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**Determining the Student Services which Align with Undergraduate Student Expectations
A Study of Student Perceptions and University Service Delivery**

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ABSTRACT

Extant research demonstrates that student support services are a vital link in the success of students and a major component in student persistence to graduation. This paper reports the results of an empirical study examining enrolled undergraduate student attitudes and expectations regarding student services at two-similarly-sized universities in a major metropolitan area in the southwestern United States. Using survey data and a sample of several hundred students at each school, it analyzes their knowledge of and attitudes about student services, such as health services, career counseling, computer laboratories, student organizations and clubs, and sporting events. This study compares student perspectives at private versus public universities and further analyzes possible differing student needs and expectations that may occur among various student demographic groups. The results of this study are important for several reasons. First, it compares student and administrator perspectives on university services to see if they are similar or if there are possible differences in their views. Since the data informs universities about student attitudes and expectations, the data can help universities to do a better job in aligning services to student perceived needs. Second, the study tests the view that students at private universities may have higher expectations of services versus public university students, and then we explore possible differences between various student demographic groups, clarifying how the needs and expectations may differ among these demographic groups. Finally, the results can help universities to determine the services that are viewed as most critical and invest in those services which are more successfully attracting and retaining those students.

Keywords: student services, university services, student expectations, quality function deployment

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1. Introduction

Many universities face challenging times especially in areas such as enrollment and retention of students (Adams, 2011). The media regularly reports a bursting of the “education bubble” declaring the end of steadily increasing enrollment and growth. Due to rising costs, difficulties repaying student loans, and an economy that according to some continues weak growth at best, students are struggling to afford higher education. Increasingly, they expect more from universities before they (and in some cases parents) are willing to invest their time and money at any given school. These new challenges may be even greater for public universities that must also contend with declining state budget revenues forcing them to make up the shortfall with student tuition dollars (Adams, 2011). The result is that universities must compete more actively to attract and retain student enrollment and the revenue that such enrollment brings. Accordingly, universities must work harder to meet student needs and expectations. Indeed, researchers are calling for institutions of higher education to focus more on operating like businesses, with a focus on attracting and retaining students and doing so in a financially efficient manner (Liu and Tsai, 2014; Beer, 2011).

It is not enough to simply attract new students; universities have to retain those students until they graduate. The American Council on Education (ACE) reports that a substantial portion of incoming students will not finish their program of study and graduate (Cook and Pullaro, 2010). This makes student retention an urgent and important issue for schools of higher education. The ACE also argues that retention is a key criterion in institutional accountability and that graduation rates are one of the most important factors in student school choice (Cook and Hartle, 2011; Cook and Pullaro, 2010). In addition to its increasing use as a measure of institutional effectiveness, student retention is important to the continued economic viability of educational institutions (Braxton, 2008). Retaining students and moving them toward degree completion are important requirements in some states for securing funding (*Performance Based Funding for Higher Education*, 2015) and may be a factor in attracting students. A more basic reason for retention is that students who stay continue to pay tuition. This means that colleges and universities have to better understand the factors that lead to increased student retention and find ways to positively affect retention.

2. Literature Review

In his seminal 1975 paper, Tinto (Tinto, 1975) argued that student dropout was the consequence of insufficient integration and insufficient affiliation with the university. His theories suggest that while students do arrive with prior educational preparation and life experiences as well as outside influences with support systems, a major factor in student retention is that the school provides to help students to integrate into the requirements and expectations of college participation in the activities and services. This will increase their personal affiliation with the institutional social system. Essentially, Tinto (Tinto, 1975) further suggests that student retention is tied not only to the student’s academic success or background factors but also to the student’s institutional experiences. These institutional experiences should serve to help students integrate into and feel a part of their college or university. Tinto’s ideas are widely accepted and have found repeated empirical validation. In fact, as Coll and Stewart indicate, “Tinto’s theory of college student departure has near paradigmatic stature...,” with hundreds of citations (Coll and Stewart, 2008: 41). Accordingly, researchers since have focused on empirically verifying, refining, and

expanding his conceptual work. According to Read, Archer, and Leathwood, student success in confronting and negotiating the guidelines and the directions of the game of university life will affect student success and retention (Read, Archer and Leathwood, 2003). Adams notes that only half of incoming freshmen will eventually graduate and suggests that university should invest in services which can be more cost-effective because they help to retain students and tuition dollars provided by those students (Adams, 2011). In addition to faculty, students can engage with a variety of student offices and services which will also successfully integrate them into the university environment. University services fill an important need for students in terms of connecting them to the university and helping guide them through the higher-educational process (Drake, 2011; Kuh, Kinzie, Whitt and Associates, 2005).

There is a growing body of research on the importance of student services in student retention and some extant literature on which services contribute the most to student success and retention. Parker argued that key factors in student retention included, counseling services, tutoring, teaching..., but goes on to suggest that there is a need for research to "...improve student services – and to better understand student needs" (Parker, 1999: 4). Lau suggests that important university services include the availability and quality of tutoring services, disability services, physical facilities, study rooms, career services, computer labs and technologies, academic advising, and social and professional organizations (Lau, 2003). Haddow and Jayanthi empirically demonstrate that library use is a key student service associated with student retention and perhaps more importantly that the empirical relationship suggests the sooner students began to use this service, the greater the likelihood that the student would remain in school (Haddow and Jayanthi, 2010). Grallo, Chalmers and Baker add to this by demonstrating that one of the most important library services is providing valuable information to students in terms of how to navigate the university environment not just the availability of academic knowledge (Grallo, Chalmers and Baker, 2012). It is, therefore, important for universities to understand and provide the services that will be most useful to students in successfully completing their program of study. This is a challenging proposition considering that students are not the same and will have differing needs and perceptions of student services. In other words, the same set of services may be viewed differently by the diverse perceptions of students. For example, offering sports clubs for students may not interest students who are not sports oriented. This suggests a broad range of services are needed which then create the two-fold challenge of need for potentially increasing costs to deliver more services. In addition, research suggests that there may be critical differences in the key retention factors for non-traditional versus traditional college students (Barefoot, 2004; Pascarella, Pierson, Wolniak and Terezini, 2004). Older, returning students may have different needs than younger students arriving directly from high school. Research also shows that there are differences in the factors that contribute to retention for distance-learning students versus on-campus students. In laying out a structured approach for schools to employ in increasing student retention, Kalsbeek argues that "[r]etention strategy begins with institutional self-awareness" (Kalsbeek, 2013: 101).

