

**Understanding Individual Differences in University Undergraduates:
A Learner Needs Segmentation Approach**

Gayla Rogers, Donna Finley, and Theresa Kline

ABSTRACT: The purpose of this study was to use the marketing concept of segmentation in a post secondary context in order to gain a better understanding of undergraduate students. Most post secondary institutions segment their learners in traditional ways based on demographic characteristics such as age, year of program, gender, special needs, and grade point average. The establishment of identifiable learner-based segments is a unique, and arguably a critical, first step which can be of benefit to institutions as they develop recruitment strategies and academic programs that best serve the needs of their unique mix of undergraduate learners.

KEY WORDS: learner needs; higher education; university administration.

Tools such as market segmentation are commonly used in the marketing field but have not been applied extensively in higher education. The two studies described in this paper demonstrated how we applied the aspect of market segmentation theory and research to a university setting. Specifically, segmentation divides a population into groups of people who perceive and respond in similar ways. It can be used to better understand the needs, motivations and defining characteristics of these groups.

There are several benefits of segmentation. It helps an organization focus its energy on those segments of the market it can most effectively serve; assists an organization in understanding these needs and opportunities not currently being addressed; and can further guide the design and development of programs, services, and processes to meet specific needs. Segmentation allows an organization to know more about whom it serves, and thus it can monitor the evolving nature of the various

Gayla Rogers received the Ph.D. from the University of Newcastle-on-Tyne in the United Kingdom. She is now Professor and Dean of the Faculty of Social Work at the University of Calgary. Education policy, strategic planning, social work practice, supervision, multicultural and diversity issues are her special interests. Donna Finley holds the M.B.A. from IMD University in Lausanne, Switzerland). She is the President of Framework: Partners in Planning and focuses upon strategic development and transformation in the public and not-for-profit sectors, marketing, and product introduction. Theresa Kline, received the Ph.D. from the University of Calgary, where she is Professor in the Department of Psychology. Her research interests are psychometric evaluations, program evaluation, team performance, and leadership.

segments it serves and make informed decisions. For example, segmentation in higher education settings reveals that mature, continuous learners who are in the workplace by day require programs and services delivered on evenings and weekends, while younger full time students direct from high school seek a full time, campus based life.

Most post secondary institutions segment their learners in traditional ways based on demographic characteristics such as age, year of program, gender, special needs, and grade point average (GPA). However, these classifications are no longer sufficient for designing programs and services as they make assumptions about individual differences within these larger groups. For example, a popular recruitment approach is to target prospective students solely on the basis of GPA, but underlying motivations are ignored.

Learner Based Segmentation

The marketing literature suggests that many other organizations and industries have shifted long ago to a model of identifying homogeneous groups of customers based on the customer need and product preferences (e.g., Moriarty & Reibstein, 1986) rather than on demographic characteristics. Sophisticated segmentation methods, used by industry, provide techniques for identifying these homogeneous groups of customers based on their preferences (e.g., Ramaswamy & DeSarbo, 1990; Rangan, Moriarty & Swartz, 1992). The first step in the segment formation process is to conduct a need based segmentation analysis (Montoya-Weiss & Calantone, 1999).

Rowley, Lujan and Dolence (1997) suggested that segmenting practices are also important for institutions of higher education. They believe it is important to "have a handle on the nature of the student population on campus as well as the nature of the population on its way in order to better assess the fit between student needs and academic programs" (pp. 219). It is surprising to Bank, Biddle and Slavings (1992) how little attention is given to what students expect upon entering a university or college or to how institutions should respond to students. A review of strategic development plans from 125 Canadian and American postsecondary institutions and ten "best-in-class" universities world wide, found no institution using a segmenting approach that is based on learner needs (Coordination Task Force, 1996). It is clear that many universities have little understanding of the types and population mixes that are emerging on campuses across North American (Levine & Associates, 1989).

