

WIRELESS ACCEPTANCE IN A UNIVERSITY SETTING
USING THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY

by
Justin Franco Cetron

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in partial fulfillment of the requirements for the degree of Master of Science in Hospitality
Information Management

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By
Justin Cetron

Approved: _____
Cihan Cobanoglu, Ph.D.
Associate Professor, Department of Hotel, Restaurant and Institutional Management

Approved: _____
Frederick J. DeMicco, Ph.D.
Chair of the Department of Hotel, Restaurant and Institutional Management

Approved: _____
Timothy K. Barnekov, Ph.D.
Dean of the College of Human Services, Education and Public Policy

Approved: _____
Carolyn A. Thoroughgood, Ph.D.
Vice Provost for Research and Graduate Studies

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ABSTRACT

The purpose of this study was twofold: first, determine the acceptance of wireless technologies in a university setting based upon the constructs and items of the Unified Theory of Acceptance and Use of Technology UTAUT. Second, to determine from this data, the next wireless technology to point companies to insofar as marketing, and the next possible 'big thing in wireless technology overall. The research was conducted using a random sample drawn from the University of Delaware's student population; as it was dependent entirely upon whichever students the Office of the Registrar chose to select to be recipients of the survey. Students surveyed ranged from new freshman up to matriculated graduate students. The results were then tabulated using multiple methods and the data analyzed. The findings of this study clearly show a trend towards both young adults (18-20) and older students (23-Up). Each of the age brackets want wireless technology for different reasons, one for the 'hip' factor, and the other the performance factor respectively.

Furthermore, the next big thing in wireless is going to be a merging of these two worlds as well a little something else mixed in. We can already see some of this with the advent of the Ultra Mobile PC's and the Cell Phones that are more media centers, PDA's, Smart Phones, and Blackberry's all in one. Imagine a device that has the computing power of a small laptop, the multimedia abilities of an iPod, the ability to play live streaming video and TV, the out-of-office capabilities of a Blackberry, and the size of small Smart Phone. Take a look at some of the new phones coming to market now, the iPhone, the MotoMING, the Blackjack, and the Motorola Q. A device such as the iPhone above all is looking to do just that, merge a multitude of wireless technologies into one sleek device that has both excellent performance to appeal to the older crowd and is very stylish and will appeal to the younger crowd.

CHAPTER 1

INTRODUCTION

1.1 – Introduction

A little more than ten years ago, to see someone in the United States with a cell phone, a wireless enabled laptop, a personal data/digital assistant (PDA), or any similar type of wireless device, would be considered extremely rare. Cell phones themselves along with laptops were giant clunky things, almost defeating the purpose of being called ‘mobile’. Wireless cards, Wi-Fi, digital cell signals, no one had ever seen such things. Flash forward ten years and look at the difference. Miniaturizing the components on a chip has enabled wireless technology to leapfrog forward. As a result, what used to be a rare citing of a cell phone or laptop has now become commonplace for everyone to have as regular every day tools.

1.2 – Problem and Purpose

The purpose of this study is to look at the trend of wireless technologies, henceforth also referred to as WTs, and their acceptance by differing classes in a university setting. This study is seeking to predict the acceptance ratio of an array of wireless technologies and applications within the student population of the University of Delaware. The objectives that are being examined are the ability to predict where a possible next big ‘thing’ in the wireless technology products will occur, capture this prediction, and from that, ascertain which technologies are best to focus attention on. The proposed hypothesis’s are the following:

1. The influence of performance expectancy of wireless technologies on behavioral intention will be moderated by gender and age, such that the effect will be stronger for men and especially for younger men.

2. The influence of effort expectancy of wireless technologies on behavioral intention will be moderated by gender, age, and experience, such that the effect will be stronger for women, particularly younger women, and particularly at early stages of experience.
3. The influence of social factors towards wireless technologies on behavioral intention will be moderated by gender, age, voluntariness, and experience, such that the effect will be stronger for women, particularly older women, and especially in mandatory settings in the early stages of experience
4. A) Facilitating conditions of wireless technologies will not have a significant influence on behavioral intention.
B) The influence of facilitating conditions on usage of wireless technologies will be moderated by age and experience, such that the effect will be stronger for older workers, particularly with increasing experience.
(These are separated due to Facilitating Conditions being the only construct that can effectively bypass Behavioral Intention entirely and go right to as it is used in Usage Behavior)
5. Behavioral intention will have a significant positive influence on usage of wireless technologies .
6. The Unified Theory of Acceptance and Use of Technology or UTAUT will account for a significant percent of the variance (adjusted R^2) in usage intention of wireless technologies. (Adapted from Anderson & Schwager, 2004)

The limitations of this study are that the sample surveyed slightly over one thousand out of the total 18,108 possible students at the time. Also, out of the one thousand two hundred and fifty students surveyed, two hundred and fifty surveys were sent out to each class. Each class had differing numbers of students and therefore had to be weighted according to the number of respondents. The total numbers for the student population of *possible* survey recipients was: 2,866 Freshman, 3,541 Sophomores, 3,442 Juniors, 5,044 Seniors, and 3,215 Graduate Students (formally matriculated in MS or doctoral programs). A total of 154 surveys were returned and were able to be analyzed.