Moreover, Yorke reminds us that it is vitally important for institutions of higher-education to understand how students view the school's efforts at increasing student engagement (Yorke, 2004). We shouldn't simply take for granted that students are cognizant of the available services, the importance of those services, or even that such support services are available to them. While support services are widely recognized as important, Zepke and Leach note that these services are costly and may not be utilized by the students whom are designed to be served. Public universities, in particular, are increasingly caught in a "double bind" (Zepke and Leach, 2010). On the one hand, university services are clearly linked to the attraction and retention of students,

but on the other hand, increasingly tight budgets mean that these schools need to be certain that every dollar spent on services actually produces the desired results.

This suggests a need for schools to focus tight budgets on investing in those services that are most needed which can directly contribute to student success and retention. Schools also need to determine how knowledgeable students may be about the availability of student services and the importance of making use of the services most closely associated with student success and persistence to complete a program of study. In short, these needs create the argument for further research into student knowledge what student services are available and why they are important to the student. Additionally, there is a need to evaluate the student perspective on the quality and importance of specific services. This study adds to the extant research literature by examining student perspectives on support services and by comparing and contrasting those perspectives among students in a private university with a residential campus with those of a public university with a commuter student body – both located in the same city. By using two schools in the same city, the study seeks to minimize the possibility of regional or cultural differences among students to increase the focus on differences between public and private university students and between residential versus commuter and distance-learning students.

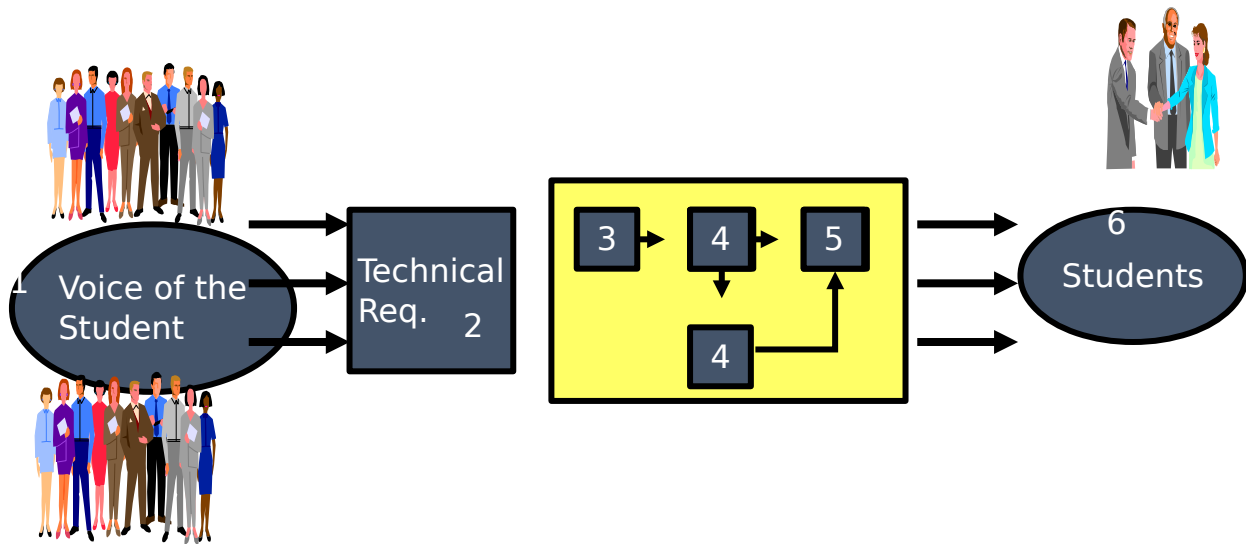
3. Methodology

In order to organize the university student support systems into the most meaningful structure, we use a technique called cluster analysis to analyze the observed data since we do not have any a priori assumption on the student service systems as well as develop taxonomical student service systems. Through the recognition of students' opinions and behavior patterns, institutions can provide an education environment which maintains a better quality of service. The term *cluster analysis* was first introduced in anthropology by Driver and Kroeber (Driver and Kroeber, 1932) and prominently used by Cattell (Cattell, 1943). It is a technique used to classify objects into relative groups called clusters; it is also called classification analysis or numerical taxonomy. This analysis is an exploratory data analysis tool which aims at sorting different objects into group. If they belong to the same group, the degree of association between two objects will be maximal; if they do not belong to the same group, the degree of that will be minimal. Since “clustering” is a collection of different algorithms putting objects into groups based on the well-defined similarity rules, this technique does not provide any typical statistical significance test like other statistical procedures/methods. The point here is that we can discover the structures in data without providing any interpretations.

In this study, we use Minitab 16 to perform our Cluster Analysis. The Cluster Analysis in Minitab 16 is an algorithm for finding the hierarchies within the variables. These hierarchies display as clusters. The data is clustered because of the same responses that students react to the support systems. The variables with the highest degree of relationship will be clustered together as step 1. Then, the variable with the highest relationship to the first cluster will be added for the step 2 cluster, now consisting of three variables. This process continues until all of the variables entered into the program have been assigned into a cluster in the hierarchy. By using this method, we can easily see how students responded to the different support systems which are paired in their minds and therefore the attentions on those support systems need to be increased to match the demographics of the students.