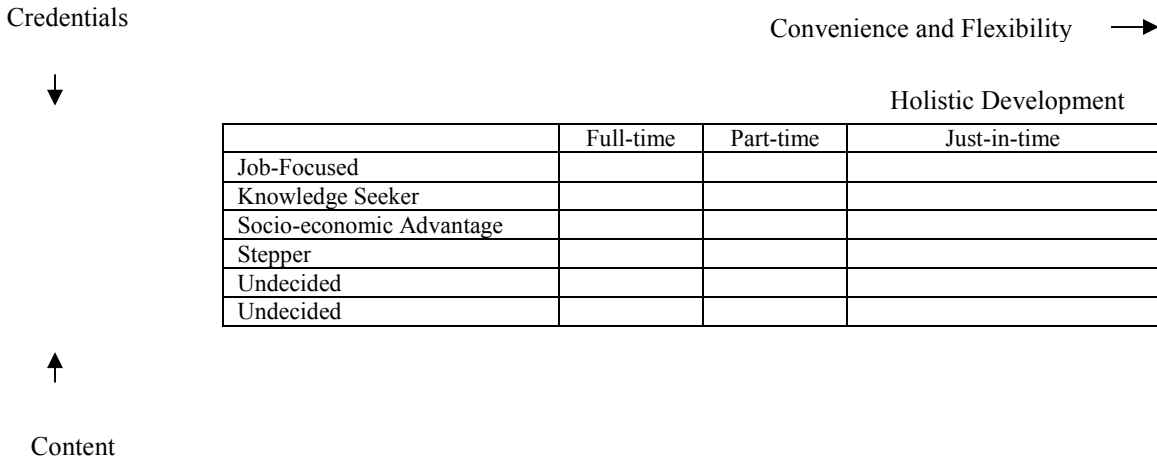
A segmentation approach based on learner needs is an attractive alternative to the traditional method. Such an approach examines the individual differences of the student body from different perspectives such as educational outcome expectations, expected benefits, and types of needs (Pascarella & Terenzini, 1991). The student's primary motivation for seeking post secondary education is linked with the recruitment efforts, services, and curricula specifically designed to meet their needs and add value to their educational experience, both of which impact revenue (Rowley, Lujan & Dolence, 1997). Learner-based segmentation allows an institution to focus energy and resources on the learner segments it can serve most effectively. It also provides valuable information about the study body to academic departments and services.

These studies describe one university's application of the learner based segmentation concept to enable a better understanding of its undergraduate students. The studies were undertaken by a Task Force to generate an understanding of the different segments of undergraduate learners at a large urban university. Study 1 was designed to develop a segmentation hypothesis through survey and focus group methods. Study 2 was designed to confirm quantitatively the existence of identifiable learner segments.

We hypothesized five learner segments by drawing on the expertise of selected educational leaders, student services personnel, academic administrators, student leaders, and the extant literature. These segments were then continuously refined through an iterative cycle of discussion until a consensus was reached forming the initial hypothesis. The five hypothesized segments were:

- Job Focused - individuals attending post secondary education primarily because of the future employment benefits that are obtained.
- Knowledge Seeker - individuals interested in a university or college education for the sake of knowledge, for the personal gratification and satisfaction of their own curiosity.
- Socio economic Advantage - learners seeking the status of obtaining a university or college degree.
- Stepper - learners intending to build on their first degree with more education (e.g., a post diploma or a graduate degree).
- Undecided - individuals not knowing specifically why they are attending university or college, often motivated by external pressure from family or peers.

Figure 1
Benefits Based Segmentation Hypothesis



We believed that students' primary needs would range from holistic development to convenience and flexibility and from a desire for credentials to an emphasis on content (see Fig. 1).

After hypothesizing the learner segments, the next step was to undertake an undergraduate learner segmentation analysis to determine whether, in fact, these learner segments could be verified within the current undergraduate population of a large urban university (N =23,000).

