

AN ABSTRACT OF THE THESIS OF

Nicole K. Cecchini for the degree of Honors Baccalaureate of Science in Business Administration presented on May 28, 2008. Title: Psychometric Properties of an Attitude Scale.

Abstract Approved:

Hal Koenig

The scope of this particular research delves into the psychological measurement of alumni that graduated from the College of Business at Oregon State University. The goal for this research is to refine the pool of alumni survey items, and to improve the measurement properties for future use. This research proposes to test the construct validity of a set of items that have been developed in the study of alumni connections, based on the theory of Brand Community. The Brand Community items were analyzed according to their validity, their reliability as a set of items, as well as per their inter-item correlations. Based upon the analysis, three weak performing items were dropped from future versions of the questionnaire.

Key Words: alumni, Brand Community, psychological measurement

Corresponding e-mail address: cecnk218@bus.oregonstate.edu

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Psychometric Properties of an Attitude Scale

by

Nicole K. Cecchini

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APPROVED:

Mentor, representing Business Administration

Committee Member, representing Business Administration

Committee Member, representing Business Administration

Chair, Department of Business Administration

Dean, University Honors College

I understand that my project will become part of the permanent collection of Oregon State University, University Honors College. My signature below authorizes release of my project to any reader upon request.

Nicole K. Cecchini, Author

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Psychometric Properties of an Attitude Scale

Introduction to Psychometric Theory

As an individual's psyche develops, that person forms perceptions of persons, places, and things that they like or dislike. These attitudes become the basis for an individual's decisions and actions. My research focuses on psychometric theory, which is "the field of study concerned with the theory and technique of [educational](#) and [psychological measurement](#), which includes the measurement of knowledge, abilities, attitudes, and [personality](#) traits" (Merriam-Webster Online). This research proposes to test the construct validity of a set of items that have been developed in the study of alumni connections to their former undergraduate university. Construct validity, according to Nunnally, looks at the internal structure of a set of items, where a construct "represents a hypothesis (usually only half-formed) that a variety of behaviors will correlate with one another in studies of individual differences and/or will be similarly affected by experimental treatments" (Nunnally 96). The items comprising the construct were also tested for their reliability and inter-item correlations, which both add insightful analysis regarding the strength of these items in making up the measurement scale.

The particular construct being analyzed in this research was developed regarding the theory of Brand Community. Its purpose is to measure alumnus' attitudes about their alma mater. The particular scale that has been developed is therefore a hypothesis regarding the ability of this set of items to determine an individual's desire to remain engaged with their university. The hypothesis also attempts to predict other behaviors common to alumni that remain closely associated with the university after graduation (i.e. propensity to give). The scope of this particular research delves into the psychological

measurement of alumni that graduated from the College of Business at Oregon State University.

Brand Community

The use of the theory of Brand Community is relatively new within the field of marketing (McAlexander, Koenig and Schouten 2002). The titles describing the four relationships that make up Brand Community have also changed over the years, however for the purpose of this research the four components will be referred to as the Product, the Brand, the Company, and Other People. They will be described in further detail later in the paper. Brand Community was initially applied to consumer research for the purpose of measuring the attitudes of those who were owners of Harley-Davidson motorcycles. From this research, the first quantitative survey was developed for use with Jeep owners.

The data from the first Brand Community survey was collected at an event for Jeep owners called Camp Jeep. Like the Harley-Davidson research, these owners could be analyzed according to how strong the ties were that the individual held between the Product (the vehicle itself and his/her experience while driving it), the Brand (Harley-Davidson in particular has developed a very strong and distinctive branding), the Company (the owners' interactions with people who represent Jeep or Harley-Davidson), and the Other People (other owners of Jeeps or Harley-Davidson). From this previous research Professors James H. McAlexander and Hal Koenig of Oregon State University developed a model by which alumni's relationships to the Brand Community of an institution of higher education could be measured. The usefulness of psychometrics in determining one's position with regard to the intensity of their relationship with the four interrelated components of Brand Community is derived from determining the particular areas of strength and weakness for an institution of higher education. This will then serve as a basis for determining in which areas of Brand Community development the university excels with its alumni population and which areas deserve attention. Previous

studies involving the theory of Brand Community have displayed that “loyalty-related behaviors such as future donations to the university and the purchase and display of university logo merchandise,” can be positively affected by assimilating students into the Brand Community of the university (McAlexander, Koenig, and Schouten 2006 2).

The four interconnected relationships that provide the framework for Brand Community are the Customer-Brand, Customer-Company, Customer-Product and Customer-Customer (Other People) connections that build Brand Community (McAlexander et al 2002 45).

Brand

The first area of Brand Community involves the relationship between the alumni and the Brand of that particular university. In the case of Oregon State University, the Customer-Brand relationship involves the strength of the alumni’s relationship and their attitudes regarding such Brand identity items as the school colors (orange and black), Benny the Beaver, and the newly formulated “OS” symbol that is used to represent Oregon State athletics. All the above-mentioned items create the Brand of Oregon State University and are unique articles which position and differentiate the university. For the average university, alumni identify and connect with the Brand of their former undergraduate institution through the school’s logo(s), mascot, colors, slogans, unique programs or departments, or even the university’s fight song.

The importance of measuring an alumni’s strength of their relationship to the Brand of their undergraduate institution for this particular research is that this can be one of the strongest areas of connection to the university for that alumni. Many alumni donors to OSU still annually attend football and baseball games, sporting the school’s colors. If

one can measure alumni's attitudes toward the symbolic and unique aspects of a university, this is useful and necessary data that can be used to segment alumni. This will allow for Oregon State University (or another university that distributes the questionnaire to their alumni) to determine whether they are doing a sufficient job of building connections with its students through the branding of the university which can carry over into connected alumni and donors in the future. With this data, targeted strategies can then be most efficiently employed to enhance any weak or missing bonds between the alumni population and the established Brand.

Product

Another relationship central to the Brand Community of a university is between the alumni and the Product of the particular university. The items that are used to measure these connections can be divided into three parts: references to the degree, skills and abilities, and extended self. References to the degree include items such as, "My undergraduate degree is valued by employers." These items measure how alumni feel their degree is perceived by others, including employers, as well as how well they believe the degree that they received has prepared them for their future careers.

The third part of Product involves the individual's extended self. Extended self, a concept developed by Russell Belk, relates to the idea that certain possessions can contribute to the identity of the individual (Belk 139). In this case, earning an undergraduate degree has the ability to enhance one's identity and become an integral part of who the person is. The measurement of the Customer-Product relationship delves into the connection between alumni and the education that they have received, taking into account how well that education has contributed to their self-enhancement and success with their career. According to this logic, if an alumnus feels that the degree he has

received has contributed in large part to the person that he has become and/or has prepared him well for his careers, that person may be more likely to sustain a connection with the university and to feel an obligation to give back to the institution. The goal of measuring alumni relations to the Product relationship is to learn more about those who have strong connections to their degree from Oregon State University and to determine ways in which those relationships and experiences can be replicated with the current undergraduate students at the university. If one can determine the ways in which to strengthen these relationships such as the Customer-Product relationship, it is more likely the university will retain more loyal alumni.

Company

The third relationship of Brand Community consists of what has been labeled as Company. The Customer-Company relationship explains the connection between the alumni and those figures that represent the university. For individual alumnus, this can include relationships with faculty, department advisors, deans of a particular college, or even the president of the university itself. Company is another vital component of an alumnus' connection with and attitudes toward their former university due to the fact that an undergraduate education is facilitated mainly through the interaction between the student and the various representatives of the university mentioned above. The importance of these relationships within the context of Brand Community is that the presence of strong relationships between the alumni and the Company has the ability to create a lifelong tie to the university. Conversely, the absence or even negative nature of connections between the former student and the Company can cut off any contact that the alumnus has with the university and significantly decrease that person's likelihood of

donating to the university. This, as one can imagine, has the possibility to weaken the Brand Community and the image of the university.

In accordance with the fact that many alumni donors maintain a connection with the Brand of the university, the relationships that are built between students and professors, deans, etc. can help maintain and grow the connections between an alumni and the Brand Community. In one example from my own experience in the College of Business, many former students who have maintained connections with a professor at OSU have returned to the university to recruit for their current employers or to speak about their experiences working in the business community. As one can imagine, the development and sustenance of this component of Brand Community can provide many advantages for a university, therefore making its measurement essential in determining the health of the Brand Community as a whole.

This research, focusing solely on the alumni of the College of Business at OSU, enables data specific to the college to be collected about those connections between the faculty as well as other members of the COB “Company” and the alumnus. The advantage of this targeted research is that strengths and weaknesses with regards to the relationships between alumni and the COB representatives can be determined, serving as a measurement tool for how well the College of Business has fostered these connections with their former students.

Other People

This particular component of Brand Community rounds out the vital relationships that students develop at their undergraduate institution and includes those relationships between alumni and their peers. This is an essential piece in learning about the presence of Brand Community for the university because in many cases the strongest ties that an

individual develops during their undergraduate years are those that involve other students on the campus. These relationships can also be those that last the longest and help sustain the alumnus' feelings of connection and community with the university even years after graduation. The importance of studying alumni's connections with their peers is highlighted when one looks at the events that the alumni association at Oregon State University hosts every year. Alumni tailgates and dinners are all attempts to reaffirm former students' connections back to the university through spending time with other fellow alumnus.