After examining the cluster analysis of frequency use, we look at the amalgamation table in the form of a tree diagram (*see*: example on Figure 4 and 5 on “Data Analyses and Discussion” section below) and decide to partition those university systems into three different groups. We recommend that the decision makers in any academic institution combine the information (i.e. the frequency use and the importance from students’ perspectives) and implement them into the concept of Quality Function Deployment (QFD), which was developed by Dr. Yoji Akao and Shigeru Mizuno, the founder of the Quality Function Deployment Institute, since universities must compete more actively to attract and retain student enrollment and the revenue that such enrollment brings (Evans and Lindsay, 2011). QFD is a method to transform users’ qualitative demands into quantitative parameters and to deploy the functions forming the specific elements of the quality (Akao and Mizuno, 1994). Here, we provide a prototype and the basic steps of QFD (*see*: Figure 1 below) which represents a basic functional design involving translating students’ requirements into measurable technical requirements and subsequently, into detailed design specifications. Here, we recommend to use the House of Quality, (*see*: Figure 2 below) to achieve the purpose of fulfill students’ needs. House of Quality is a subset of QFD, which was first adopted by Mitsubishi’s Heavy Industries in 1972 in the design of an oil tanker (Hauser & Clausing, 1988) and then was famously adopted by Toyota in 1978 (Evans and Lindsay, 2011). The output of the House of Quality can identify the importance of students’ needs/desires, identify the university’s supports which may be relevant to those needs/desires, and correlate these two to assign objectives and priorities regarding university service delivery (Larson, Kirkpatrick, Sellers, Thomas and Verma, 2009).

Figure 1. Prototype of QFD: Quality Function Deployment



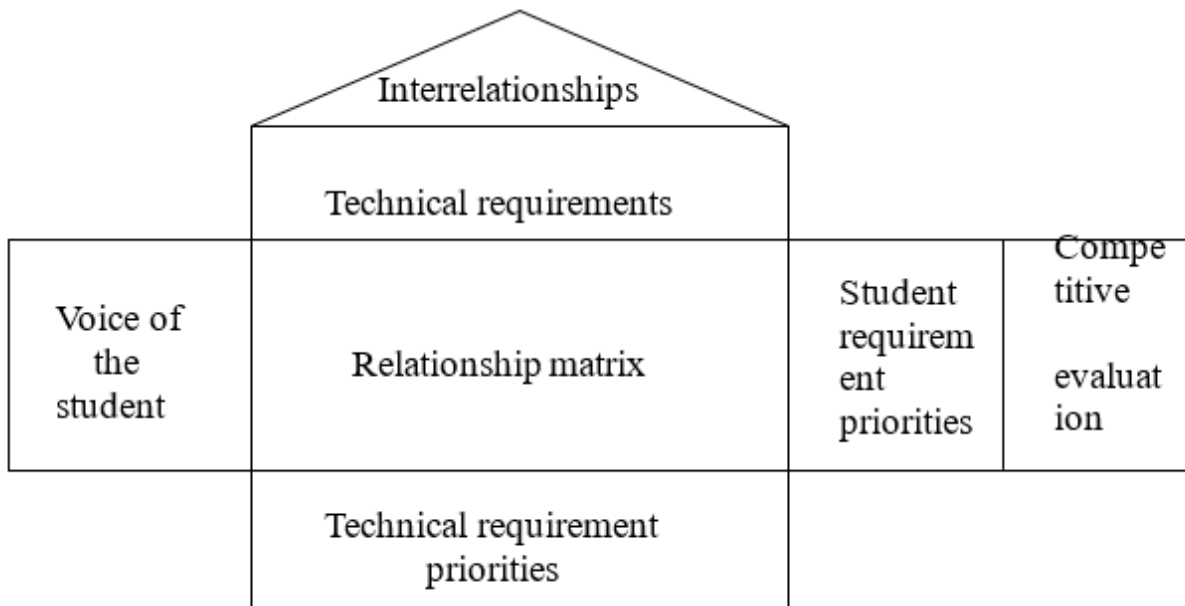
Source: Evans and Lindsay, 2011.

Six basic steps of QFD:

1. Identify customer requirements (i.e. Voice of the Students).
2. Identify Technical Requirements.
3. Relate the customer requirements to the Technical Requirements

4. Conduct an evaluation of the competing products or services.
5. Evaluate technical requirements and develop targets.
6. Determine which technical requirements to deploy.

Figure 2. The Matrix of the House of Quality



Source: Evans and Lindsay, 2011.

3.1. Data Description

This paper reports the results of an empirical study examining enrolled student attitudes and expectations regarding important university services at two similarly-sized universities (*see*: Table 1) in the same major metropolitan area in the southwestern United States. Since these two universities share the same geographic location and have the similar social, political, religious, and economic backgrounds, it is interested to see and compare how the students from two different types (i.e. private vs. public) of institutions view these university support services. As is well known that private schools have charged a higher tuition, which is in alignment with higher expectations from students; in contrast to the public schools, the expectations are relatively lower since students do not demand the same kind of educational excellence as those in the private schools (Bracey, 2002).

Table 1. Comparison of two universities (information based on 2015-2016 academic year)

—	Private Institution	Public Institution
Year Founded	1895	2009
# of Enrollments	3334	4,511
Male-to-Female Sex Ratio	1 to 2.3	1 to 1.6

Ethnicity (White/Hispanic/Black/Other)	21% /57% /14% /8%	21% /67% /6% /6%
First-Generation College Students	N/A	76 %
Class Size	Up to 25	Up to 36 (HyFlex only – up to 75)*
Residence Hall	Yes	None (the 1 st residence Hall will open in Fall 2017)
Undergraduate Tuition and Fees	\$24,596	\$6213 (in-state) \$15,203 (out-state)

* HyFlex allows students to attend a class either in-person, online, or watching the lecture recording.