CHAPTER 2

LITERATURE REVIEW

2.1 – Definitions of terms used:

Wireless Technology - The term wireless technology is generally used for mobile IT equipment. It encompasses cellular telephones, personal digital assistants (PDA's), wireless networking, RFID technology, Blackberry's, laptops, and the like. Other examples of wireless technology include GPS units, garage door openers, wireless computer mice and keyboards, satellite television and cordless telephones. (Wikipedia.com)

RFID - (**R**adio **F**requency **I**Dentification) is data collection technology that uses electronic tags for storing data. The tag, also known as an "electronic label," "transponder" or "code plate," is made up of an RFID chip attached to an antenna. Transmitting in the kilohertz, megahertz and gigahertz ranges, tags may be battery-powered or derive their power from the RF waves coming from the reader. (PC Magazine, 2006)

Personal digital assistants – (**P**ersonal **D**igital **A**ssistant) A handheld computer for managing contacts, appointments and tasks. It typically includes a name and address database, calendar, to-do list and note taker, which are the functions in a personal information manager. Wireless PDAs may also offer e-mail, Web browsing and cellular phone service. Data are synchronized between the PDA and desktop computer via a cabled connection or wireless. (PC Magazine, 2006)

Blackberry – The all-in-one wireless data and voice device from Research in Motion, Ltd. (RIM), Waterloo, Ontario (www.blackberry.net). Available in cell phone and PDA sizes, these

popular devices extend the office to the road, providing e-mail, phone, text messaging, Web browsing, organizer (calendar, addresses, tasks, etc.), as well as paging, Yahoo instant messaging and corporate data access. A raft of third-party applications is also available. (PC Magazine, 2006)

Wireless MP3 player (i.e. Zune) – Zune refers to Microsoft's digital audio player, client software, and online music store released in the United States on November 14, 2006. With the device playing music, displaying videos and images, receiving FM radio, and sharing via wireless with other Zune's and via wire with Xbox 360s, televisions, or AV receivers, it connects to the Zune Software, allowing users to manage files on the player, to rip audio CDs, and to purchase songs online with the Zune Marketplace. (Wikipedia.com)

Smart Phone – A telephone with advanced information access features. It is a cellular telephone that provides digital voice service as well as any combination of e-mail, text messaging, pager, Web access, voice recognition, still and/or video camera, MP3, TV or video player and organizer. (PC Magazine, 2006)

2.2 – Evolution of the UTAUT

The basis for the Unified Theory of Acceptance and Use of Technology, or UTAUT, is the Technology Acceptance Model. The Technology Acceptance Model, or TAM, was developed by Fred D. Davis in 1986 as a doctoral dissertation when he was attending the Massachusetts Institute of Technology. The TAM is an adaptation of the Theory of Reasoned Action (TRA) to the field of Information Systems. The TAM posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use. Perceived usefulness is also seen as being directly impacted by perceived ease of use. What this means in terms of the TAM is that perceived usefulness has an equal affect on perceived ease of use, which enables them to balance each other out. Even before the TAM however, researchers removed the attitude construct found in Theory of Reasoned Action model, or TRA, to help form the current TAM. (Venkatesh, Morris, Davis, Davis, 2003). Attempts to extend TAM have generally taken one of three approaches: by introducing factors from related models, by introducing additional or alternative belief factors, and by examining antecedents and moderators of perceived usefulness and perceived ease of use (Wixom and Todd, 2005).

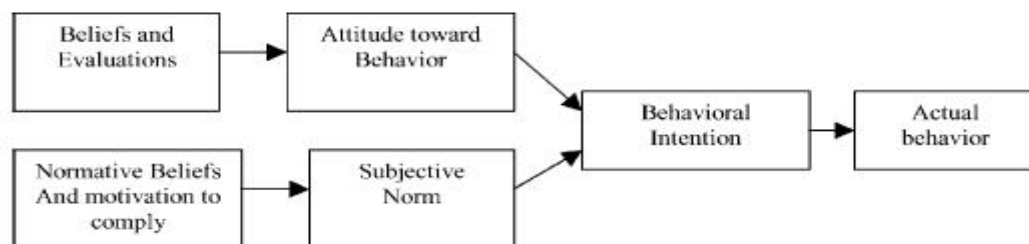


Figure 1: Theory of Reasoned Action Model

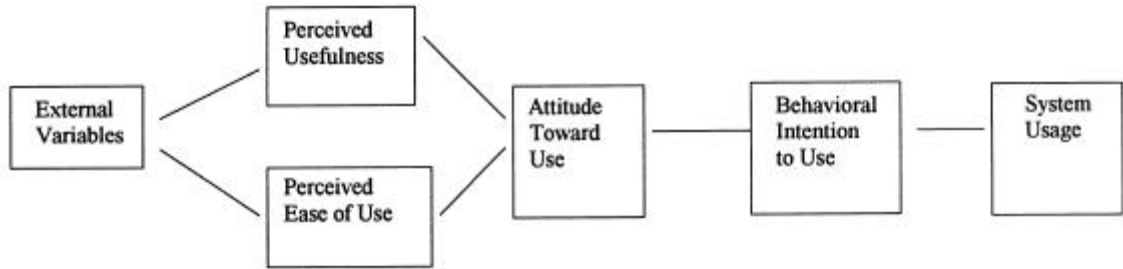


Figure 2: Technology Acceptance Model

Both the TRA and TAM have strong behavioral elements, which assume that when someone forms an intention to act, that they will be free to act without limitation. In practice however, constraints such as limited ability, time, environmental or organizational limits, and unconscious habits will limit the freedom to act.

Davis and Venkatesh (2000) came up with an extended model to further attempt to explain how factors can influence and effect the original TAM model, this became the Extended Technology Acceptance Model 2 (TAM2). What were added to the original TAM are the factors working on the Perceived Usefulness measure. These are Subjective Norms, Image, Job Relevance, Output Quality, and Result Demonstrability. These added constructs, pulled from the External Variables construct of the original TAM, allow for a greater understanding of what truly effects perceived usefulness. Adding these into TAM2 allows for an even greater understanding of the variance that might occur when these added factors were not measured originally in the TAM. There are also two factors working on Subjective Norm as it applies to both Perceived Usefulness and Intention to use; these two factors are Experience and Voluntariness.