The Two Studies

Study 1: Qualitative Approaches to Establish Learner Segments and their Needs

Method. Over 1,400 undergraduate students participated in a short in class survey. Students were asked the relevance of five statements related to the five hypothesized learner segments. For example, "You are attending university primarily to gain skills relevant to a specific field of employment" (Job Focused) or "You are intending to pursue a graduate or professional degree or post degree diploma in a specific field, or you are currently enrolled in this type of program" (Stepper).

Students were then asked to select the one reason for attending university that currently best applied to them and to answer questions related to demographics, grades, and financing. They were also asked if they would be prepared to participate in a focus group. Results from this survey provided information regarding the size of segments and assisted the research team in organizing relatively homogeneous focus groups where learner needs could be explored in some depth.

We held a total of 18 focus group sessions over a two month period, attended by approximately 140 current undergraduates, potential undergraduates, as well as individuals who influence undergraduate choices regarding post secondary education (e.g., parents, school counselors). There were 5 homogeneous focus groups, representing each of the five hypothesized learner segments: Job Focused, Socio-economic Advantage, Undecided, Stepper, and Knowledge Seeker. In addition, there were 4 focus groups composed of a combination of the hypothesized learner segments. The remaining nine focus groups consisted of guidance counselors, employers, grade 12 high-school students, prospective adult learners considering returning to university, learners attending other post secondary institutions, parents, recent graduates, first year advisors, and campus advisors. The views of these groups were very useful in expanding on the perspectives of current learners and in understanding the outside influences that affect the decisions and choices made by learners.

We asked participants questions specifically designed to reveal their motivations and needs in seeking a post secondary education. Their responses were documented by two individuals, and each focus group session was audio-recorded. The questions included:

- "Why choose this university over other institutions?"
- "What is core to a university education?"
- "What are your primary reasons for pursuing a post secondary education?"

Approximately 90 members of the university community, drawn from department heads, faculty, staff, students, and members of the major governance bodies, observed the focus groups from behind one way glass. Notes were taken at

Individual Differences

debriefing sessions following each focus group as observers reflected upon what they had heard, observed, and learned while watching and listening.

Results. In total, over 900 needs were listed. The research team examined and clustered the data collected from focus group participants and observers. For example, there were headings such as "need for just-in-time advising," "need for professor contact," "need for a clear link between university courses and programs and job market requirements," "need for courses that offer hands-on experiences and teach specific skills," "need for program flexibility in preparation for future academic or professional plans," and "need for an opportunity to learn from respected research oriented faculty." We extracted clusters of needs to identify those needs that appeared to be unique to specific segments and those which were common to all learners.

An outcome of the focus groups was that an additional segment needed to be added to the list of original five. This was the Dual-Purpose segment. These learners wish to pursue their primary interest in athletics or performing arts, while obtaining a university degree at the same time. They are attracted to the university because of its world-class facilities, reputation of teams, performance opportunities, and the amenities in the geographic region.

Study 2: Quantitative Validation of Learner Segments

Method. A follow up survey was undertaken to validate segments, learner needs within segments, and size segments within the current undergraduate population. A random sample of 776 undergraduates (4.3% of the population), ranging in age from 18 - 74 (mean = 25.6), representing both males and females, from a broad cross section of disciplines, with a mean GPA of 3.2 (B/B+), and across all four years of study took part in a telephone survey. The size of the sample provided a confidence level of 99% in the validation of learner segments.

We asked the participants questions derived from the needs expressed in the focus groups in order to identify motivations and needs for attending university. Statistical analysis of the results clustered needs and grouped students according to their response to the importance of needs.

The Learner Segments Questionnaire (LSQ) was developed explicitly for the purpose of conducting these interviews. The LSQ is a 92-item questionnaire containing 30 items which were written for each of the six learner segments. Specifically, 5 items assessing needs were written for each of the six segments. We added six questions assessing needs which were potentially relevant to respondents who were part time students.