Source: from the schools' websites

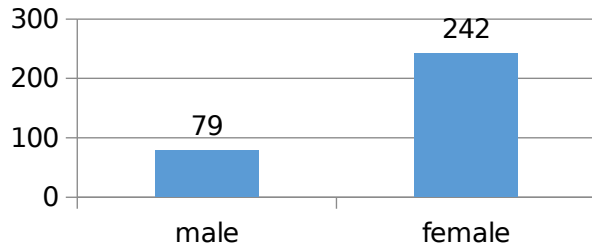
Our data set contained 321 and 281 valid respondent surveys from one private and one public institution, respectively. The students were asked to rank the 17 support systems as either Very Important, Important, Neutral, Unimportant, or Very Unimportant. The student support systems in consideration were the Professors, Center for Academic Success tutoring, Writing Center, Librarians, Mental Health Counselors, Resident Assistants, University Ministry, Academic Advisors, Financial Aid Department, the Gym Equipment and UWAC, Computer Labs and Printers, University Health Services, Campus Activities and Events, University Clubs, Organizations, and Teams, Career Services, Student Employment, Campus Police, and Campus Dining. These are the most publicized support systems; some may group many services under one system, making the reference and inclusion of them pertinent and simple. Separately and independently from the first ranking, the students were asked to select how frequently they use these support systems as either Frequently, Sometimes, or Never. Data for both types of institutions are illustrated in the following section and followed by the results from these rankings. On the end, this study compares student expectations and attitudes at private versus public universities and analyzes possible differing student needs and expectations that may occur among various student demographic groups.

3.2. Data Analyses and Discussion

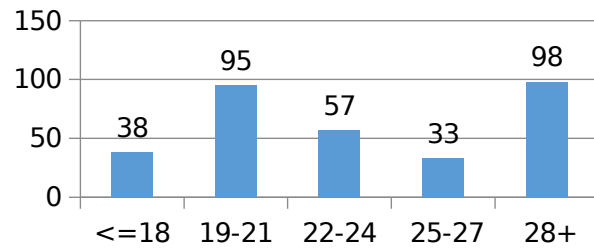
Private institution (N=321 who have agreed to participate and completed this study). The initial responses from the private institution were 362 students; however, 41 of those did not complete the entire survey, so their responses were discarded. Among those 321 valid respondents, majority group of the data set is indicated as follows: 75% are female, 31% are age 28 and above, 63% are Hispanic, 68% are commuters, 31% are juniors, 61% take between 13 and 18 hours, and 67% attend neither the Night nor Weekend College. Graphs showing the descriptive statistics of students' background are in the following section (*see*: Figure 3 below).