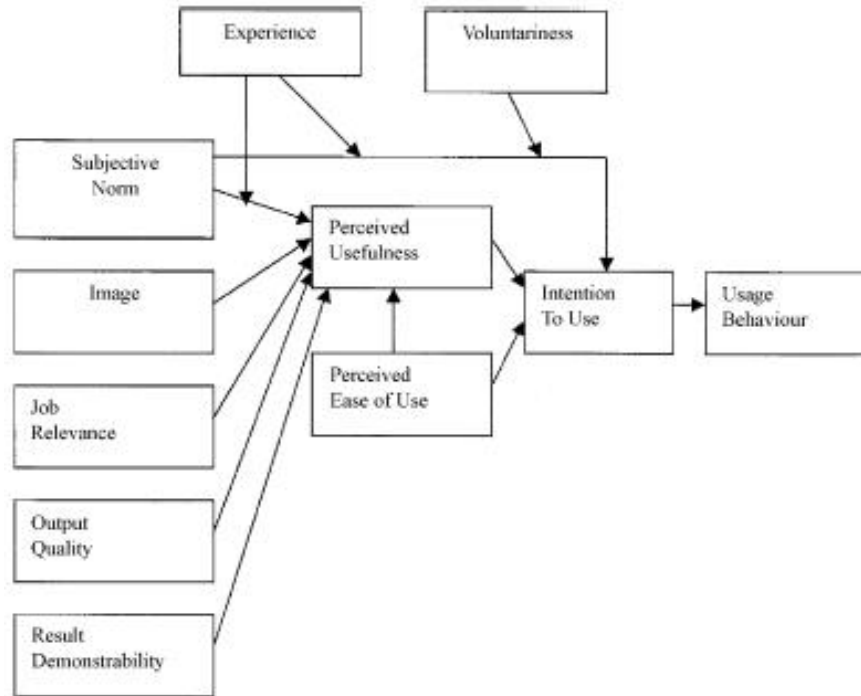


Figure 3: (Extended) Technology Acceptance Model 2

As stated by Paul Legris et al., “in 1985, Fred Davis suggested the TAM. It examines the mediating role of perceived ease of use and perceived usefulness in their relation between systems characteristics (external variables) and the probability of system use (an indicator of system success). “Davis proposed a new version of his model: TAM2. It includes subjective norms, and was tested with longitudinal research designs. Analysis of empirical research using TAM shows that results are not totally consistent or clear. This suggests that significant factors are not included in the models. We conclude that TAM is a useful model, but has to be integrated into a broader one which would include variables related to both human and social change processes, and to the adoption of the innovation model.” (Legris et al, 2003). When this was realized, it became apparent a new model was needed to better understand what was really going on. This is where the UTAUT steps in and addresses these concerns.

The UTAUT takes the TAM and TAM2, and then looks at these other issues that have arisen that affect the model's results including many of the ones in the TAM2. The UTAUT aims to explain user intentions to use Information Systems and subsequent usage behavior. The theory holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of usage intention and behavior (Venkatesh et. al., 2003). What this means is that the four key constructs are now the primary indicators in showing usage and intention to use a Wireless Technology (WT). Performance expectancy is, simply put, what a user expects performance-wise out of the WT they are using, i.e. does the cell phone they just bought send and receive clear calls without static and without dropping the person on the other end and does this coincide with what they expected or not? Effort expectancy is the amount of effort required by a user to learn to use a WT, and the amount of effort required to actually use the WT. This would be for example, if a consumer bought a wireless enabled laptop that was so hard to use and figure out, that they got frustrated with it and returned it. If this happened, we would say that their effort expectancy was low, but because it turned out to be high, they returned the WT. Social influence, like performance expectancy, is again, relatively easy to understand. Does a consumer buy a WT based on what others around them and in their age bracket are buying and using? The Motorola RAZR is a perfect example of social influence effecting direct behavioral intention. In reality, according to most reviews, it is a rather poor cell phone in terms of actual performance, but because of social status of having one, and that everyone else had one, many consumers had to have one. Lastly, the unique construct, facilitating conditions is the only construct able to effect usage behavior directly rather than going through behavioral intention. Facilitating conditions are the conditions in place for a consumer when they have to approach a WT, and because of these conditions, they might either

be forced to use or not to use a WT directly and bypass the intention to use completely. For example, a young student in grade school who never has had a want or desire to use a wireless enabled laptop has one assigned to him and is told he needs to use it to do some of his school work. The facilitating condition, the wireless enabled laptop is there, but the behavioral intention, as the child had never had any exposure or desire to use the laptop means that behavioral intention is skipped and usage behavior is effected directly by the teacher making it mandatory for the student to use the laptop for school work. Gender, age, experience, and voluntariness of use are posited to mediate the impact of the four key constructs on usage intention and behavior (Venkatesh et. al., 2003). These items were put in place to ensure that no single construct has a 'unfair' amount of weight placed on it. The UTAUT was fully developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain IS usage behavior (the TRA, TAM, and TAM2 being integral parts). Subsequent validation of UTAUT in a longitudinal study found it to account for 70% of the variance in usage intention (Venkatesh et. al., 2003). This meant that it was able to accurately predict 70% of the intention patterns for consumers.