Respondents were asked to indicate whether and the extent to which each item was an important learner need for them. Responses were provided using a 5 point Likert-type scale ranging from "completely disagree" (1) to "completely agree" (5). Moreover, for each item, if a respondent indicated either a response of "4" (agree somewhat) or "5 (completely agree), the interviewer asked the respondent to indicate whether and the extent to which the need in question had been met (using the same scaling format). In addition to the need-related items, we included various demographic and general information questions.

Also included in the LSQ were six statements concerning primary reasons for attending university, asking the respondent to indicate their level of agreement (using the same 5-point scale) for each statement. The interviewer asked the respondent "to what extent do you agree that the following statements are primary reasons why you currently attend university." Each statement was designed to capture the primary reason for attending university, and each statement corresponded to a different learner segment group.

Lastly, two items were included to identify one primary "current," and one primary "initial" reason for attending university. First, the interviewer read aloud, all of the six statements just described. Before reading the statements, the respondent was asked to choose which one statement was the primary reason for currently attending university. Similarly, the respondent was asked to choose which one statement was the primary reason for initially attending university and the statements were read once again.

Twenty-three undergraduate students served as telephone interviewers. They were provided with a training session (lasting approximately 1.5 hours) on how to conduct all aspects of the interview, including how to greet the prospective respondent, how to code the respondent's data if they were willing to participate, and securing informed consent. Upon completion of the training session, each interviewer was provided with a list of prospective research participants along with telephone numbers; the lists were obtained from a master list of 5000 names provided by the Registrar's Office.

Results. A common factor analysis using the correlations between the 30 items relating to the six learner segment needs was conducted. The analysis requested six factors and orthogonal rotation of the factors. The six factors accounted for 45% of the variability in the item set, and Table I reports the factor loadings.

Inspection of the loadings in Table I reveals that the factor structure does not conform to the predicted pattern. There is some evidence, albeit limited, for 2 factors, which correspond to the Job-Focused (Factor 2) and Dual Purpose (Factor 5) segments. However, the goal of uncovering six clearly identifiable segments was not achieved. One possible explanation for these results is that many of the items are such that members of multiple segments may have commonly seen a given item as either important or unimportant. Identifiable segments may still exist; however, these segments may share many specific needs.

Table I
Rotated Factor Loadings (>.30) for Forced Six-Factor Solution

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Explmp2	0.59			0.32		
Knowlmp3	0.58					
Explmp4	0.52					
Steplmp3	0.51					
Steplmp2	0.49					
Knowlrnp4	0.43		0.40			
Steplmp4	0.38					
Duallmp1	0.32					0.30
Joblmp2		0.74				
Joblmp4		0.66				
Joblmp3		0.65				
Seslmp2		0.59				
Joblmp5		0.50	0.45	0.32		
Steplmp1	0.40	0.41				
Steplmp5			0.59			
Seslmp3			0.53			
Duallmp3			0.52			
Knowlmp5			0.47			
Seslmp4			0.45			
Explmp3	0.39		0.45			
Explrnp5				0.67		
Seslmp5				0.65		
Explmp1				0.52		
Duallmp2					0.72	
Duallmp5				0.30	0.65	
Duallrnp4	0.35				0.64	
Knowlrnp1						0.69
Joblmp1		0.46				0.53
Knowlmp2						0.49
Seslmp1			0.38			0.45

To pursue this possibility, items that were most critical or salient for the various segments under consideration were subjected to a second 6-factor Principal Axis Factor Analysis with orthogonal rotation. The rotated loadings are reported in Table II. This factor analysis produced 4 factors accounting for 75% of the variance in the item set. Inspection of the items in Table II reveals that the 4 factors can be labeled according to four of the segments: (Factor 1 = Knowledge Seeker; Factor 2 = Dual Purpose; Factor 3 = Job Focused; Factor 4 = Stepper). The remaining items that did not load on any factors were the 2 single items written for the Undecided and Socio-economic segments. Because only one item was included for each segment, it is not surprising meaningful factors could not be formed for these segments. However,