Measurement Scale and Method of Administration

Although the number of items in the alumni relations survey has varied over the years of administrations, the data that is being analyzed came from that of winter 2007, in which the final survey pool contained eighty items. Thirty-one of these items formed the Brand Community scale, while the other forty-nine items consisted of demographic questions (age, gender, income, etc.), “fun” questions that dealt more with experiential college activities, outcome related items, such as “In the future, I could see myself donating money to OSU,” and challenge items, such as “Because of my education, I have a level of confidence I did not have before.” Demographic questions can be useful for the purpose of segmenting the data by year of graduation or gender, which enables the researcher to determine specific groups that have the highest propensity to give to the university or those that tend to stay most involved with the institution, both of which are important indicators of the strength of the Brand Community relationships.

The measurement scale for the Brand Community items was comprised of self-report inventory items, referred to as “attitude scales,” that the respondent rated on a seven-point strongly agree-strongly disagree scale. The seven-step approach was utilized due to the fact that more steps are generally most advantageous when dealing with psychometric theory (Nunnally 595). Nunnally states that there are “numerous studies showing that the reliability of individual rating scales is a monotonically increasing function of the number of steps” (Nunnally 595). Previous studies have also shown that as the number of steps in the scale increases from two to twenty, “the increase in reliability is very rapid at first,” leveling off around seven, therefore making a seven-step scale the best option for this research (Nunnally 595). Self-report inventory scales are very popular for their use in measuring the attitudes of respondents and are typically

viewed as one of the most valid ways of assessing one's attitudes. For the purpose of this research, the self-report inventory was the most time and cost effective. By incorporating the survey administration into the Marketing Research Practicum as the class project during winter term of 2007, the cost of performing the data collection was greatly reduced. The survey was administered by the marketing students to the alumni over the telephone.

Limitations to Research

One significant limitation to the research was the use of self-report inventories as the means of collecting the data. Although it was the most economical and time-efficient, self-report measures of attitudes are “limited to what individuals know about their attitudes and are willing to relate” (Nunnally 591). This can be a problem if an individual is either unaware of his true feelings about their experiences at Oregon State University or if he does not want to share their true attitudes with the market researcher on the other end of the telephone who is administering the survey. However, since the interviewer was a random student and most likely a stranger to the alumni, and due to the fact that most of the questions were not of a sensitive nature, these effects were likely to be minimal.

Explanation of Analysis

I collaborated with Professor Koenig on how to properly analyze the data using Statistical Package for the Social Scientist (SPSS). The SPSS program is statistical software that is frequently used for the analysis of marketing research data. My work with the Close to the Customer Project (a marketing research program through the College of Business), as well as my Marketing Research Practicum course (BA 496) at Oregon State University have allowed me to become comfortable and proficient in using this software and interpreting the results.

Each relationship of Brand Community (Brand, Product, Company, and Other People) was analyzed separately. The reason for the separate analyses is that, although these components are interconnected through the concept of Brand Community, each represents a distinct component of this concept. It is helpful to analyze the four relationships independently to ensure that the items that make up each category do not overlap, meaning that there are not duplicate items measuring the same aspect of that component. For example, if we were determining the items that provided for the best measurement of the Brand group, analysis of the items that comprise that relationship would help ensure that we are not including multiple items that refer to the alumni's feelings of identification with their alma mater.

An additional purpose of the analysis involves determining whether the scale items as a group are too dissimilar. It is crucial that the items are not so disparate as to lack the provision of a complete picture of what each category is attempting to measure within the scheme of Brand Community. Extensive research and analysis has occurred to assure that the items selected for the final version of the questionnaire, sufficiently provide the researchers with a clear and complete picture of the alumnus' connections to

the Brand Community of their alma mater. The analysis contributes helpful insights into which items work best concurrently within the four categories of Brand Community to measure that specific aspect (i.e, Product, Other People, etc.); to ensure that all critical aspects of Brand Community are represented; and to verify that only useful and unique items are kept in the questionnaire.

For the added purpose of respecting respondents' time as well as increasing response rates, it is necessary to include the minimum number of items which add distinct and measurable benefit to the measurement of Brand Community. This particular goal dealt with the "parsimonious" nature of the items. It was the researchers' desire that the questionnaire be trimmed down to the essential items. Another goal of the analysis was more long-term in its reach. This particular questionnaire being administered to Oregon State University College of Business graduates was eventually going to be adapted to fit into the context of higher education and marketed as an "alumni enhancement tool" by Professor McAlexander and Professor Koenig. In order to achieve this objective, they use past data results, as well as other related studies, to refine the items that comprise the concept of Brand Community. The results of the analysis not only allowed the researchers to determine which items proved unsuitable for the final questionnaire, but also had the dual purpose of serving as a double-check for the reliability of those items which remained.

Analysis: Reliability and Correlations

Within each relationship of Brand Community, the reliability of the individual concepts (Brand, Other People, etc.) were analyzed as a whole, in addition to analyzing item against item using correlation matrices. Reliability when applied to the whole group of items is measured by Cronbach's Alpha. Cronbach's Alpha is a measurement that is based on "the average correlation among items (the internal consistency) and the number of items" (Nunnally 230). The main avenue when analyzing data to determine the reliability of the set of items is by looking at alpha, as has been done with this research. If alpha appears to be too low (a score above point-seven is desired), this implies that the test is "either too short or the items have very little in common" (Nunnally 230, 245). The ability of this test to highlight the presence or lack thereof compatibility between the set of items is the reason that the reliability test is run as the primary means of an analysis. Once it has been determined that the items as a group appear to possess internal consistency, the analysis can then progress further in determining if there are perhaps weak items within the group. It is necessary to analyze the individual items even if the reliability score is within a reasonable range due to the fact that although the alpha is high enough, it does not necessarily mean that the items are the best scale that can be used. Finding and removing a weaker item in the set may help to raise the reliability score and improve the internal consistency of the group of items. When searching for weak individual items, both the correlation matrices and the "Cronbach's Alpha If item Deleted" measure provided by SPSS are very helpful.

The correlation matrix allows the researcher to assess how well individual items relate to other items in that same category of Brand Community, as well as to allow for the evaluation of the range of Pearson correlation values across the entire matrix. Ideally,

one desires to receive Pearson correlations across the whole matrix that fall within a reasonable range (i.e., all correlations are between 0.3 and 0.6). When such a range is achieved, it can be assumed that those items are all reasonably related to each other on a one-to-one basis, without being too closely related. Having items that are too closely related, that show Pearson correlations that edge close to the 1.0 mark, perhaps share so much in common that their content may be measuring the same aspect of the attitude and it is therefore redundant to keep both items in the questionnaire. This issue is referred to as multicollinearity and can cause problems in subsequent analysis (e.g. suppression in a multi-regression analysis). Eradicating these “duplicate” items is particularly important when a market researcher is attempting to shorten the length of a survey for time, money, and/or response rate reasons.

The second helpful tool of analysis when looking at individual items is referred to as, “Cronbach’s Alpha if Item Deleted.” This measure looks at what the reliability score would be if that particular item were left out of the analysis. If the alpha score improves when the item is dropped, this is evidence that the item does not contribute, but rather detracts from internal consistency of that set of items. If this occurs, the researcher should probe the issue through further means of analysis to determine if the item should be dropped from the pool of survey items in future administrations. Conversely, if Cronbach’s Alpha drops when a particular item is deleted, this informs the researcher that the item contributes greatly to the reliability of the set of items and is crucial to the measurement.

Brand

For Brand, Cronbach's Alpha for the nine items was 0.875 (Table 1.1). With so many items to measure in this relationship, this was a suitable level of measurement. The lowest correlation was 0.257, which measured the correlation between item twenty-seven ("The College of Business' ranking in polls, such as in US News and World Report, matters a great deal to me") and fourteen ("I am proud to be associated with OSU") (Table 1.2). Upon further review, it seemed that item twenty-seven referring to the ranking of the College of Business in polls, had very low correlations with the other items as well, not just item fourteen. When an item consistently displays low inter-item correlations, further analyses should be completed to determine whether this evidence of a poor-fit within the category is actually valid. If the item performs poorly in subsequent analyses, it is evident that this item should be dropped from the survey.

To further assess item twenty-seven, "Cronbach's Alpha if Item Deleted" was reviewed. The alpha when leaving out item twenty-seven, increased slightly, providing further proof that the item should be exempt from future administrations (Table 1.3). This is because the presence of the item negatively affects the reliability of the set of items.

The highest point in the correlations was extremely high for an inter-item correlation at 0.830 (Table 1.2). This occurred between item number forty-seven ("I am a Beaver Believer") and item sixteen ("I love the Beavers"). It is obvious to see that these items are very similar and are perhaps measuring the same component of the Brand relationship. When one receives such a high inter-item correlation, it raises a red-flag that these two items are possibly too similar and that the inclusion of both items in the final questionnaire is perhaps not necessary. After reviewing the particular content of these

questions however, it was decided to keep both of the items in the Brand category. The reasoning behind this was that “I love the Beavers” was more of a general statement about the mascot and the branding of the university to the general population, whereas being a “Beaver Believer” applied more to an athletic context. In this sense, the “Beaver Believer” item measured the alumni’s affinity for Oregon State University athletics due to the fact that this slogan was used to endorse athletic events and athletic paraphernalia.