Figure 3. Students' background in private institution

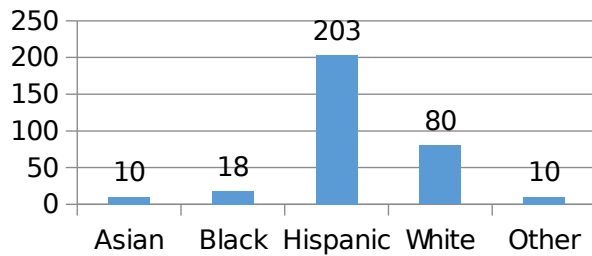
Gender



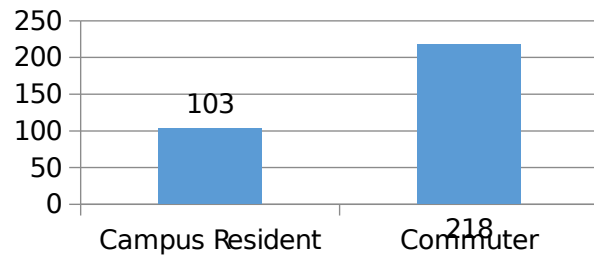
Age



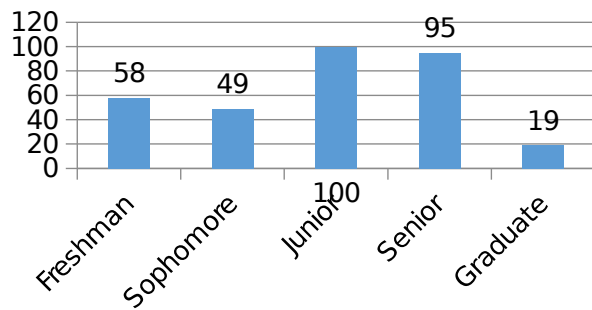
Ethnicity



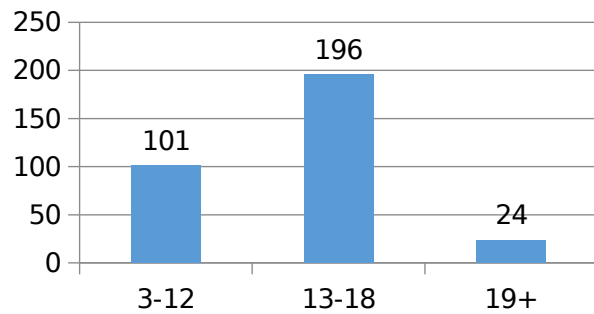
Residency



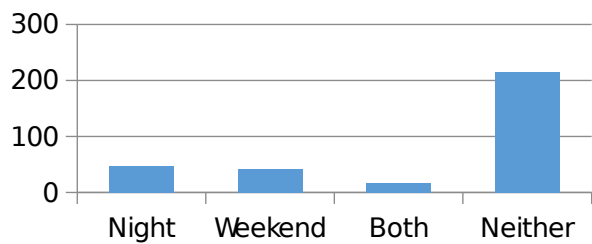
Class



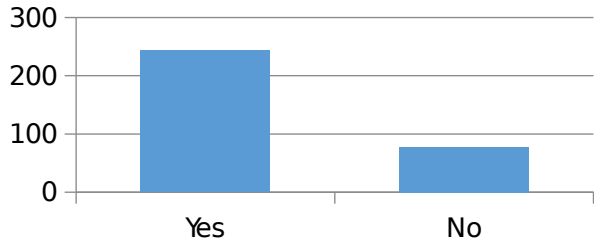
Hours Taken



Night/Weekend Class

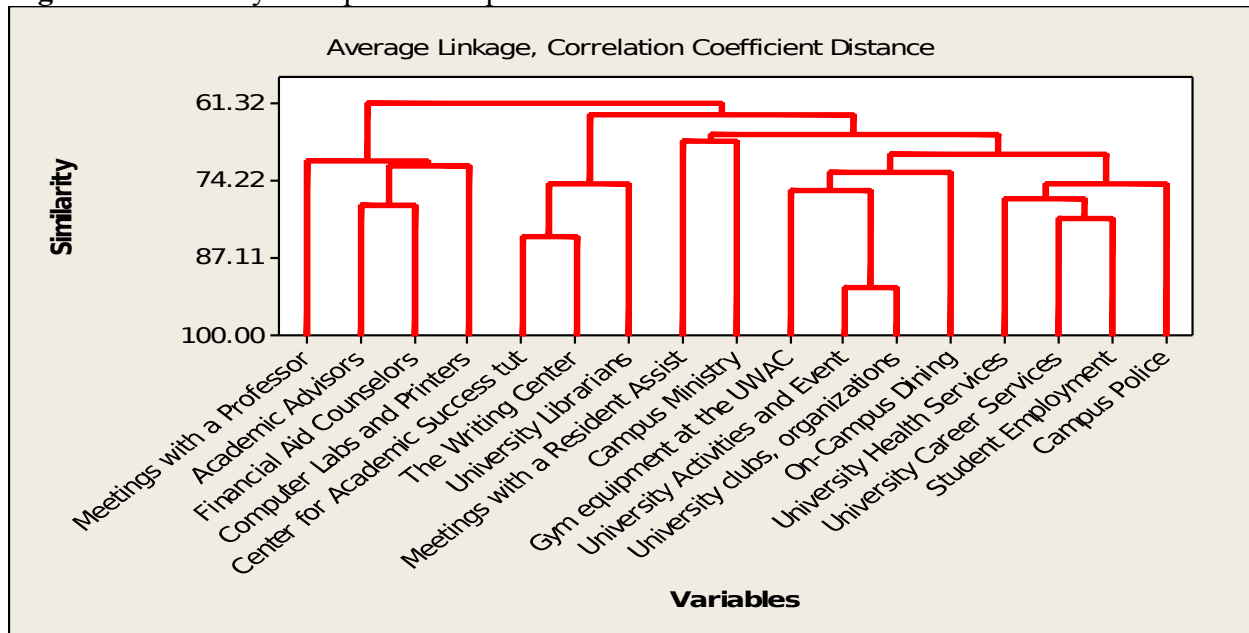


Needs Fully Met



Based on the Tree Clustering Analysis (*see*: Figure 4), the students ranked each support system by how important they think the system is to them. The system “University Activities and Events” is grouped in terms of importance with the “University Clubs, Organizations, and Teams” with the most similarity of 92.19%. The next grouping is the “Center for Academic Achievement” and “Writing Center,” and the third grouping with the closest ranking in importance is the “University Career Services” and “Student Employment.” These new groups will continue to group with other support service which is the next closest ranking in importance.

Figure 4. Hierarchy of importance – private institution



The students responded to the support systems in terms of how frequently they use the services. The two systems with the most similarity are “University Activities and Events” grouped with “University Clubs, Organizations, and Teams.” The second highest grouping in frequency of use is the “Center for Academic Achievement” and “Writing Center.” The third closest frequency group is the new cluster of “Activities, Clubs, Organizations, and Teams” with “On-Campus Dining,” which confirms that a comfortable full of atmosphere with meals being a chance for students hanging out with their friends and hosting an activity (Pittman, 2012). Students will seek for a place to hang out and build their social life and network. Overall, the frequency of use on the University system has been grouped into the three major categories: school, academic support service, and student life. Therefore, we decide to use three as a final partition when we performance the cluster analysis on the Frequency of Use data so that the Tree Clustering Analysis (*see*: Figure 5) will exhibit in different colors by different clusters.