Table I
Rotated Factor Loadings (>.30) for Forced Six-Factor Solution

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Explmp2	0.59			0.32		
Knowlmp3	0.58					
Explmp4	0.52					
Steplmp3	0.51					
Steplmp2	0.49					
Knowlrnp4	0.43		0.40			
Steplmp4	0.38					
Duallmp1	0.32					0.30
Joblmp2		0.74				
Joblmp4		0.66				
Joblmp3		0.65				
Seslmp2		0.59				
Joblmp5		0.51	0.45	0.32		
Steplmp1	0.40	0.41				
Steplmp5			0.59			
Seslmp3			0.53			
Duallmp3			0.52			
Knowlmp5			0.47			
Seslrnp4			0.45			
Explrnp3	0.39		0.45			
Explmp5				0.67		
Seslmp5				0.65		
Explmp1				0.52		
Duallmp2					0.72	
Duallmp5			0.30		0.65	
Duallrnp4	0.35				0.64	
Knowlmp1					0.69	
Joblrnp1		0.46			0.53	
Knowlmp2					0.49	
Seslmp1			0.38		0.45	

To pursue this possibility, items that were most critical or salient for the various segments under consideration were subjected to a second 6-factor Principal Axis Factor Analysis with orthogonal rotation. The rotated loadings are reported in Table II. This factor analysis produced 4 factors accounting for 75% of the variance in the item set. Inspection of the items in Table 11 reveals that the 4 factors can be labeled according to four of the segments: (Factor 1 = Knowledge Seeker; Factor 2 = Dual Purpose; Factor 3 = Job Focused; Factor 4 = Stepper). The two remaining items that did not load on any factors were the 2 single items written for the Undecided and Socio-economic segments. Because only one item was included for each segment, it is not surprising that meaningful factors could not be formed for these segments. However,

Table II
Rotated Factor Loadings (>.30) for Forced Six-Factor Solution
for Selected Items

	Factor I	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Opportunities to demonstrate knowledge through various means	0.79					
Challenging assignments	0.78					
High-performance coaches/trainers/professionals		0.81				
Access to high-level competition		0.78				
Clear link between university work and job market requirements			0.81			
Programs that link students with the external community			0.75			
Minimize undergraduate education financial costs				0.80		
A clear understanding of the utility of a university degree				0.59		
A systematic and Comprehensive orientation to the university					0.88	
Maintain multiple career options as long as possible						0.94

because these items did not "load" on the other 4 factors, the results provide some evidence for the existence of these 2 segments as well. Subscales for each segment, based on the items from Table II were created. The items were unit weighted, and subscale mean scores were computed for each respondent. Classification then proceeded by examining these mean scores for each respondent across the six subscales. Many (58%) of the respondents were not classified into only one of the six segments. Of the 325 respondents (42% of the sample) who were classified into one segment the percentages for each segment were: Socio-economic Advantage (25%), Undecided (9%), Job Focused (30%), Knowledge Seeker (20%), Stepper (11%), and Dual Purpose (5%). We then conducted a series of ANOVA, t-test, and correlational analyses to determine if there were some demographic differences along these

Table III
Learner Needs by Segment

Career-oriented	Clear link between university work and job market requirements; programs that link students with the external community.
Curiosity-driven	Opportunities to demonstrate knowledge through various means; challenging assignments.
Socio-economic Stepper	Maintain multiple career options as long as possible. Minimize financial costs of undergraduate education; require a clear understanding of the utility of a university degree.
Undecided Dual-purpose	Systematic and comprehensive orientation to the university. High performance coaches, trainers, professionals; access to high level competition.

partially-supported learner-segment groups. These included: gender, financing, full-time vs. part-time, English as a First Language, year of program, and discipline. None were of any practical significance.