Another item that was recommended to be dropped from the questionnaire was item number forty-three, “When someone criticizes OSU it feels like a personal insult.” The rationale behind the omitting of this particular item was more qualitative than quantitative, as was the case with number twenty-seven. The justification dealt with the content of the item and not necessarily the measurements of the Pearson correlation or Cronbach’s Alpha. Due to the fact that we were attempting to shorten the length of the questionnaire and desired to drop one or two items from each category (Other people being exempt due to the small number of items), I began to look at the content and the wording of each of the items to identify which ones were the most visually appealing and were the easiest to comprehend. Since the only item that increased “Cronbach’s Alpha if Item Deleted” was question twenty-seven, it became necessary to use a more qualitative approach to the analysis. Based on my own knowledge of the questionnaire and its purpose, as well as reviewing the other items in the category, item number forty-three appeared to have the least in common with regard to content when compared with the other items. Additionally, another item in the Customer-Brand relationship appeared to measure the concept of emotional connection and pride for one’s university and that was, “When people talk about OSU, I feel proud.” Forty-three also allowed for the smallest decrease in Cronbach’s Alpha if it were to be dropped from the questionnaire, therefore

providing further evidence that it had the least impact of any of the items in this category on the measurement of the concept of Brand (Table 1.3).

Product

The twelve items that made up the Product category received an alpha score of 0.895 (Table 2.1). For this large of pool of items this was a good reliability score. Typically, if the items are reliable, the greater number of items in that particular group, the higher Cronbach's Alpha. This category of items was the most difficult to analyze due to the large number of items compared to the other relationships that comprise Brand Community. In particular, when running bivariate correlations, the matrix produced is quite extensive and requires much more scrutiny. For this matrix, the range of correlation values was quite wide, the lowest being 0.176 and the highest being 0.687 (Table 2.2). The items that produced the lowest correlation were that of, "My bachelor's degree is valued by employers," and "The price for my education was more than fair." It seems logical that these two would not be very highly associated especially when it may be perceived by many that employers would place the most value on a degree from a prestigious institution rather than on a state institution that is less expensive to attend. In this case it appears that the price of an education is not significantly linked to how the degree is perceived by others, in particular, employers. The items that generated the highest correlation of the group were that of, "My undergraduate degree prepared me well to start my career," and "My undergraduate classes allowed me to start my career with confidence." It is obvious that the content of these two items are extremely similar and both focus on the component of the degree and how well the degree prepares the undergraduate for their future career. It can be assumed that an individual who feels that

they are well prepared to begin their career also feels some degree of confidence in that area.

Upon analysis of the correlation matrix, one should look at the items that produce the lowest Pearson correlation, as this would help the researcher determine the weaker items within the product group. It became obvious that item thirteen, “The price for my education was more than fair,” (which was also a part of the lowest correlation described above) produced lower than average correlations with almost every other item in the category. The other items, while still generating a few of the lower correlations, appeared to be more consistent in their associations with the other items in the group. A majority of the correlations that involved the price item were in the 0.2-0.3 range with one value being below 0.2 (Table 2.2).

When the price item displayed weakness in the correlation matrix, the “Cronbach’s Alpha if Item Deleted,” is helpful in determining how the reliability score would fare without the price item. If item thirteen were to be removed from the Product category, the reliability score would be 0.895 (Table 2.3). While this does not show evidence that the reliability of the items as a group were positively affected by the absence of the price item, it does reveal that if that particular item were to be left out of the questionnaire, the reliability of the product items would not be jeopardized. In addition, the values for “Cronbach’s Alpha if Item Deleted” for the other eleven items in the group were all lower. This provided further evidence that these eleven items associated well together and were strong items that should be kept in the alumni questionnaire.

Three items displayed particular significance to the Product relationship because alpha was notably lower if either of these individual items were to be removed from the category. These items were: “My undergraduate education is a statement of who I am

now,” “My undergraduate business education helps me to be who I want to be,” and “I feel a strong sense of gratitude to the College of Business at OSU.” For each of these items, alpha dropped by more than ten percentage points if the items were removed from analysis. The first two items listed refer to the extended self portion of the Product category. This is significant because the fact that these items are performing well in analysis displays evidence that the extended self is an important part of measuring alumni’s attitudes and feelings regarding the degree that OSU provides its undergraduates. As mentioned previously, as much as this analysis is focused on locating weak items that should be removed from future questionnaires, this research also involves targeting which items prove to be the best measures for each relationship within Brand Community. This will aid in developing future items for the survey as well as assist in refining the current items with the goal of working to achieve the best possible measure of the Brand Community as it relates to alumni.

After it was determined that item thirteen was a possible weak link within the Product group, I re-ran my analysis leaving the item out in order to see how the items performed together in the absence of the price question. The reliability score (alpha) for the eleven items increased only slightly (alpha 0.896) after the price item was removed (Table 2.4). This minimal increase in alpha is insignificant due to the fact that the reliability score is still within the desired range. It would be more problematic if the reliability score of the items dropped significantly after the item was removed from the group; however, that was unlikely to occur in this particular case because the price item was shown to have weak associations with the other items.

It was decided that item thirteen would be removed from future versions of the alumni questionnaire due to its poor performance in the analysis. Referring to the content

of the question as well, the item seemed to lack any particular association with the other items of the product category. After finishing my analysis and devising reasoning behind my recommendation to remove the price item from the questionnaire, I spoke with Professor Koenig, who reviewed the analysis and agreed with my suggestion. The price item was then officially discarded from the pool of survey items.

Company

The Company category of items was the third relationship of Brand Community to be analyzed and contained seven items. These items generated a reliability score of 0.836 (Table 3.1). This, in congruence with the reliability analysis for the three other relationships of Brand Community, fell within the desired range and portrayed that as a group these seven items are a reliable measure of alumni's attitudes about Company (Company being concerned with those individuals that represent the institution such as faculty, advisors, deans, etc.).

The correlation matrix for these items revealed a range of 0.299 to 0.601, with a majority of the items having correlations in the 0.4 range. The items that received the lowest correlation of 0.299 were, "If I had a professional problem or question, I would be very comfortable seeking the advice of a faculty member at OSU," correlated with "My college (the College of Business in the case of this particular data) understands my needs." The items that received the highest correlation were, "I can imagine being friends with College of Business faculty members," and "If I had a professional problem or question, I would be very comfortable seeking the advice of a faculty member at OSU." The high correlation between these two items is logical given that if an individual responding to the questionnaire has/had established relationships with faculty during their

undergraduate years they would most likely feel at ease seeking their guidance with regards to professional inquiries or concerns that arose in the future (Table 3.2).

In the case of this specific correlation matrix, no single item stood out as a consistently weak question with regard to the correlation values. Most of the items had at the most one weak correlation with another items; however, the rest of the correlations fell into the appropriate range, and no one item measured poorly against other items on a consistent level. Overall, the correlation matrix displayed that the items which comprised the Customer-Company relationship associate well together. This evidence, when combined with the strong reliability score, provides evidence of a strong category of items that measure this particular component of Brand Community well and that no items should be removed from “Company.”

To further solidify my logic behind keeping all the items in “Company,” I reviewed “Cronbach’s Alpha if Item Deleted,” in order to increase the dimensionality of my analysis and ensure that I was not keeping any weak items in the questionnaire. This test displayed that if any of the seven items were to be removed from the company category, the reliability of this group would decrease. For most of the items, alpha experienced a significant drop. Two items in particular portrayed prominent importance to the measurement of company were, “OSU is interested in my personal development,” where alpha decreased to 0.809 if the item was left out of the analysis, and “I can imagine being friends with College of Business faculty members,” in which the reliability score dropped to 0.805. The fact that alpha experienced such significant reductions when any one item was removed from analysis displayed that each of the items in this group are a vital part of the construct of the measurement of Company in this questionnaire. Despite having a goal of finding items to remove from the questionnaire for the purpose of decreasing the length of the survey, it would not be wise to remove any items that proved

to be significant to the measurement of a component of Brand Community. It is more important for this research that the measurement be as complete as possible, rather than removing items that are useful to the scale just to reduce the length of the questionnaire (Table 3.3).

Other People

This particular category was comprised of only three items and was the smallest category of the four relationships, with the others having at least seven items or more. Cronbach's Alpha, measuring the reliability of the correlation for "Other People," was 0.855 (Table 4.1). This is an acceptable measure for the number of items, particularly since one would like a score of at least 0.7 for Cronbach's Alpha (Nunnally 245). In addition, the Pearson correlations between the three items were fairly consistent, with a range of 0.620 to 0.677 (Table 4.2). Ideally, one would like to have a range that is similar to this because this displays that when comparing individual items against other items of the same concept, the correlation scores are similar. This provides additional proof that the items are alike and belongs in the same category of Brand Community.

The Pearson correlations are in the mid-range which is a positive signal. This signifies that the items possess strong correlations and are similar enough without appearing that two items are measuring the exact same thing. If two items appear to have such strong correlations (close to one) and when combined with other factors such as word choice, etc., the items appear to have identical or repetitive qualities, it makes most sense to drop the weaker of the two items. It is also useful to inspect the analyses that measures the item-total statistics, and in particular the "Cronbach's Alpha if Item Deleted." By comparing the Cronbach's Alpha for all three items and the Cronbach's Alpha when any one of the three items were dropped from the analyses, the researcher is

able to determine if the items in that category would be reliable if an item were to be omitted from future surveys. In this particular case, Cronbach's Alpha dropped significantly when any of the items were dropped from the category. This provides strong evidence that the three items work well for measuring the concept of "Other People" and that this, combined with the other analyses, determines with sufficient confidence that all of these items should be kept in the final version of the survey. The item regarding whether the respondent feels a sense of kinship with other OSU alumni displayed the most significant drop in alpha to 0.765, portraying the strength of this item in measuring the "Other People" concept (Table 4.3).