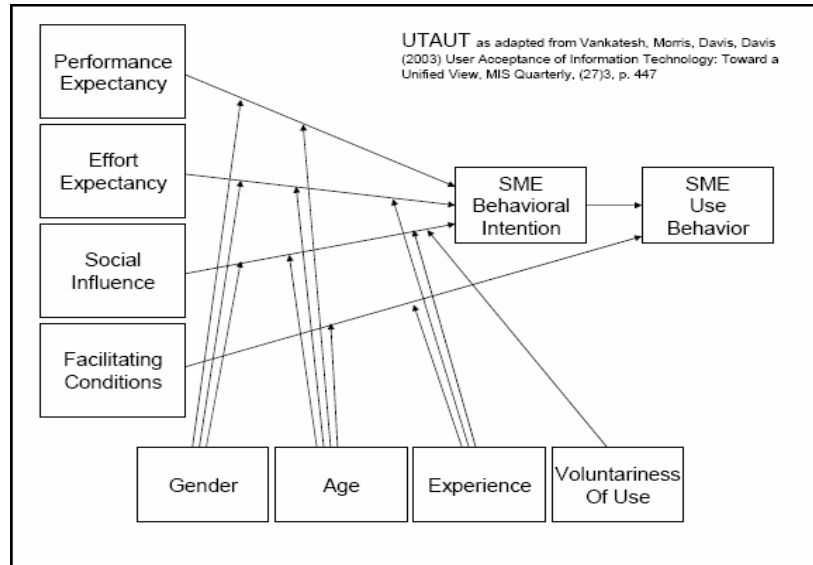


Figure 4: UTAUT Model

The UTAUT took the TAM/TAM2 and pulled it back a bit, eliminating the two constructs of perceived usefulness and perceived ease of use, and instead pulled out eight interacting constructs and items. As stated above, what they do is help to balance each other out and to see which one has the greatest effect on behavioral intention. Being able to do so, researchers have a much more accurate and balanced model. This is why for the purposes of this study it was felt that the UTAUT was the best model to ascertain the acceptance of wireless technology on a college campus with such a small age bracket. It takes into account age, gender, experience, and voluntariness of use, all of which are found in abundance on a college campus.

2.3 – Wireless Technology

“Wireless is changing the way we live and work,” said Robert Mesirov, vice president of operations and show director for CTIA wireless. “The promise of digital integration and wireless connectivity is here, and it's everywhere around us: on the street; in our communities; in stores;

homes; and office buildings.” (Business Wire, 2007). Wireless technology is paving the way for huge advancements in human interaction, information gathering, and much more. In 2007, Internet purchases for travel will account for nearly 55 percent of all U.S. travel bookings, according to a just-released report by PhoCusWright Inc., an industry consulting group. With smart phone technology and the increasing availability of wireless networks, "the ability for travel suppliers and intermediaries to communicate with their frequent customers while on the road has never been greater," PhoCusWright reported in a study. Hotels can offer what PhoCusWright called a "virtual concierge," digital information on local tourist attractions and tips guests can access via Wi-Fi in the room or on mobile devices. Among the possibilities are suggestions for restaurants, jogging paths, pet-friendly areas etc. Airlines could offer airport maps, real-time airport parking information, even coupons for stores or restaurants (Schensul, 2006).

Places you never thought would see a wireless technology before, are seeing now. As you walk down the street, the services might let you know that those jeans you wanted are on sale a few blocks south, or that Chez Panisse has two seats available at 7 p.m. Stores will know you're in the vicinity because you have sent a text message to a computer that notifies the vendors you trust--or maybe you'll allow them, at certain moments, to "sniff" the chips in your phone that uniquely identify it as yours (Edwards, 2006).

To help wireless technologies like these, two clever technologies are crucial. The first is WiMAX, a global standard designed to blanket whole cities in broadband. It could be available to as many as 1.5 billion users worldwide by 2008 (Balint, 2007). WiMax technology is a big cousin to the Wi-Fi technology whose “hot spots” offer easy, fast and cheap high-speed Internet

access for laptops in coffee shops and airports. WiMax is more powerful, with a coverage area up to 31 miles, and the ability to be used either in a fixed setting or for people on the go with their mobile devices (Balint, 2007). Intel, Motorola, and Samsung have invested heavily in the technology, and Sprint plans to begin building an entire Web-based phone network tuned to WiMAX starting next year.

Second is a next-generation networking architecture called iMS, or ip Multimedia Subsystem. The technology would essentially link all appliances and electronic devices over the Net. Each one then becomes its own Internet node, able to interact with all the others. Early applications might include such things as cellular handsets that provide ultrafast Wi-Fi access when you're at home, then switch automatically to cellular frequency when you are out of range. This could be extremely useful to people on the go looking for a restaurant or needing to book a hotel room or plane ticket. Even just locating a nearby business would be advantageous for many cell phone users. Startup Mavenir in Richardson, Texas, hopes to take this idea a step further, providing software to cellular carriers so they could serve up everything from Internet phone calls to TV shows. These ideas have huge implications for mobility. "A PC is like a telescope into the virtual world," says Kiyoyuki Tsujimura, DoCoMo's executive vice-president of products and services. "But with a cell phone, there's a merging of the real world and cyberspace, the physical and the virtual." (Edwards, 2006). It's happening in airports too for business travelers. Travelers at Cleveland's Hopkins International Airport soon will be able to use new wireless technology to instantly transfer information about local hotels, restaurants and attractions onto their cell phones. The technology, available to anyone who has Internet service on their mobile phone, also will allow companies to deliver video advertisements to passengers'

phones. Businesses that pay for the wireless technology also can have information, including maps and phone numbers, digitally transferred to a traveler's cell phone (Vinella, 2007).

