Employees

Company Bus. Engr. Comp. Sci.

AAA C D C*

BBB B C C

CCC C B C

DDD B C C

etc.

Pot'l. Cust. 4417 3161 2153

Act'l Cust. 1200 1785 576

Mkt Share 0.27 0.56 0.27

Coll Mkt Trend A D C

Program Ratio 0.34 0.50 0.16

Table 2b. College Performance Breakout, Credit Courses, ITFS Employees

Employees

Company Potential Actual Mkt Share Trend

AAA 865 526 0.61 D

BBB 310 169 0.55 B

CCC 1200 620 0.52 B

DDD 800 505 0.63 B

etc.

Pot'l. Cust. 7295

Act'l Cust. 3561 0.49 B

Mkt Share

Coll Mkt Trend B

Program Ratio 3561

*Key:

A - Fast Market Share Growth

B - Slow Market Share Growth

C - Stable Market Share

D - Slow Market Share Decline

E - Fast Market Share Decline

F - Potential but no actual enrollment

G - Inexplicable fluctuations in Market Share

In this case, it represents the results of a historical trend analysis (ratios which indicate average growth or decline over a specified period of time may be used in lieu of this lettering scheme). These results were derived while evaluating the product performance measures for each site, as was shown earlier with the engineering courses at Company CCC. Thus, a college-market trend (shown as "Coll Mkt Trend" at the base of Table 2) can be viewed relative to the individual site trends that created it. An employee trend (shown as "Trend" in the column at the right of Table 2) can be viewed relative to the courseware category trends that created it. Using historical data in this way offers three primary

benefits: 1) it permits the early detection of shifts or changes in consumer behavior; 2) it allows the provider to evaluate the scope and direction of a change; and 3) it logs the accumulation of market experience/knowledge over time.

This same format also may be used to produce a matrix that summarizes projected trends for the next performance period. The projections are formulated after evaluating all the current performance trends (i.e., the demand analysis trends, the population analysis trends, and the competitor analysis trends), and the foreseeable market conditions. As such, different courseware mix or market growth scenarios can be evaluated to determine which specific allocation of resources is likely to produce the best results. Other measures near the base of Table 2 include:

* Potential Customers (Pot'l Cust.) - Total number of potential customers for the college under which it is placed.

* Actual Customers (Act'l Cust.) - Actual number of customers for the college under which it is placed.

* Market Share (Mkt Share) - Market share for the college under which it is placed.

* College-Market Trend (Coll Mkt. Trend) - Historical (or projected) trend for the college under which it is placed. Also, the overall enrollment trend can be viewed relative to the individual courseware category trends that created it.

* Program Ratio - Indicates individual college-market programming demand vis-a-vis the total current actual programming demand for credit courseware in this particular partition. When compared to the discipline shares or individual class enrollments, one can evaluate whether these ratios represent the most efficient or desirable use of programming resources.

In addition, there are more measures at the far right of the horizontal axis. These are essentially the same as those just described, except they pertain to the individual site results.

CONCLUSION

In distance education, the cornerstone to a market responsive programming strategy is a reliable market intelligence system. Such a system can be established by developing a type of computer database known as a knowledge tree (McCann 1986). The real time data in the knowledge tree helps keep decision-makers abreast of the various interactions that occur between the service offering, the consumers, and the environmental influences. From a strategic planning standpoint, this feedback is absolutely critical. After all, a provider's long term success will largely be predicated on its ability to "read" the market consistently and accurately, to communicate this information convincingly and effectively, and to quickly enact programming responses which maximize audience revenues over time.

REFERENCE

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