Additionally, due to the fact that this relationship was only represented by three items, it was important to keep all the items providing that they stood up to the analysis. Although the four relationships that intersect to make up Brand Community are not equally represented in quantitative measurement according the number of items per category, it was nonetheless essential that the concept of each component of Brand Community could be measured with the items contained in the questionnaire. Upon review of the analysis of the items in "Other People," and keeping in mind the desire to accurately measure each concept with the items provided, it was decided that the three items would be used for subsequent surveys.

Factor Analysis

An additional analysis was run for each of the components of Brand Community. The factor analysis is used as a “check” against the other previous analyses. Essentially, the factor analysis is a follow-up to alpha, which does a poor job of assessing the number of dimensions in a set of items. The factor analysis determines how much variance within the set of items is captured by the first factor. If indeed the factor analysis displays proof that those items can be reduced to one factor, then a majority of the variance has been contained within the first factor and the remainder of the variance is at most trivial. The ideal shape for the scree plot, which is produced from the factor analysis, is an elbow shape, with one factor having an Eigen value greater than one and then a sharp drop off at the elbow, where the plot flattens out. The Eigen values where the scree plot flattens out should be less than one. The sharp drop from the first factor to the remaining factors displays the majority of the variance that is captured by that first factor. This enables the researcher to be further assured of the strength of their items and the measurement that they provide.

Other People

The scree plot derived from the factor analysis for this component of Brand Community looks exactly like the ideal described above. The plot displays that the first factor has an Eigen value of almost two-and-a-half, and that a sharp drop occurs after the first factor. The second factor occurs at the “elbow” of the scree plot, with that value being about one-half and the remainder of the scree plot is a fairly level line that extends out from the elbow. The shape of this scree plot and the related Eigen values for the three components is positive evidence that the set of items is unidimensional and the

respondents view these items as part of the same “domain.” The scree plot also verifies the decision to keep all three items in this group, as they have proven to be strong and reliable measures of this concept.

Brand

For the Brand relationship, the factor analysis was performed leaving out the two items (items twenty-seven and forty-three) that were to be dropped from the survey pool. The rationale behind running the factor analysis without those items is that we are able to see how well the reduced group of items for Brand performs and how much of the variance is secured within that first factor. The seven items produced a scree plot that while not being ideal was still positive for our analysis. The Eigen value for the first factor was four, followed by a steep drop that lead to the second factor, which was less than one. After the elbow the remaining components extended out in a slightly decreasing slope. Typically, one desires a nearly flat line that extends from the elbow because this signifies that very little of the variance is left in those components after the first factor. However, for the remaining seven items of Brand it still appears that a large majority of the variance is captured within that first factor, which is ideally what one would like to see. While this does not provide as strong of evidence for our measurement as Other People did, it is still sufficient proof that our items are a unidimensional set.

Product

As with Brand, the factor analysis for Product was run without any of the items that were recommended through the previous analysis to be dropped from the survey. This meant that for this particular category, eleven of the original twelve items would be

included in the factor analysis, leaving out item number thirteen. The scree plot for Product produced an ideal picture of how the variance in this group of items was captured. The first factor was around five-and-a-half, with the sharp drop that the researcher hopes for, and the elbow for the second factor had an Eigen value around one. The remaining nine components formed a fairly straight line, which again was strong evidence that most of variance for this group of items had been captured within the first factor and very little was left to the remaining components. The evidence that this scree plot produced was very assuring considering the large number of items in this group that still managed to have almost all the variance captured by that first factor. This also provided additional proof that keeping all eleven of these in the survey was still appropriate, which was particularly helpful considering that a large part of the purpose of this research was to shorten the length of the current questionnaire.

Company

Company, similar to Other People, did not have any items that proved weak enough to drop from the current item pool; therefore the factor analysis included all seven original items. The scree plot that was produced from the analysis was visually comparable to that for brand. Although a majority of the variance was contained within the first factor, which had an Eigen value over three-and-a-half, the remaining factors after the elbow displayed a slight decline, as had occurred with the scree plot for Brand. While it is still apparent that a majority of the variance is captured by the initial factor, it is not as much as preferred since the decline of Eigen values after the elbow portrays portions of the variance not contained within that first factor. As well, after the second factor at the elbow, which had an Eigen value around one, there was drop to the third factor, that while certainly less prominent and steep than after the first factor, was still

significant enough to be mentioned. Despite not being as ideal of a representation of the strength of these items as a measurement of Company, the factor analysis still displayed that a large part of the variance was indeed captured within the first factor, and that these items formed a unidimensional set.

Analysis: Validity

“Face” Validity

The first part of determining the validity of scale items involves determining the “face” validity. This was accomplished by a thorough literature review that was conducted previous to finalizing the final version of the survey. The literature review looked at comparable items that were found in recent research in social science and marketing journals. Extensive content analysis has also been done as part of previous research by Professors Koenig and McAlexander (McAlexander et al. 2002, 2006).

Convergent Validity

The next step in assessing the validity of the Brand Community items deals with the convergent validity. For Brand, Product, and Company, one item from each group was chosen that best encompassed the definition of each of those relationships with the customer (alumni, in this case). The Customer-Other People relationship was left out of this analysis due to the small number of items in its scale. To analyze the convergent validity of each of the relationships, a correlation matrix was created that included the summed scores for each of Brand, Product, and Company. These scores were correlated with the particular item that was chosen to depict the best definition of each of the relationships. For Brand, “I am a Beaver Believer” was chosen as the definitive item of the group. When this particular item was correlated against the summed score of the Brand relationship (calculated without the “Beaver Believer” question), the correlation was 0.718 (See table 6.1), which was the highest correlation within the matrix. This high correlation displays the convergence, or “correspondence...between similar constructs”

(Trochim, William M.K). That is, convergent validity is displayed when the item best summarizing the construct (“I am a Beaver Believer”) and the other items that make up the construct correlate highly with one another.

For Product, the item that best summarized the construct was determined to be “My undergraduate business degree prepared me well to start my career.” Like Brand, this item correlated highly with the summed score of the other items that comprise the Customer-Product relationship, with a correlation value of 0.618. The item that was chosen to best capture the definition of Company was “The College of Business cares about my opinions.” This item, when correlated against the summed score of the other Company items, received a high correlation of 0.601, again displaying that the items that make up that particular relationship are related to each other. (See Table 6.1 for all correlation values).

Discriminant Validity

The next step in assessing validity deals with determining the discriminant validity of the items. This can be completed by reviewing the correlation matrix that was used for the above analysis of convergent validity. To assess discriminant validity, correlations between the single items (i.e., “I am a Beaver Believer” for Brand) and the other constructs (i.e., Company, Product, Other People) are examined. To show discriminant validity, these correlations should be lower than what was found between the single item and the construct they match. This provides evidence that the constructs (Brand, Product, and Company, and Other People) are dissimilar and evidenced as such through the correlations. An example that portrays the presence of discriminant validity is when “I am a Beaver Believer” (which was used as the single item measure of Brand) is correlated against the summed score for Company, the correlation is 0.350, which is

significantly lower than that same item's correlation with the Brand summed score, which was 0.718 (Table 6.1). Similar correlations occur when the items chosen to summarize Product and Company are correlated against the other summed scores. This is evidence that the constructs are dissimilar, as shown through the correlations described above.

Nomologic Validity

Nomologic validity deals with the Brand Community constructs' relationship to other variables, in this case items referred to as "outcomes." By theory, if the researcher is in actuality measuring what Brand Community is supposed to be measuring, one should see high correlations between the relationship constructs (i.e. Brand, Product, etc.) and the outcome that would be expected from an alumni community that was actively engaged with their alma mater. Such outcome-related behaviors include the alumni's propensity to acquire new Oregon State University apparel or their desire to donate to the university in the future. For example, the outcome item "I followed the Beavers play in the 2006 College World Series very closely," is moderately correlated with the summed score for Brand, displaying both that this outcome is related to the Brand construct and that the Brand construct relates in general to university athletics (Table 6.2). In another example, "I would recommend OSU to my friends" is highly correlated with the summed scores for Brand, Product, and Company, and moderately correlated with Other People (Table 6.2). This signifies the nomologic validity of the Brand Community constructs, in that these relationships are in fact related to the outcome variables.

Future Research

Adaptations of the initial Jeep Brand Community survey continue to develop as new research is integrated into the model for the purpose of refining the content of current survey items. This includes adding new survey items to the pool of Brand Community questions, as well as continuing to phase out the weaker scale items. The measurement tool has been strengthened to provide a more accurate measurement of the alumni's relationship with the various aspects of Brand Community. In the past year, the alumni survey has been served as the basis of measuring the attitudes of current undergraduate students at Oregon State University through an on-line questionnaire, as well as providing the foundation for an alumni relations tool that will be marketed to other universities across the company through the Close the Customer Project on campus. Professor Koenig's 496 Marketing Research Practicum was involved with the administration of the undergraduate survey that occurred during winter term of 2008. The survey that was sent out through e-mail was an adaptation of the original alumni questionnaire and had items that were tailored to a current student's perspective. The purpose of administering a questionnaire to the undergraduate population was to discover connections in the data with the students' involvement with the brand community during their college years. Since many of the experiences that contribute to the creation of a strong brand community for alumni occur during the period when they were a student, it is essential to measure what events, relationships, activities, etc. culminate to form those strong relationships. By understanding current students' attitudes, more can be learned to improve the areas the university performs poorly in with regards to the Brand Community. This data and the insights that ensue can then be compared against future

alumni data to see how current student attitudes translate into alumni behavior in the future.