2.4 – Wireless Devices

Other devices are getting a wireless makeover as well, Microsoft's new Zune digital music player, for example, ostensibly does the same thing as an iPod, but its selling point is that it shares information over a wireless link. To many, this could be the wave of future; no longer is that MP3 player stuck to being only that, now it can be a portable sharing device for data, pictures, movies, or anything that can be stored in a digital medium (Edwards, 2006). PDA's and Blackberry's are getting a tune up with wireless GPS as well. The Garmin company just introduced a new line of wireless GPS units to be used with your PDA, BlackBerry, or Smart Phone. All options allow the user to look up millions of points of interest such as restaurants, hotels and gas stations. There is the capability to access real-time traffic information, weather reports, safety camera alerts and more. It is also possible to select a pedestrian or car mode in order to get the most appropriate route for your method of travel (PR Newswire Europe, 2007).

Much of the network needed to support these applications however still needs to be implemented. That's because WiMAX networks, which are expected to not only allow for wireless calls but also for bandwidth-thirsty wireless-video viewing and music downloads, are not yet in place for common usage by the population of the United States (Kharif, 2006).

CHAPTER 3

METHODOLOGY

3.1 – Sampling Technique

The sample was randomly drawn from the University of Delaware's student population; as it is dependent entirely upon whichever students the Office of the Registrar chose to select to be recipients of the survey. The students surveyed ranged from new freshman to matriculated graduate students. Two hundred fifty individuals per class were chosen for a total of 1,250 individuals. The number of possible survey recipients was 2,866 freshman, 3,541 sophomores, 3,442 juniors, 5,044 seniors, and 3,215 graduate students. The sample is a generalized example that has external validity and can be used as a representative sampling of the standard college population. The students selected were sent an E-Mail requesting that they go to a designated web page where the survey instrument was located and where they would fill it out. The survey instrument was compiled using Perseus Survey Solutions, and can be found at this link <http://www.udhrim.com/surveys/wireless/>.

3.2 – Questionnaire Development

The academic models, primarily the UTAUT, used to arrive at the constructs have been described in detail in Chapter 2. Questions are based on the constructs identified from these models, and in particular, the constructs used by *Anderson & Schwager, 2004*.

The key constructs and their brief descriptions are:

1. Performance Expectancy – How well does a consumer expect a WT to perform in common usage and does the WT conform or not to these expectations?
2. Effort Expectancy – How much effort is expected to use a WT and again, is it on par with what the reality ends up being?
3. Social Influence – Is everyone else using a particular WT, and if so, does the consumer base his/her decision on a particular WT because of that influence?

4. Facilitating Conditions – Are the conditions under which a WT is introduced conducive to the use of a WT or prohibitive of WTs?

The closed ended survey was devised to measure the various constructs depicted in the UTAUT research model. The questions asked sought to validate the key constructs mentioned above as significant factors leading to Behavioral Intention. An exhaustive review of previous research into the area was conducted to ensure the reliability of the survey instrument. The survey was divided into four parts; The first part asks about respondents familiarity with the Internet, cell phones, and shopping online. The second section proposes questions that are directed towards behavioral intention and potential usage of Wireless Technologies. The third section is geared towards measuring peoples acceptance of wireless technologies and their adoption of WT. Last, the fourth section asks respondents general information about age, class, major, etc. All of the questions are applied and developed from previous studies about technology acceptance, such as “User acceptance of information technology: Toward a unified view” (Venkatesh et. al., 2003). A copy of the survey questionnaire is presented at the end of this paper.

While the method for acquiring our data using the UTAUT model was by using a survey instrument, we however choose to change one of the original four acting factors of age, gender, voluntariness of use, and experience. The experience item factor was changed into what was called the college/major factor as it was felt that in this case it made more sense than experience as shown in Figure 5 below. Also, this (experience) was changed rather than removed to help maintain the balance and to ensure that no inconstancies might arise or instead to show a unique pattern.