Discussion

The marketing literature notes that understanding and catering to potential customers' needs is of critical importance in ensuring that any particular product or service is selected by that potential customer (e.g., Mazumdar & Papatla, 2000; Roberts, 2000). Consistent with this approach, these studies applied what has been known for a long time in the marketing discipline to the context of higher education.

The establishment of identifiable learner segment groups is a critical step that can be of great benefit to higher education institutions as they develop recruitment and marketing strategies and academic programs in attempting to differentially serve the needs of their unique mix of learners. Based on all of the information gathered through both studies, clusters of undergraduate learner needs were identified. Based on these needs, the identification of the originally-hypothesized five learner segments was only partially supported. The results suggested that two of the original five hypothesized segments needed to be modified and one additional segment needed to be included (see Table III).

As noted earlier, the added segment was the Dual-Purpose segment, that emerged from the focus group data. They want to pursue their primary interest in athletics or performing arts, while obtaining a university degree at the same time.

The first modified segment was the Career-Oriented segment. This segment evolved from the original “Job Focused” segment. It recognizes that learners who are attending university in order to acquire knowledge relating to a career (as opposed to a technical school) are looking for much more than a job training. They are looking for the type of learning that will prepare them to navigate a number of career changes and to accept the challenges presented by the need for continuous learning.

The second modified segment was the Curiosity-Driven segment. This segment evolved from the original “Knowledge Seeker” segment. It was determined that essentially all learners attending university are knowledge seekers. What, in fact, distinguishes this segment from the other segments is the quest for knowledge that is not necessarily directed toward a particular outcome or goal. The acquisition of knowledge is an end in itself for these learners.

Future Research Directions

These results point to the need for further research into the learner-based needs approach to segmenting undergraduate students. It is recognized that this research is a first step and should continue in order to define and evolve an in-depth understanding of learner segments. For example, further research may help to identify more evolved groupings of needs that would further explain the 58% of learners who aligned with more than one segment. Establishing which needs are seen as most critical or salient for each learner segment would be logical follow-up to the research reported here. This greater emphasis on knowing undergraduates beyond their demographics and grade point average is only one dimension of a comprehensive strategy that can help an institution achieve distinction and a strong reputation.

A second fruitful area for further research is that which takes a longitudinal approach to learner needs. It is likely that learner needs evolve over time as students progress through university, similar to and parallel with the stages of student development as described by Patterson (1998). Future research is needed to examine this evolution, the role the institution plays in influencing those changes, and the speed at which those changes occur.

A third area of research, which is now recognized more openly in the marketing literature as a deficit (Montoya-Weiss & Calantone, 1999), is concerned with understanding and characterizing the market; an evaluation of what to do with that information becomes paramount.

Which segments should be catered to, how best to market to them, and how to retain them are now just beginning to be discussed. Higher education researchers would be well-advised to pursue such directions as their institutions often operate in a context of scarce resources.

Finally, segmentation data are time-dated and need to be routinely updated. Establishing an ongoing research process that keeps this information current is an important consideration. For example, the institution may become more aggressive in recruiting and retaining a particular segment as it gains knowledge about the population of students it best serves.

Practical Impact

There are five areas in which incorporating consideration of segments could directly impact post-secondary institutions. The first one is institutional image. An institution wanting to attract and meet the needs of the Dual-Purpose segment, for example, would present an institutional image of world-class facilities, coaching and competition along with a flexible academic program. On the other hand, if an institution is interested in appealing to the Undecided segment, they would portray an institutional image of a nurturing, personalized environment with strong academic and personal advising and programs that encourage exploration of numerous subjects.