The national alumni survey is a culmination of the past efforts by Professors McAlexander and Koenig to analyze alumni relations that began with their hometown university at Oregon State University. The alumni of the College of Business at Oregon State University have served as the pilot study since its beginnings in 1999. Through thorough analysis of the data following each survey administration, weak items have been highlighted and either dropped from future surveys or watched carefully in subsequent administrations to judge their performance as a part of the construct in measuring Brand Community. In addition, the content of items has been revised to provide better measures or so that it is worded in a way that is easier for the respondent to properly answer. New items have also been added as gaps or weaknesses in the construct have been discovered.

After almost a decade of surveying the College of Business alumni, the alumni survey construct has been finalized and the process has begun to market the survey tool to universities throughout the country. The first step in administration of the alumni survey (branded as the “C2C survey”), was to complete a national survey of alumni. By administering the survey nationally, a benchmark was created that will allow universities to compare the attitudes of their alumni with that of other universities in the same region, of the same size, etc. The national survey has the ability to give alumni associations and universities across the country the ability to better understand their alumni and due to this enhanced knowledge, develop a stronger Brand Community.

Final Thoughts

As mentioned at the beginning of this document, the development of the construct is a continual process that occurs gradually over time. As more data is collected over the years, the scale can be revised with the use of this additional data and the items are fine-tuned. Additional research in the area of Brand Community has allowed for the revision of some items, the removal of other items, as well as the formulation of new items. As additional data is collected from future client universities, analysis of the alumni database is likely to produce novel insights that will further assist in refining the scale. It is likely as well that the scale will be adapted to measure the Brand Communities of other organizations and groups, similar to the way that the scale was adjusted from the Jeep survey for use in the context of higher education with regard to alumni relations. In our ever-expanding globalized economy, as competition continues to increase, it is only plausible that more companies will be looking to strengthen the relationships of their own Brand Communities that revolve around their product offering. To do so, it will be necessary for those businesses to understand the attitudes of their customers and the strength of the bonds between the consumer and the various relationships that comprise the Brand Community.

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Appendix

Appendix

Copy of Questionnaire

(Data from research came from an administration of this survey)

BA496/596 Marketing Research – Winter 2007 College of Business Alumni Survey →*blue*

Introduction

Hello, this is _____*your name*_____, is _____*alumni name*_____ at home now?

My name is _____, and I am a student in the Marketing Research class at Oregon State University. As part of the Marketing Research class project we are contacting College of Business alumni, and asking for their perceptions of their undergraduate experience. The goal of this research is to collect information that helps us understand your experience with OSU so we can improve our programs and better serve you as an alumnus of OSU. In addition we may use the data to write an academic paper

We want to assure you that we are not attempting to sell you anything and we are not asking you to donate any money. This study involves a short survey of your opinions that should take about 10 minutes. There are no foreseeable risks in completing the survey and there are no direct benefits to you for completing the survey but we hope to use the results to make our programs better in the future.

If you decide to take part in the study, it should be because you want to volunteer. You can stop at any time during the study and you are free to skip any questions that you would prefer not to answer. If you choose to withdraw from this project before it ends, the researchers may keep information already collected about you and this information may be included in study reports.

To help protect your confidentiality, no names will be recorded on survey forms; the forms will only include identification numbers. All computers that will contain survey responses are password protected.

Before starting I want to mention that I would be happy to answer any questions you might have about the study either now or later. Do you have any questions at this time?

If you have questions about this research project, please contact Professor Hal Koenig, (541) 737-4117, Hal.Koenig@bus.orst.edu. If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-4933 or by email at IRB@oregonstate.edu.

Would you mind sharing your opinions with me? Thanks.

INT: After interview is complete, fill in the numbers in the boxes below - these numbers must be entered here to count as a completed interview. [blue]

Last five digits of YOUR Student ID →	— — — — —	Last four digits of respondent's phone number →	— — — — —	Unique sequence number (from 1 to 6) →	—
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INT: Write in the year of graduation before calling. Please note any changes on this sheet.

O.K., we start with some background information,

1. I was told that you graduated from OSU in _____. Is that correct?

_____ Yes

_____ No → When did you graduate? _____ → **record in Q#77**

2. What was your option in the College of Business? **[INT: let them tell you]**

_____ Accounting

_____ Marketing

_____ Finance

_____ MIS/Information Systems

_____ International Business

_____ Hotel Restaurant Tourism Management

_____ Management

_____ General Business

_____ Business Minor

_____ Other – please specify _____

I will now read a number of statements concerning your feelings about the College of Business and OSU. Please rate each on a seven-point scale from “Strongly Disagree” to “Strongly Agree.” You may want to jot down that “1” is Strongly Disagree, and “7” is Strongly Agree, and “4” is Neither Agree nor Disagree. The first statement is

Strongly Disagree	Strongly Agree	DK NA
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3.	I had many fun experiences at OSU. – do you Strongly Disagree , which is a “1,” or Strongly Agree , a “7,” or somewhere in between?	1	2	3	4	5	6	7	8	9	
4.	My College of Business classes allowed me to start my career with confidence.	1	2	3	4	5	6	7	8	9	
5.	The College of Business understands my needs.	1	2	3	4	5	6	7	8	9	
6.	I share a common bond with other College of Business alums	1	2	3	4	5	6	7	8	9	
7.	I truly enjoyed my time at OSU.	1	2	3	4	5	6	7	8	9	
8.	I value relationships with faculty members of the College of Business at Oregon State.	1	2	3	4	5	6	7	8	9	
9.	My College of Business undergraduate degree is central to my identity.	1	2	3	4	5	6	7	8	9	
10.	Even years after graduation, I feel that my College of Business education is a valuable resource for me.	1	2	3	4	5	6	7	8	9	
		Strongly Disagree						Strongly Agree		DK NA	
11.	I value the heritage of the College of Business at OSU	1	2	3	4	5	6	7	8	9	
12.	The faculty in the College of Business are among the best.	1	2	3	4	5	6	7	8	9	
13.	The price for my College of Business education was more than fair.	1	2	3	4	5	6	7	8	9	
14.	I am proud to be associated with the College of Business at Oregon State University	1	2	3	4	5	6	7	8	9	
15.	I followed the Beaver's play in the 2006 College Baseball World Series very closely.	1	2	3	4	5	6	7	8	9	
16.	I love the Beavers.	1	2	3	4	5	6	7	8	9	
17.	The College of Business cares about my opinions.	1	2	3	4	5	6	7	8	9	
18.	OSU provided me an ideal university experience.	1	2	3	4	5	6	7	8	9	
19.	In the future, I could see myself donating money to OSU.	1	2	3	4	5	6	7	8	9	

20.	My values are very much like the values of OSU.	1	2	3	4	5	6	7	8	9	
21.	If I were to have children, I would want them to go to OSU.	1	2	3	4	5	6	7	8	9	
22.	I have good friends who are College of Business alums	1	2	3	4	5	6	7	8	9	
23.	My College of Business undergraduate degree prepared me well to start my career.	1	2	3	4	5	6	7	8	9	
24.	The College of Business is interested in my personal development.	1	2	3	4	5	6	7	8	9	
25.	The money that was invested in my College of Business undergraduate education was well spent.	1	2	3	4	5	6	7	8	9	
26.	I will likely add to my OSU wardrobe this year.	1	2	3	4	5	6	7	8	9	
27.	The ranking of the College of Business in polls, such as conducted by <u>US News & World Report</u> , matters a great deal to me.	1	2	3	4	5	6	7	8	9	
28.	I would like to be involved with an OSU College of Business alumni group.	1	2	3	4	5	6	7	8	9	
29.	If I had a professional problem or question, I would be very comfortable seeking the advice of a faculty member in the College of Business.	1	2	3	4	5	6	7	8	9	
30.	I would recommend OSU to my friends.	1	2	3	4	5	6	7	8	9	
31.	I try to stay current on the major happenings at the OSU College of Business.	1	2	3	4	5	6	7	8	9	
32.	My College of Business undergraduate degree is valued by employers.	1	2	3	4	5	6	7	8	9	
33.	I identify with the College of Business at Oregon State University.	1	2	3	4	5	6	7	8	9	
34.	I am very satisfied with my OSU experience.	1	2	3	4	5	6	7	8	9	
35.	I feel a sense of kinship with other College of Business alums.	1	2	3	4	5	6	7	8	9	
		Strongly						Strongly		DK NA	