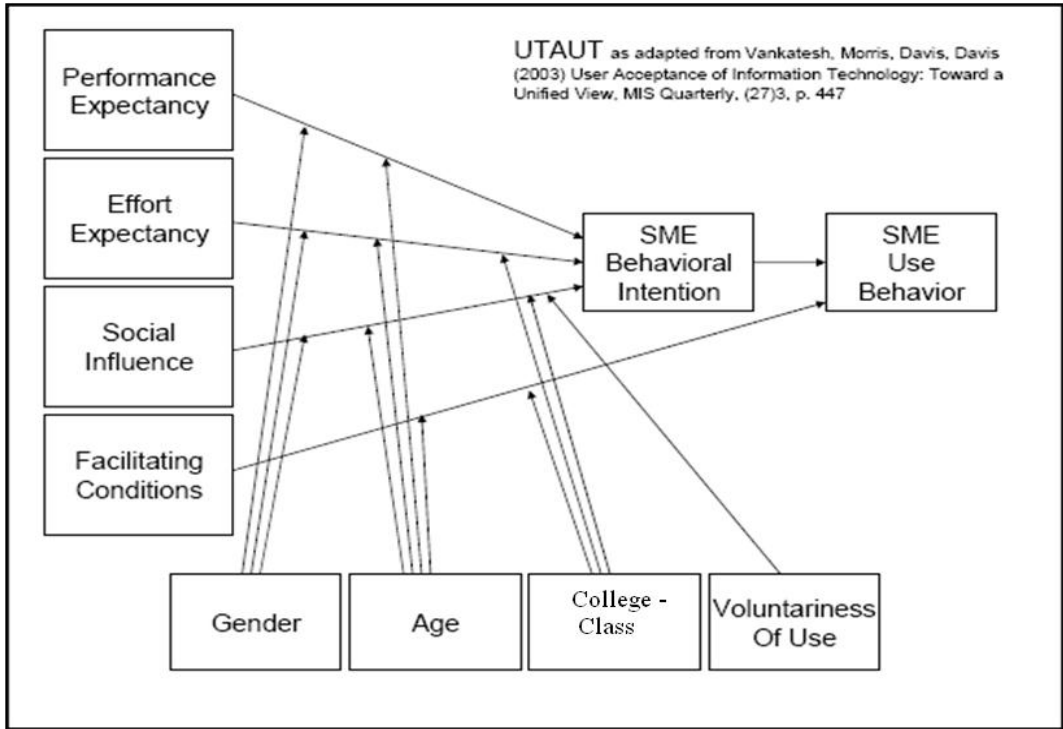


Figure 5: Modified UTAUT Model

CHAPTER 4

DATA ANALYSIS

4.1 – Demographic Information

The survey administered was able to capture 154 respondents. The data received provides a good representation of a standard student body in a college setting, which in this case was the University of Delaware. The respondents were broken down by Age, Gender, Class (Freshmen-Graduate Student), College (Arts & Sciences, Engineering, Human Services, Education, and Public Policy – CHEP, etc), and Major. This is provided in Table 1.

Table 1 Demographics

AGE	18→19 – 61 respondents - 39.6% 20→22 – 54 respondents - 35.1% 23→25 – 10 respondents - 6.5% Above 25 – 29 respondents - 18.8%
GENDER	51 Male – 33% 103 Female – 67%
CLASS	Freshman – 54 respondents - 35.1% Sophomore – 21 respondents - 13.6% Junior – 24 respondents - 15.6% Senior – 18 respondents - 11.7% Graduate Student – 37 respondents - 24%
COLLEGE	Agriculture & Natural Resources – 5.8% Arts & Sciences – 41.6% Lerner College of Business & Economics – 12.3% Engineering – 9.1% Health Sciences – 9.7% CHEP – 21.4%

N=154

This clearly shows that a vast majority of our respondents (forty percent) are from the Arts and Sciences college at the university. This is to be expected as it meshes with the fact that the Arts and Sciences students do in fact make up about 40% of the total population at the University. The gender distribution of the respondents was 33% males and 67% females. It should be noted that this too was expected, and is in keeping with the ratio of males to females on the Delaware campus, which is at a 1:2 ratio. Seeing that our respondents fit this ratio gave

us further confidence in the results. Also of note is the propensity of both freshman and graduate students to respond to the survey. We assume and form the supposition that the disparity involved with the fewer numbers of sophomore-senior respondents is due to the desire freshman have to try to get further involved with the campus community and will have a higher tendency to want to fill out surveys. Graduate students in turn are more likely to complete surveys out of respect and the knowledge that they too may at some point have to ask others to respond.

Based on the survey results, Table 2 shows the breakdown of the various majors, encompassing all the colleges of the University.

Table 2

Majors of Respondents

N=154

Major	Total	Percentage out of 154
Accounting	5	3.25%
Animal Science	6	3.90%
Anthropology	2	1.30%
Apparel	2	1.30%
Biochemistry	2	1.30%
Biology	7	4.55%
Bio Mechanics	2	1.30%
Chemistry	3	1.95%
Business	8	5.19%
Chemical Engineering	4	2.60%
Civil Engineering	4	2.60%
Communications	1	0.65%
Computer Science	3	1.95%
Criminology	1	0.65%
Economics	2	1.30%
Education	22	14.29%
Engineering	1	0.65%
English	4	2.60%
Entomology	1	0.65%
Exercise	3	1.95%
Fashion	2	1.30%
Finance	2	1.30%
Fine Arts	1	0.65%
Health	2	1.30%
History	7	4.55%
HRIM	8	5.19%
Leadership	1	0.65%
Marketing	2	1.30%
MBA	3	1.95%
Mechanical Engineering	2	1.30%
Medical Technology	1	0.65%
Nursing	7	4.55%
Photography	1	0.65%
Physics	1	0.65%
Political Science	4	2.60%
Public Policy	1	0.65%
Psychology	5	3.25%
Sociology	1	0.65%
Spanish	2	1.30%
Undecided	12	7.79%
Visual Communications	1	0.65%
Wildlife Conservation	2	1.30%

As Table 2 shows, more than 14% of respondents participating in the survey were in the education major. However, you can also see the diverse pool of the respondent majors, showing that overall no singular major was used to determine our results. The spread of having such diversity also ensures that the numbers that are returned will be consistent with being fair and unbiased.

4.2 – Frequency and Descriptive Statistics

The study had sought at the onset to discover and to predict the acceptance ratio of an array of wireless technologies and applications within the student population of the University of Delaware. In doing so, we wanted to see how comfortable students were with wireless technologies and how to use them. The Tables below lists some important findings; all are based on a scale of one through five with one being ‘Not Familiar at all’ and 5 being ‘Very Familiar’:

Table 3 Familiarity with Wireless Technology

Question Are you Familiar With?	Mean	Std. Deviation
The Internet	4.76	.55
Cell Phones	4.64	.70
Shopping Online	4.12	.98

N=154 1=Not Familiar at All 5=Very Familiar

Table 3 shows, as expected that almost all of the respondents had used the Internet at some time in their lives and are familiar with it. Also not surprising is that the respondents also indicated a strong familiarity with both cell phones and shopping online, shopping online having

a larger deviation, but still showing a large familiarity. The following tables show respondents answers to questions asked in regards to use of various Wireless Technologies. Total number of respondents for each of the following was 154, therefore N=154 for all.