A second area impacted by segmentation is recruitment. Institutional recruitment approaches would differ according to the segments targeted by the institution. Key messages would vary, as would the vehicles for communicating these messages. If an institution was really serious about using this approach, its recruitment team would try to portray different images, depending on the segment. For example, the recruiting team targeting the Career-Oriented segment would dress in business attire while the Curiosity-Driven recruitment team would present itself in casual collegiate attire. Key messages that resonate with the Career-Oriented segment would include: "Our degree leads directly to your career." A key message for the Curiosity-Driven would include: "At this university you have access to the greatest minds of our time."

The third area impacted by consideration of segments is curriculum policy and procedures. In meeting the needs of Dual-Purpose learners, for example, the institution would have policies that enable requirements to be met while competing or while absent from campus. Steppers, on the other hand, need policies and procedures that facilitate admission to advanced degrees or professional schools.

The fourth area that would be affected by a focus on the needs of particular segments of learners is student services. If the institution is trying to be responsive to the Socio-economic segment, for example, the campus will have a rich student life with clubs, organizations, opportunities for participation, and networking. Student services for Career-Oriented would include extensive employment counseling, organized job fairs, job announcements, and employer visits to campus.

One final area of impact potential is fund raising. The fund raising partners would change depending on which segment(s) the institution is interested in targeting. For example, sponsorship from big business and the professions may be inclined to support an institution clearly focused on the Career-Oriented and Stepper segments. Institutions that focus on the Curiosity-Driven might be attractive to entrepreneurial enterprises and organizations that are interested in research and development.

This study has demonstrated that the marketing concept of segmentation can be used successfully in a post-secondary context. It provides a framework for understanding undergraduate student needs as well planning for and marketing to those needs.

Acknowledgments

The authors wish to gratefully acknowledge the contributions of the following individuals who worked on various aspects of this project: Dr. Ronald Bond, Dr. Michael Boorman, Ms. Myrna Foth, Dr. Steven Franklin, Ms. Andrea Hay, Ms. Janet Gavinchuk, Mr. Art Kirk, Dr. Graham Reader, Ms. Fran Reiss, Dr. Norman Schachar, Dr. Lorne Sulsky, Ms. Heather Travers, Mr. Michael Wong, and Dr. Howard Yeager.

References

- Bank, B., Biddle, B., & Slavings, R. (1992). What do students want? Expectations and undergraduate persistence. *The Sociological Quarterly, 33*, 321-335.
- Coordination Task Force. (1996). *Situation assessment: Facts, trends, and implications related to the environment in which the university operates*. Calgary: University of Calgary.
- Levine, A., & Associates. (1989). *Shaping higher education's future: Demographic realities and opportunities, 1990-2000*. San Francisco: Jossey-Bass.
- Mazumdar, T., & Papatla, P. (2000). An investigation of reference price segments. *Journal of Marketing Research, 37*, 246-258.
- Montoya-Weiss, M., & Calantone, R. J. (1999). Development and implementation of a segment selection procedure for industrial product markets. *Marketing Science, 18*, 373-395.
- Moriarty, R. T., & Reibstein, D. J. (1986). Benefit segmentation in industrial markets. *Journal of Business Research, 14*, 463-486.
- Pascarella, E., & Terenzini, R. (1991). *Findings and insights from twenty years of research, how college affects students*. San Francisco: Jossey Bass.
- Patterson, M. (1998, April). *Student development theory - what is it?* Paper presented at the Canadian Institute of Student Affairs and Services, Toronto, Ontario.
- Ramaswamy, V., & DeSarbo, W. S. (1990). SCULPTURE: A new methodology for deriving and analyzing hierarchical product market structures from panel data. *Journal of Marketing Research, 27*, 418-427.

Rangan, V. K., Moriarty, R. T., & Swartz, G. S. (1992). Segmenting customers in mature industrial markets. *Journal of Marketing*, 56, 77-82.

Roberts, J. H. (2000). Developing new rules for new markets. *Journal of the Academy of Marketing Science*, 28, 31-44.

Rowley, D., Lujan, H., & Dolence, M. (1997). *Strategic change in colleges and universities*. San Francisco: Jossey-Bass.