		Disagree						Agree			
36.	I enjoy talking to people about OSU.	1	2	3	4	5	6	7	8	9	
37.	Because of my education, I have a level of confidence that I did not have before.	1	2	3	4	5	6	7	8	9	
38.	I can imagine being friends with College of Business faculty members.	1	2	3	4	5	6	7	8	9	
39.	My College of Business undergraduate education is a statement of who I am now.	1	2	3	4	5	6	7	8	9	
40.	I am very satisfied with my College of Business education.	1	2	3	4	5	6	7	8	9	
41.	I received high quality classroom instruction as an undergraduate in the College of Business.	1	2	3	4	5	6	7	8	9	
42.	I am proud to be a fan of OSU football.	1	2	3	4	5	6	7	8	9	
43.	When I hear someone criticize Oregon State it feels like a personal insult.	1	2	3	4	5	6	7	8	9	
44.	If I were to continue my professional education, I would like OSU to deliver those classes.	1	2	3	4	5	6	7	8	9	
45.	The successes of the College of Business are my successes.	1	2	3	4	5	6	7	8	9	
46.	I enjoyed my College of Business classes.	1	2	3	4	5	6	7	8	9	
47.	I am a Beaver Believer.	1	2	3	4	5	6	7	8	9	
48.	My family is proud that I graduated from Oregon State.	1	2	3	4	5	6	7	8	9	
49.	My College of Business undergraduate education helps me to be who I want to be.	1	2	3	4	5	6	7	8	9	
	O.K., we are getting close to the end of this section; just a few more to go										
50.	I believe annual contributions of \$20 to \$50 make a difference to the OSU College of Business.	1	2	3	4	5	6	7	8	9	
51.	I really like the OSU College of Business.	1	2	3	4	5	6	7	8	9	
52.	I feel a strong sense of gratitude to the College of Business at OSU	1	2	3	4	5	6	7	8	9	

53.	My College of Business undergraduate education has made me a better person	1	2	3	4	5	6	7	8	9
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Great, that is the end of that section and you are two-thirds done! I will now ask a couple questions about the experiences you may have had at OSU. For some of these questions we will go back to the seven-point scale from “Strongly Disagree” to “Strongly Agree.”

54. Did you participate in a [sorority/fraternity] at OSU?

_____ No
 _____ Yes

55. Do you agree or disagree, “Being involved with a [sorority/fraternity] was a good experience for me.” With 1 equal to Strongly Disagree, and 7 equal to Strongly Agree...

Strongly Disagree			Neither Agree nor Disagree			Strongly Agree	Don't Know	No Answer
1	2	3	4	5	6	7	8	9

56. Did you go to athletic events at OSU?

_____ No
 _____ Yes

57. Do you agree or disagree, “Athletic events at OSU were a good experience for me.” With 1 equal to Strongly Disagree, and 7 equal to Strongly Agree...

Strongly Disagree			Neither Agree nor Disagree			Strongly Agree	Don't Know	No Answer
1	2	3	4	5	6	7	8	9

58. Did you study abroad as part of your undergraduate program at OSU?

_____ No
 _____ Yes

59. Do you agree or disagree, “Studying abroad was a good experience for me.” With 1 equal to Strongly Disagree, and 7 equal to Strongly Agree...

Strongly Disagree			Neither Agree nor Disagree			Strongly Agree	Don't Know	No Answer
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1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

OK. Now we have a few questions about more recent activities with OSU

60. Since your graduation, have you donated money to OSU?

No

Yes

61. Did you donate money to OSU in the year 2006?

No

Yes

62. Did you direct your donation to a particular program or was it a general donation?

(INT: Don't read choices and check all that apply)

general donation to OSU

donation to your college

athletics

library

other _____

63. Approximately, how much did you donate to OSU in 2006? The categories for this question are

\$1-\$100

\$101-\$250

\$251-\$500

\$501-\$1000

more than \$1000

Before we get to the demographic questions I have two more questions. First,

64. Considering all of your experiences with the College of Business, is your attitude toward the College of Business positive or negative?

_____ Positive Attitude

_____ Negative Attitude

65. What is the single most important event, interaction or person that contributed to your **(INT: fill in "Positive Attitude" or "Negative Attitude" answer from last question>** toward the College of Business?

Thanks! OK, just a set of demographic questions and we are finished

66. Did you receive any scholarships as a student at OSU?

_____ No

_____ Yes

67. As a student at OSU, did you have any type of assistantship or work on campus?

_____ No

_____ Yes

68. Did either of your parents attend college?

_____ No

_____ Yes



69. Did either of your parents attend OSU?

_____ No – neither attended OSU

_____ Yes – at least one of my parents attended OSU

70. What was your age when you graduated with your bachelor's degree?

_____ (**INT: write in age here**)

71. Do you have any advanced degree beyond your bachelors (e.g., MBA, JD)?

_____ No

_____ Yes

72. Are you currently employed?

_____ No

_____ Yes



73. Are you employed Full-time or Part-time??

_____ Full-time

_____ Part-time

74. Is your current job closely related to your undergraduate option in the College of

Business? (**INT: don't read choices**)

_____ No

_____ Yes

One question that is frequently asked by students applying to OSU is the salaries of graduates at different times in their careers.

75. What is your current annual salary before taxes? There are just five broad categories, when I come to the category that best represents your personal income for 2006 before taxes, will you please stop me? (Just your best estimate is fine.)

- 0 - \$24,999
- \$25,000 – \$34,999
- \$35,000 – \$54,999

- \$55,000 – \$74,999
- \$75,000 or more

Sorry- I won't even share this information to help out the College.

That's it! Thank you very much for your cooperation. I really appreciate your willingness to answer these questions. Do you have any questions or comments concerning this survey?

Thanks again! Have a good day/evening.

(INT: DON'T ASK; record this information from call sheet)

76. Gender Male Female
77. Year of Graduation _____
78. City of residence _____
79. State of residence _____
80. Zip Code _____

	N	624	631	628	603	628	626	625	629	624
16. I love the Beavers	Pearson Correlation	.396(**)	.497(**)	1	.438(**)	.305(**)	.431(**)	.458(**)	.461(**)	.817(**)
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000
	N	625	628	635	606	632	629	629	633	625
20. My values are very much like the values of OSU.	Pearson Correlation	.461(**)	.496(**)	.438(**)	1	.295(**)	.496(**)	.443(**)	.521(**)	.464(**)
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000
	N	599	603	606	608	605	604	605	607	603
27. [The College of Business'] ranking in polls, such as in US News and World Report, matters a great deal to me.	Pearson Correlation	.285(**)	.258(**)	.305(**)	.295(**)	1	.360(**)	.399(**)	.476(**)	.320(**)
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000
	N	625	628	632	605	635	629	628	632	625
33. I identify with [OSU].	Pearson Correlation	.547(**)	.591(**)	.431(**)	.496(**)	.360(**)	1	.385(**)	.530(**)	.502(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000
	N	625	626	629	604	629	632	626	630	625
43. When someone criticizes OSU it feels like a personal insult.	Pearson Correlation	.345(**)	.345(**)	.458(**)	.443(**)	.399(**)	.385(**)	1	.555(**)	.508(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000
	N	622	625	629	605	628	626	631	630	622
45. [OSU's] successes are my successes.	Pearson Correlation	.484(**)	.442(**)	.461(**)	.521(**)	.476(**)	.530(**)	.555(**)	1	.491(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000
	N	626	629	633	607	632	630	630	635	626
47. I am a Beaver Believer.	Pearson Correlation	.468(**)	.496(**)	.817(**)	.464(**)	.320(**)	.502(**)	.508(**)	.491(**)	.817(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	625	628	631	605	631	629	628	632	625

(Brand Correlation Matrix)

Table 1.3**Item-Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
11. I value OSU's heritage.	41.75	68.654	.611	.456	.862
14. I am proud to be associated with OSU.	40.75	71.055	.630	.500	.863
16. I love the Beavers	40.72	67.090	.653	.709	.859
20. My values are very much like the values of OSU.	41.92	68.838	.622	.415	.862
27. [The College of Business'] ranking in polls, such as in US News and World Report, matters a great deal to me.	42.68	68.477	.461	.264	.878
33. I identify with [OSU].	41.64	67.240	.646	.485	.859
43. When someone criticizes OSU it feels like a personal insult.	41.93	64.157	.596	.408	.865
45. [OSU's] successes are my successes.	42.57	63.753	.697	.515	.854
47. I am a Beaver Believer.	40.83	65.706	.702	.733	.854

(Brand CA If Item Deleted)

	N	629	635		630	631	619	633	634	632	634	63
11. I value OSU's heritage.	Pearson Correlation	.299(**)	.373(**)		.378(**)	.410(**)	.337(**)	.450(**)	.313(**)	.396(**)	.470(**)	.374(**)
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	624	626		625	624	614	626	627	626	627	62
13. The price for my education was more than fair.	Pearson Correlation	.309(**)	.232(**)	.309(**)	.329(**)	.541(**)	.176(**)	.259(**)	.374(**)	.275(**)	.315(**)	.258(**)
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	619	623		620	622	609	623	624	622	624	62
23. My undergraduate degree prepared me well to start my career.	Pearson Correlation	.687(**)	.437(**)	.378(**)	1	.499(**)	.451(**)	.468(**)	.501(**)	.523(**)	.515(**)	.411(**)
	Sig. (2-tailed)	0.000	0.000			0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	628	630		632	628	618	630	631	630	631	63
25. The money that was invested in [my education] was well spent.	Pearson Correlation	.463(**)	.320(**)	.410(**)	.499(**)	1	.363(**)	.375(**)	.467(**)	.425(**)	.463(**)	.393(**)
	Sig. (2-tailed)	0.000	0.000		0.000		0.000	0.000	0.000	0.000	0.000	0.000
	N	628	631		628	634	619	631	633	630	632	63
32. My [bachelors degree] is valued by employers.	Pearson Correlation	.349(**)	.433(**)	.337(**)	.451(**)	.363(**)	1	.502(**)	.383(**)	.493(**)	.476(**)	.440(**)
	Sig. (2-tailed)	0.000	0.000		0.000	0.000		0.000	0.000	0.000	0.000	0.000
	N	617	619		618	619	621	619	620	619	620	62
39. My [undergraduate business education] is a statement of who I am now.	Pearson Correlation	.355(**)	.677(**)	.450(**)	.468(**)	.375(**)	.502(**)	1	.450(**)	.628(**)	.535(**)	.569(**)
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000		0.000	0.000	0.000	0.000
	N	629	633		630	631	619	635	634	632	634	63
41. I received high quality classroom instruction as an undergraduate in the College of Business.	Pearson Correlation	.480(**)	.360(**)	.313(**)	.501(**)	.467(**)	.383(**)	.450(**)	1	.487(**)	.524(**)	.422(**)
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000		0.000	0.000	0.000
	N	631	634		631	633	620	634	637	633	636	63