Table 4 **Cell Phones**

Cell Phone	Frequency	Percent
Yes and I used it to access the Internet	29	19.10%
Yes, but I did not use it to access the Internet	123	80.9%
No, but plan to use	1	0.6%
Do not use and have no plan to use	0	0%

Table 4 shows that the vast majority of respondents do in fact have and use cell phones, over 80% in fact. The total that used their cell phones to access the Internet however was substantially less, at only 19%, but still a surprisingly high number.

Table 5 **PDA**

PDA	Frequency	Percent
Yes and I used it to access the Internet	6	3.90%
Yes, but I did not use it to access the Internet	14	9.10%
No, but plan to use	18	11.70%
Do not use and have no plan to use	113	73.40%

Table 5 indicates respondents in general do not use PDA's as much as cell phones, as many have started using their cell phones in place of a possible PDA, and in fact have no plan to buy or use one in the future. Those that *did* have a PDA however tended to be more likely to in fact use it to access the Internet.

Table 6 **Blackberry**

Blackberry	Frequency	Percent
Yes and I used it to access the Internet	6	3.90%
Yes, but I did not use it to access the Internet	0	0.00%
No, but plan to use	20	13.00%
Do not use and have no plan to use	123	79.90%

Table 6 shows a very similar trend to respondents' usage of PDA's, in that neither seemed to be very widely used by the sample group. One possible reason for this could be that many of the respondents who would of answered yes, would be business or working responders, who would use PDAs and Blackberrys regularly, are older, and most likely to be only graduate students.

Table 7**Wireless Enabled Laptop**

Wireless Enabled Laptop	Frequency	Percent
Yes and I used it to access the Internet	121	78.60%
Yes, but I did not use it to access the Internet	9	5.80%
No, but plan to use	16	10.40%
Do not use and have no plan to use	6	3.90%

At first, the numbers in Table 7 might look a bit high, but remembering that the survey was sent to college students, it makes more sense that many would have a laptop, and many more would use it as their primary computer to access the Internet. Hence we have a huge portion of the respondents, close to 80%, saying they use their wireless laptop to access the Internet.

Table 8**Wireless MP3 Player**

Wireless MP3 Player	Frequency	Percent
Yes and I used it to access the Internet	3	1.90%
Yes, but I did not use it to access the Internet	41	26.90%
No, but plan to use	18	11.70%
Do not use and have no plan to use	87	56.50%

Interestingly, there were a large number of respondents who answered, according to Table 8, that they had a wireless enabled MP3 player even if they didn't use it to get to the Internet. This perhaps, is more because many were confused that connection to a computer does not constitute a wireless MP3 player, i.e. an iPod is not considered to fall under this category. Still, even with that, more people choose that they don't have a wireless MP3 player nor have any plans to get one in the future.

Table 9 **Smart Phone**

Smart Phone	Frequency	Percent
Yes and I used it to access the Internet	7	4.50%
Yes, but I did not use it to access the Internet	0	0.00%
No, but plan to use	17	11.00%
Do not use and have no plan to use	125	81.20%

Very few respondents at all, even less than for PDAs and Blackberrys, said they had or would even consider using a smart phone in the future according to the results in Table 9. This is somewhat striking based on what can be seen in magazines and the TV; smart phones seem to be where many phone companies are head with cell phones from the Blackjack, to the Samsung SCH-i730, to the Motorola Q.

Table 10**RFID Enabled Device**

RFID Enabled Device	Frequency	Percent
Yes and I used it to access the Internet	2	1.30%
Yes, but I did not use it to access the Internet	28	18.20%
No, but plan to use	21	13.60%
Do not use and have no plan to use	99	64.30%

Lastly Table 10 shows how many people own and use a RFID Wireless device.

Though RFID, by these numbers, would seem to be an area to avoid sinking funding and such into, they can not account for its growing usage in the global community based upon other studies such as “RFID Tags in Restaurants, Retail, and Hospitality” (Cetron, 2007). What is also more likely, is that many students do in fact use RFID WT’s and don’t even realize that they are in fact using them, for example EasyPass, AMEX Blue, Visa PayPass, etc.

The following tables asked respondents to judge how often they used a wireless device to do an action, such as Buy an Airplane ticket, Book a Restaurant Reservation Online, etc. Assume that the following statement precedes all the titles: “How often have you used a wireless device to book/make/locate/use a.....?”

Table 11-17

“How often have you used a wireless device to ‘X’.....?”

Table 11			
Airplane Ticket	Frequency	Percent	
Never	63	40.90%	From Table 11, which shows if students have used a wireless device to purchase an airplane ticket, the largest numbers, 41% and 23% respectively, show that respondents either never use a WT or always use one for airplane tickets. The other 36% in the middle, leaning more towards using a WT rather than not.
Rarely	14	9.10%	
Sometimes	22	14.30%	
Often	20	13.00%	
Always	35	22.70%	
Table 12			
Hotel Room	Frequency	Percent	
Never	68	44.20%	Table 12 shows very similar numbers to Table 11, with 44% never using a WT and 15% always using a WT to book a hotel room.
Rarely	17	11.00%	
Sometimes	27	17.50%	
Often	19	12.30%	
Always	23	14.90%	
Table 13			
Restaurant	Frequency	Percent	
Never	102	66.20%	Oppositely, Table 13, using a WT to book a restaurant reservation, shows 66% of respondents saying they have never done so and only 4.5% saying always. When not quite as specific as booking a reservation, but instead deciding on where to go for dinner, to see a movie, etc, and also to locate a nearby business, the numbers slide towards the always usage choice as seen in Tables 14 and 15.
Rarely	27	17.50%	
Sometimes	12	7.80%	
Often	6	3.90%	
Always	7	4.50%	
Table 14			
Where to go?	Frequency	Percent	
Never	21	13.60%	In Table 14, making a decision as where to go, 30% responded sometimes, 40% often, and 9% always, counting for close to 80% of the total respondents, shows that a majority do in fact use a WT to decide where to go and only 13.6% saying never.
Rarely	11	7.10%	
Sometimes	46	29.90%	
Often	62	40.30%	
Always	14	9.10%	