Figure 5. Hierarchy of frequency of use – private institution

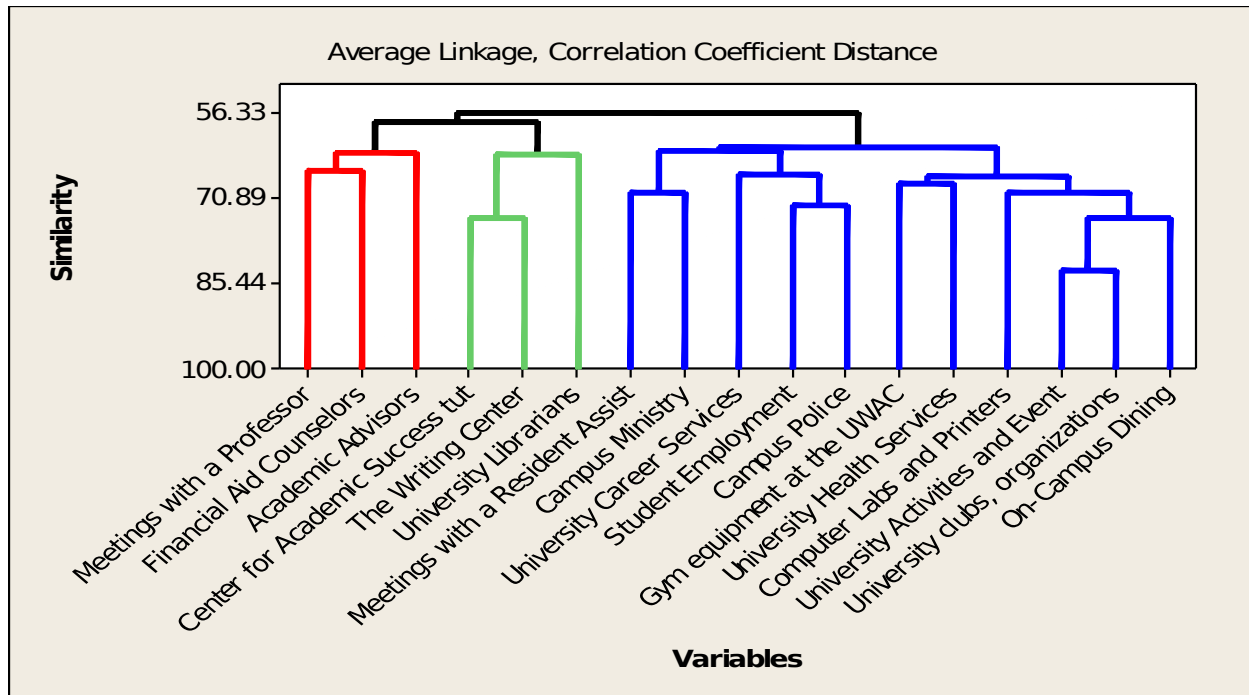


Table 2 shows the importance of the university services (which is the sum of “very important” and “important” rated by students) and the frequency of the use from majority students or the largest group from the students. By comparing these two data sets, we can understand the enrolled students’ attitudes and expectations regarding important university services. For instance, more than 90% of respondents (or students) have rated “Visiting Professors in the Offices” is either very important or important; however, majority of the students (i.e. 65.11%) said that they only use the service sometimes. The same situation also happens to the services of “Academic Advisors,” “Financial Aid Counselors,” and “Library.” For the service of “Campus Police” and “Health Services,” 72.90% and 67.29% of respondents, respectively, have rated the service is either very important or important; however, majority of the students (i.e. 51.09% and 41.43%) said that they never use the service. The service of “Computer Labs” is the only one that student behaviors match their perspectives. The comparison between these two sets of data shows a strong tendency for students to rank the systems they use the most often as very important than the systems they use the least. However, the complete trend suggests that the students find the importance of service is not always those they frequently use at school.

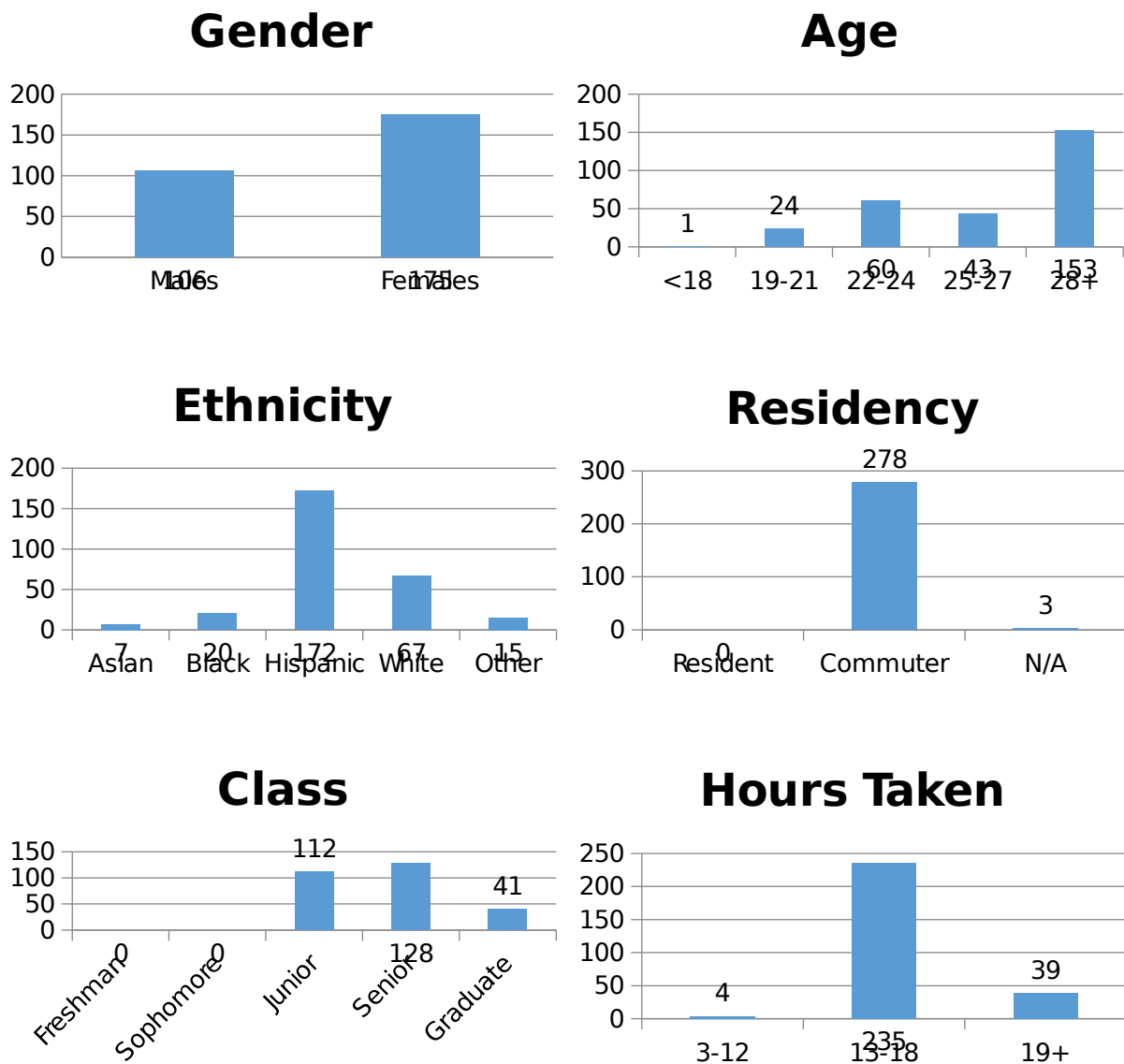
Table 2. Results from the two cluster analysis tests – private institution