49. My undergraduate business education helps me to be who I want to be.	Pearson Correlation	.394(**)	.545(**)	.396(**)	.523(**)	.425(**)	.493(**)	.628(**)	.487(**)	1	.548(**)	.564(**)
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000		0.000	0.000
	N	629	632		630	630	619	632	633	634	633	633
52. I feel a strong sense of gratitude to the College of Business at OSU	Pearson Correlation	.439(**)	.453(**)	.470(**)	.515(**)	.463(**)	.476(**)	.535(**)	.524(**)	.548(**)	1	.585(**)
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000		0.000
	N	630	634		631	632	620	634	636	633	636	633
53. My undergraduate business education has made me a better person	Pearson Correlation	.309(**)	.466(**)	.374(**)	.411(**)	.393(**)	.440(**)	.569(**)	.422(**)	.564(**)	.585(**)	
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	N	631	634		631	633	620	634	636	633	635	633

** . Correlation is significant at the 0.01 level (2-tailed).

(Product Correlation Matrix)

Table 2.3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
4. My undergraduate classes allowed me to start my career with confidence.	55.95	99.480	.554	.493	.889
9. My undergraduate degree is central to my identity.	57.23	91.871	.599	.467	.888

11. I value OSU's heritage.	56.26	97.196	.535	.314	.890
13. The price for my education was more than fair.	55.79	100.944	.422	.316	.895
23. My undergraduate degree prepared me well to start my career.	56.03	94.534	.675	.575	.883
25. The money that was invested in [my education] was well spent.	55.62	97.971	.607	.467	.886
32. My [bachelors degree] is valued by employers.	56.16	96.192	.566	.361	.888
39. My [undergraduate business education] is a statement of who I am now.	56.97	89.984	.699	.592	.881
41. I received high quality classroom instruction as an undergraduate in the College of Business.	55.91	98.939	.627	.437	.886
49. My undergraduate business education helps me to be who I want to be.	56.24	93.636	.709	.537	.881
52. I feel a strong sense of gratitude to the College of Business at OSU	56.46	93.653	.704	.526	.881
53. My undergraduate business education has made me a better person	56.20	95.144	.628	.462	.885

(Product CA If Item Deleted)

Table 2.4

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.896	.898	11

(Product Alpha Rerun w/o 13)

Table 3.1

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.836	.842	7

(Company Alpha)

Table 3.2

Correlations

		5. My [college] understands my needs.	8. I value relationships with faculty members of the COB at Oregon State.	12. The faculty at [OSU] is among the best.	17. The College of Business cares about my opinions.	24. [OSU] is interested in my personal development.	29. If I had a professional problem or question, I would be very comfortable seeking the advice of a faculty member at [OSU].	38. I can imagine being friends with College of Business faculty members.
5. My [college] understands my needs.	Pearson Correlation	1	.318(**)	.452(**)	.433(**)	.460(**)	.299(**)	.327(**)
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	627	611	595	606	609	624	616
8. I value relationships with faculty members of the COB at Oregon State.	Pearson Correlation	.318(**)	1	.429(**)	.403(**)	.429(**)	.456(**)	.516(**)
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	611	622	594	601	606	620	612
12. The faculty at [OSU] is among the best.	Pearson Correlation	.452(**)	.429(**)	1	.456(**)	.465(**)	.401(**)	.366(**)
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	595	594	606	590	594	603	597
17. The College of Business cares about my opinions.	Pearson Correlation	.433(**)	.403(**)	.456(**)	1	.565(**)	.353(**)	.414(**)
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	606	601	590	615	604	613	606

24. [OSU] is interested in my personal development.	Pearson Correlation	.460(**)	.429(**)	.465(**)	.565(**)	1	.430(**)	.374(**)
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	609	606	594	604	618	616	608
29. If I had a professional problem or question, I would be very comfortable seeking the advice of a faculty member at [OSU].	Pearson Correlation	.299(**)	.456(**)	.401(**)	.353(**)	.430(**)	1	.601(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	624	620	603	613	616	634	623
38. I can imagine being friends with College of Business faculty members.	Pearson Correlation	.327(**)	.516(**)	.366(**)	.414(**)	.374(**)	.601(**)	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	616	612	597	606	608	623	627

** Correlation is significant at the 0.01 level (2-tailed).

(Company Correlation Matrix)

Table 3.3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
5. My [college] understands my needs.	26.70	45.068	.494	.312	.828
8. I value relationships with faculty members of the COB at Oregon State.	27.33	38.219	.610	.390	.810
12. The faculty at [OSU] is among the best.	26.75	43.985	.582	.369	.818
17. The College of Business cares about my opinions.	26.80	41.171	.601	.427	.811
24. [OSU] is interested in my personal development.	27.34	40.967	.615	.441	.809
29. If I had a professional problem or question, I would be very comfortable seeking the advice of a faculty member at [OSU].	27.92	37.068	.618	.474	.810
38. I can imagine being friends with College of Business faculty members.	27.46	36.714	.643	.504	.805

(Company CA If Item Deleted)

Table 4.1

Reliability Statistics

Cronbach's Alpha	N of Items
.855	3

(Other People Alpha)

Table 4.2

Correlations

		6. I share a common bond with [OSU] alums.	22. I have good friends who are [OSU] alums.	35. I feel a sense of kinship with other OSU alums.
6. I share a common bond with [OSU] alums.	Pearson Correlation	1	.619(**)	.677(**)
	Sig. (2-tailed)		.000	.000
	N	631	630	630
22. I have good friends who are [OSU] alums.	Pearson Correlation	.619(**)	1	.693(**)
	Sig. (2-tailed)	.000		.000
	N	630	635	634
35. I feel a sense of kinship with other OSU alums.	Pearson Correlation	.677(**)	.693(**)	1
	Sig. (2-tailed)	.000	.000	
	N	630	634	636

** Correlation is significant at the 0.01 level (2-tailed).

(Other People Correlation Matrix)

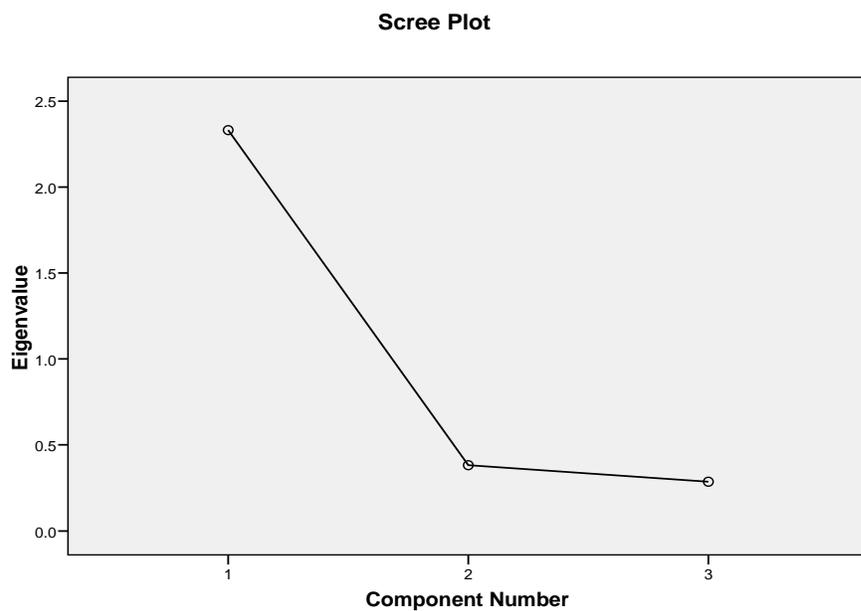
Table 4.3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
6. I share a common bond with [OSU] alums.	10.52	10.591	.702	.821
22. I have good friends who are [OSU] alums.	9.62	10.434	.718	.805
35. I feel a sense of kinship with other OSU alums.	10.13	11.070	.765	.765

(Other People CA If Item Deleted)