System	Importance	Frequency	
Professors	91.90%	65.11%	Sometimes
Computer Labs	88.47%	65.11%	Frequently
Academic Advisors	85.05%	56.39%	Sometimes
Financial Aid Counselors	84.74%	56.07%	Sometimes
Campus Police	72.90%	51.09%	Never

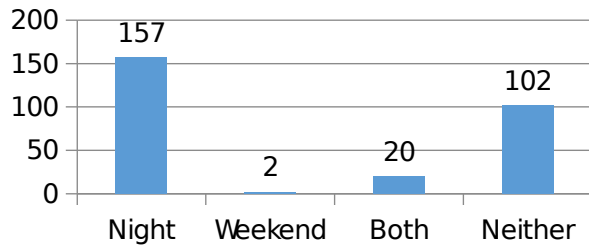
Library	70.09%	54.83%	Sometimes
Health Services	67.29%	41.43%	Never

Public institution (N=281 who have agreed to participate and completed this study). The initial responses from the public institution were 287 students; however, 7 of those did not complete the entire survey, so their responses were discarded. Among those 281 valid respondents, majority group of the data set is indicated as follows: 62% are female, 54% are age 28 and above, 61% are Hispanic, 99% are commuters, 46% are seniors, 84% take between 13 and 18 hours, and 56% attend the Night College (see: Figure 6 below).

Figure 6. Students' background in public institution



Night/Weekend Class



Needs Fully Met

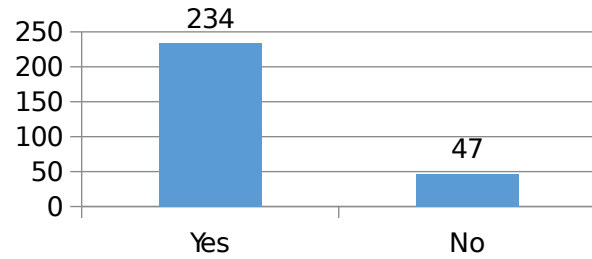


Figure 7 shows how public school students ranked each support system based on the importance of the function or service. The result is similar to the private school where “University Activities and Events” is also grouped with the “University Clubs, Organizations, and Teams” with the most similarity in terms of importance. However, the next grouping from the public school is the “Meeting with a Resident Assist” and “Campus Ministry”, and then followed by the grouping of the “Center for Academic Success” and “Writing Center.” As usual, these new groups will continue to group with other support service which is the next closest ranking in importance.

Figure 7. Hierarchy of importance – public institution

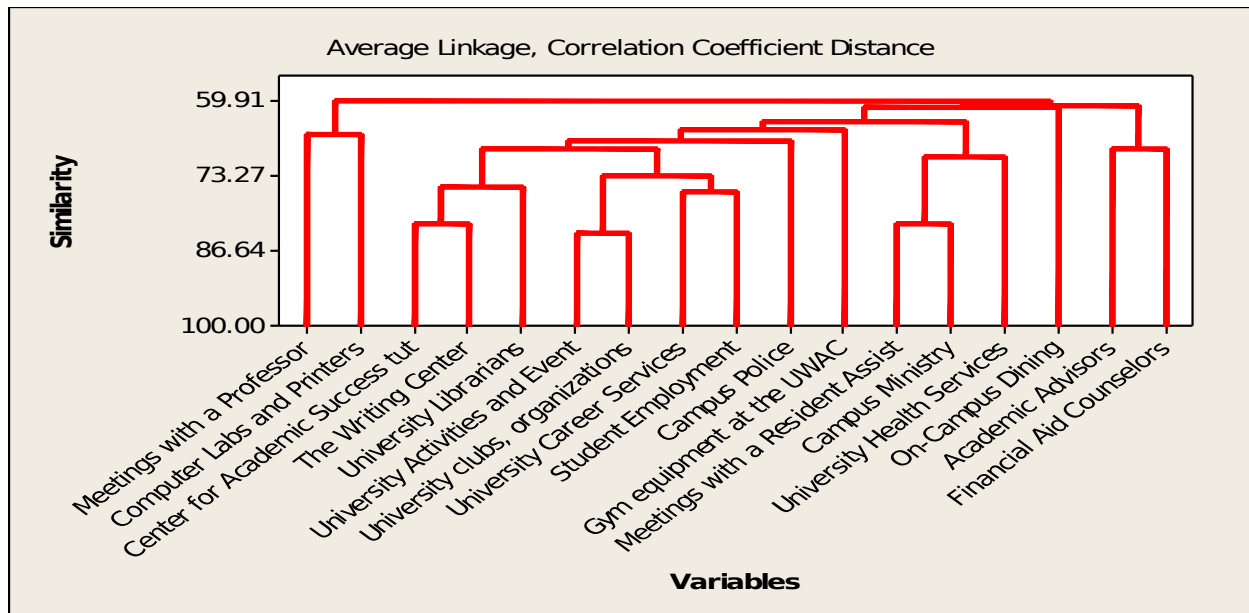


Figure 8 shows the frequency of the use. The systems “Meeting with a Resident Assistant” and “Campus Ministry” have been grouped together with the most similarity of 83.61%, which most students believe they are either “neutral” or “not applicable” to them, which reflects to the situation at the public school with no dormitory on campus. The next grouping is the “University Activities and Events” and “University Clubs, Organizations, and Teams.” The similarity is 81.93%, where most students believe they are either “important” or “neutral” to them. The following group is the “Center for Academic Achievement” and “Writing Center.” The students

responded to the support systems in terms of how frequently they use the services. The two systems “Meeting with a Resident Assistant” and “Campus Ministry” have been grouped together with the most similarity of 83.08%, which most students believe they are either “neutral” or “not applicable” to them. The next grouping is “University Career Services” and “Student Employment” ... *etc.* until the whole system becomes one. The final partition for the Cluster Analysis (if we still use three different categories) would be: Academic life (i.e. Meeting with a Professor, Gym, Computer Labs, University Activities, University Clubs/Organizations, and Campus Police); Student Life (i.e. Tutoring Center, Writing Center, University Librarians, Meeting with a Resident Assistant, Campus Ministry, University Health Services, Career Services, Student Employment, and On-Campus Dining); Advisory Service (i.e. Academic Advisors, Financial Aid Counselors).