Table 5.1

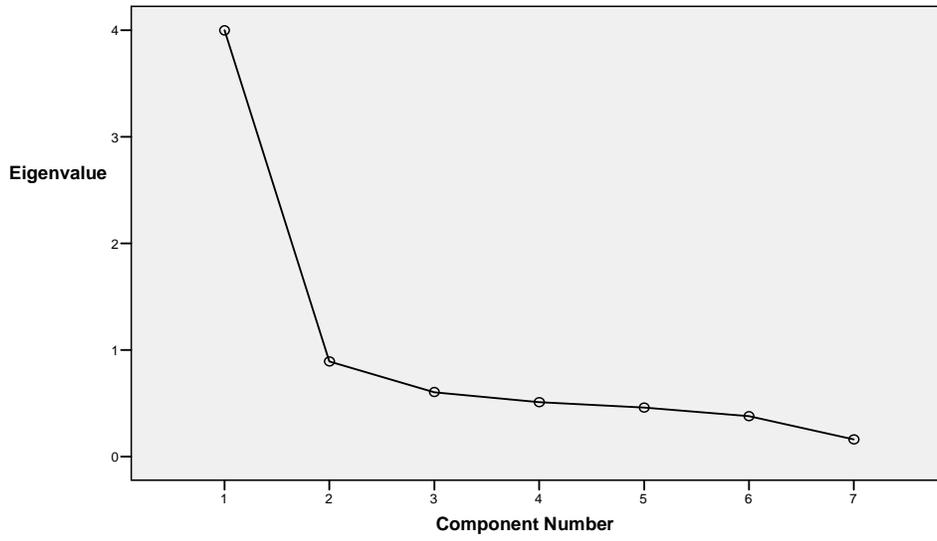


(Other people factor

analysis)

Table 5.2

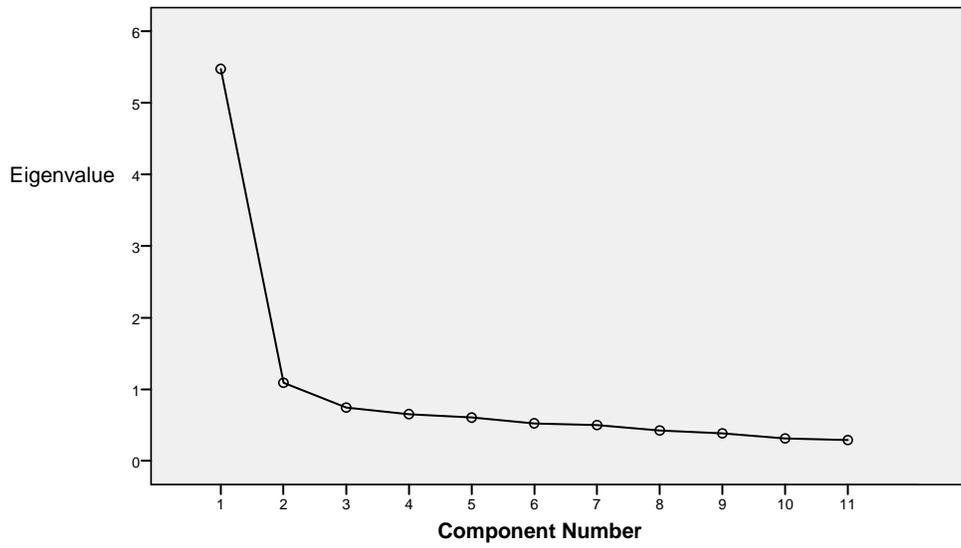
Scree Plot



(Brand Factor Analysis)

Table 5.3

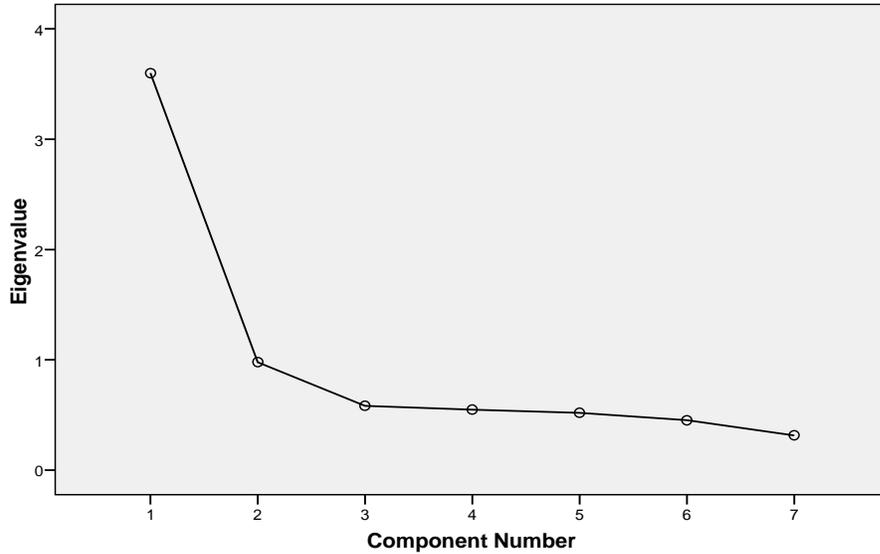
Scree Plot



(Product Factor Analysis)

Table 5.4

Scree Plot



(Company Factor Analysis)

Table 6.1

		47. I am a Beaver Believer.	17. The College of Business cares about my opinions.	23. My undergraduate degree prepared me well to start my career.	BR 11141620 334345 no BBelieve	Comp 0508122 42938 no cares	prod 09103239 495253 no23 start career	Other People
47. I am a Beaver Believer.	Pearson Correlation	1	.345(**)	.280(**)	.718(**)	.350(**)	.456(**)	.443(**)
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	631	609	626	582	561	606	623
17. The College of Business cares about my opinions.	Pearson Correlation	.345(**)	1	.419(**)	.514(**)	.601(**)	.490(**)	.354(**)

	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	609	612	607	569	556	588	607
23. My undergraduate degree prepared me well to start my career.	Pearson Correlation	.280(**)	.419(**)	1	.485(**)	.533(**)	.618(**)	.392(**)
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	626	607	629	582	561	606	621
BR 11141620334345 no BBelieve	Pearson Correlation	.718(**)	.514(**)	.485(**)	1	.566(**)	.713(**)	.588(**)
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	582	569	582	585	539	564	578
Comp 050812242938 no cares	Pearson Correlation	.350(**)	.601(**)	.533(**)	.566(**)	1	.626(**)	.409(**)
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	561	556	561	539	564	550	560
prod 09103239495253 no23 start career	Pearson Correlation	.456(**)	.490(**)	.618(**)	.713(**)	.626(**)	1	.411(**)
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	606	588	606	564	550	609	602
Other People	Pearson Correlation	.443(**)	.354(**)	.392(**)	.588(**)	.409(**)	.411(**)	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	623	607	621	578	560	602	626

Table 6.2

		BR 111416203 34345 no BBelieve	Comp 05081224293 8 no cares	prod 09103239495 253 no23 start career	Other People
BR 11141620334345 no BBelieve	Pearson Correlation	1	.566(**)	.713(**)	.588(**)
	Sig. (2-tailed)		.000	.000	.000
	N	585	539	564	578
Comp 050812242938 no cares	Pearson Correlation	.566(**)	1	.626(**)	.409(**)
	Sig. (2-tailed)	.000		.000	.000
	N	539	564	550	560
prod 09103239495253 no23 start career	Pearson Correlation	.713(**)	.626(**)	1	.411(**)
	Sig. (2-tailed)	.000	.000		.000
	N	564	550	609	602
Other People	Pearson Correlation	.588(**)	.409(**)	.411(**)	1
	Sig. (2-tailed)	.000	.000	.000	
	N	578	560	602	626
7. I truly enjoyed my time at OSU.	Pearson Correlation	.489(**)	.348(**)	.352(**)	.474(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	582	562	606	625
15. I followed the Beaver's play in the 2006 College World Series very closely.	Pearson Correlation	.445(**)	.184(**)	.248(**)	.323(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	584	563	608	625
18. OSU provided me an ideal university experience.	Pearson Correlation	.600(**)	.417(**)	.485(**)	.426(**)

	Sig. (2-tailed)	.000	.000	.000	.000
	N	581	561	606	622
19. In the future, I could see myself donating money to OSU.	Pearson Correlation	.634(**)	.445(**)	.459(**)	.416(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	581	560	604	621
21. If I were to have children I would want them to go to OSU.	Pearson Correlation	.638(**)	.387(**)	.491(**)	.332(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	584	561	607	623
26. I will likely add to my OSU wardrobe this year.	Pearson Correlation	.570(**)	.303(**)	.380(**)	.372(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	583	562	608	624
28. I would like to be involved with an OSU alumni group.	Pearson Correlation	.479(**)	.475(**)	.414(**)	.390(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	583	562	607	624
30. I would recommend OSU to my friends.	Pearson Correlation	.677(**)	.511(**)	.561(**)	.380(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	584	564	609	625
34. I am very satisfied with my OSU experience.	Pearson Correlation	.601(**)	.506(**)	.540(**)	.449(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	584	562	608	624
36. I enjoy talking to people about OSU.	Pearson Correlation	.717(**)	.434(**)	.534(**)	.506(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	578	563	602	618
40. I am very satisfied with the [education within my	Pearson Correlation	.536(**)	.598(**)	.654(**)	.321(**)

major].					
	Sig. (2-tailed)	.000	.000	.000	.000
	N	585	564	608	625
42. I am proud to be a fan of OSU football.	Pearson Correlation	.600(**)	.283(**)	.373(**)	.355(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	584	563	605	622
46. I enjoyed my classes at [OSU].	Pearson Correlation	.469(**)	.516(**)	.459(**)	.285(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	582	561	607	623
48. My family is proud that I graduated from Oregon State.	Pearson Correlation	.552(**)	.317(**)	.466(**)	.366(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	583	563	608	624
50. I believe annual contributions of \$20 to \$50 make a difference to the OSU College of Business.	Pearson Correlation	.495(**)	.487(**)	.516(**)	.317(**)
	Sig. (2-tailed)	.000	.000	.000	.000
	N	574	557	595	612