Figure 8. Hierarchy of frequency of use – public institution

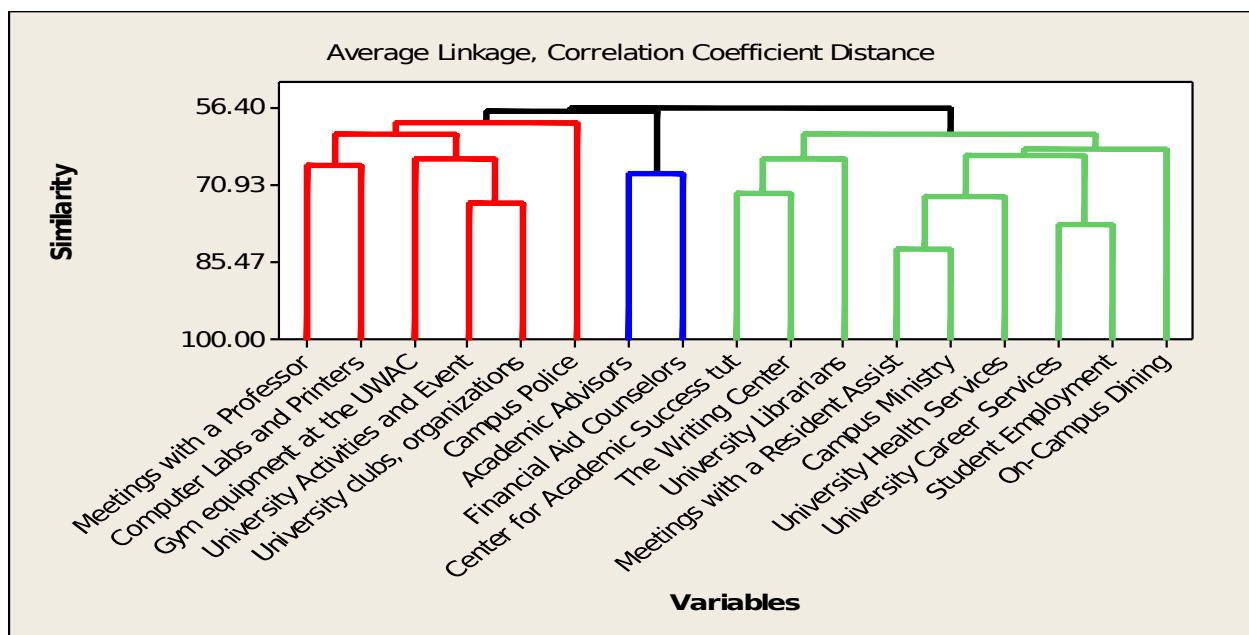


Table 3 summarizes the importance of the university services (which is the sum of “very important” and “important” rated by students) and the frequency of the use from majority students or the largest group from the students in the participated public institution. By comparing these two data sets, we noticed that the enrolled students’ attitudes are different from their expectations regarding which would be the important university services. For instance, more than 90% of respondents (or students) have rated “Academic Advisors” is either very important or important; however, majority of the students (i.e. 63.99%) said that they only use the service sometimes. The similar situation also happens to the services of “Visiting Professors in the Offices” and “Financial Aid Counselors.” For the services of “Tutoring Center” “Student Employment” and “Career Services” more than half of respondents have rated the service is either very important or important; however, majority of the students (i.e. 58.35%, 70.63%, and 60.84%, respectively) said that they never use the service. The service of “Computer Labs” is the only one that student behaviors match their perspectives, but still only less than half of the students use it frequently.

Table 3. Results from the two cluster analysis tests – public institution

System	Importance	Frequency	
Computer Labs	90.39%	49.30%	Frequently
Academic Advisors	90.04%	63.99%	Sometimes
Professors	82.92%	68.53%	Sometimes
Financial Aid Counselors	70.45%	46.85%	Sometimes
CAS Tutoring Center	58.01%	58.35%	Never
Student Employment	56.94%	70.63%	Never
Career Service	56.58%	60.84%	Never

Just like the students in the private institution, the comparison between these two sets of data shows a strong tendency for students' behaviors and conceptions. This suggests a need for schools to carefully use their tight budgets and focus on investing in those services that are most needed since this will also contribute to student success and retention. Schools also need to determine how knowledgeable students may be about the availability of student services and the importance of making use of the services most closely associated with student success and persistence to complete a program of study. In short, this argues for research into student knowledge on what student services are available and why they are important to the students. Additionally, there is a need to evaluate the student perspectives on the quality and importance of specific services. This study adds to the extant research literature by examining student perspectives on support services, and by comparing and contrasting those perspectives among students in a private university with a residential campus with those of a public university, with a commuter student body – both located in the same city.

4. Conclusions

The results of this study are important for several reasons. First, it demonstrates how the students view those university support services and how frequent they have been using those services. From those information, the administrator can better understand student attitudes and expectations. By adopting the concept of QFD and the matrix of the House of Quality, universities may do a better job in serving student needs. Second, the study also compares the expectation of students at private and public institutions. The finding shows that students at private universities may have higher expectations of services versus public university students. Finally, we also explore possible differences between various student demographic groups, clarifying how the needs and expectations may differ among these groups. Therefore, this study can help guide universities to be more successful in attracting and retaining the students and examining student perceptions of both the quality and importance of university services.

In sum, schools need to be certain that they are investing in the services that students most need and make certain that students know of the availability of these services. The findings from this study will allow schools to focus tight budgets on investing in services that are of the most use to

students. It will also, however, allow schools to better educate their students on the availability and importance of taking advantage of school services – particularly those that have been shown to most positively impact student success and retention.

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