Table 15			Table 15 on locating a nearby business with a WT shows that again a majority use a WT to locate a place of business around them, 24%, 35%, and 23% respectively in regards to sometimes, often, and always, with a 12% never response.
Locate Business	Frequency	Percent	
Never	19	12.30%	
Rarely	8	5.20%	
Sometimes	37	24.00%	
Often	54	35.10%	
Always	36	23.40%	
Table 16			In Table 16 we asked responders if they had used a GPS device to again locate a nearby business. While 37% did respond no, 21% and 13% responded often and always respectively, indicating a good usage of GPS units exists. A possible reason this number is so high might be because so many people were thinking of a GPS device in their car rather than a true 'wireless' GPS device, such as one built into a cell phone.
GPS	Frequency	Percent	
Never	57	37.00%	
Rarely	18	11.70%	
Sometimes	27	17.50%	
Often	32	20.80%	
Always	20	13.00%	
Table 17			The last question asked was if the respondents had ever used a WT to pay for an item at a vending machine. This being a relatively new concept here in the United States, it was not expected to get a large always or often response, and indeed it did not. A total of 78.6% said never with only then the remaining 21.4% being spread out from rarely to always, with always being only 2.6%.
Vending Machine	Frequency	Percent	
Never	121	78.60%	
Rarely	15	9.70%	
Sometimes	7	4.50%	
Often	7	4.50%	
Always	4	2.60%	

From Tables 11-15 we can also see another trend, respondents indicated what they do on a wireless device. Looking at the results we can see that a vast majority of respondents regularly use a wireless device to locate a business or to decide where to go. When it comes to purchasing something using a wireless device however, people are still not as sure about sending their information over what they see as a possibly unsecured network, allowing someone to grab their personal information. With the advent of new security for wireless devices such as WPA2

and the like, the chances are we will find the numbers of respondents saying Always in Table's 11 and 12, matching more close the answers in Table's 14 and 15.

Tables 18-23 below contains the constructs used to determine Behavioral Intention, Performance and Effort Expectancy, Social Influence, Facilitating Conditions, and Voluntariness of Use as prescribed by the UTAUT. These were rated on a scale of one to five, with the numbers corresponding to the following: One – Strongly Disagree, Two – Disagree, Three – Neither Disagree nor Agree, Four – Agree, and Five – Strongly Agree.

Table 18 Behavioral Intention

	Mean	Std. Deviation
I use Wireless Technology on a regular basis.	4.28	1.09
I intend to use Wireless Technology in the next 12 months.	4.6	0.77
I predict I would use Wireless Technology in the next 12 months.	4.6	0.73
I plan to use Wireless Technology in the next 12 months.	4.58	0.81
I have no plans to use Wireless Technology.	1.23	0.62

As seen in Table 18, a majority of respondents had a very favorable outlook on wireless technology, with no positive response being under Agree, and only one being under Strongly Agree. The negative question, asking if respondents have no intention to use WT's, received a Strongly Disagree, supporting the other 4 questions. This also shows that the student body that was polled uses WT regularly and that it is an integral part of their life.

Table 19 **Performance Expectancy**

	Mean	Std. Deviation
I find Wireless Technology useful in my education.	4.23	0.99
Using Wireless Technology enables me to accomplish tasks more quickly.	4.25	0.97
Using Wireless Technology increases my productivity.	4.05	1.07
If I use Wireless Technology, I will increase my chances of getting a better grade.	3.41	1.15
I do not use wireless technology.	1.38	0.83

Table 19 shows the performance expectancy of the respondents, also high on the scale it demonstrates good agreement and that in general, what was expected performance-wise out of WT is in fact what they are getting. It also shows that many agree with the fact that WT's help them accomplish their task more efficiently and increase their overall productivity. Most also agreed that WT helped them in their education as well as increased their chances of getting a higher grade. As can also be seen, the negative question asking if the respondents use WT is low at barely above Strongly Disagree.

Table 20**Effort Expectancy**

	Mean	Std. Deviation
My interaction with Wireless Technology would be clear and understandable.	3.88	0.92
It would be easy for me to become skillful at using Wireless Technology.	4.21	0.75
I would find Wireless Technology easy to use.	4.18	0.76
Learning to operate Wireless Technology is easy for me.	4.15	0.79

Effort Expectancy can be seen in Table 20, and aside from the first question asked, respondents agree with Effort Expectancy being an important construct when acting upon Behavioral Intention. Also, it is important to note that these results show a vast majority of respondents do in fact feel that they can pick up how to use WT very quickly and effectively.

Table 21**Social Influence**

	Mean	Std. Deviation
People who influence my behavior think that I should use Wireless Technology.	3.18	1.06
People who are important to me think I should use Wireless Technology.	3.32	1.05
The faculty at the University have been helpful in the use of Wireless Technology.	3.27	1.14
In general, the University has facilitated the use of Wireless Technology.	3.79	1.00

Social influence, as seen in Table 21, is somewhat odd in the sense that it has some of the lowest numbers, indicating most respondents did not feel as strongly that it had an effect on Behavioral Intention. Yet as shown later, Social Influence in fact is one of the two constructs that acts the *most* on Behavioral Intention. Maybe one reason for this is that some respondents felt that they didn't want to show they were being so heavily influenced by others around them.

Table 22 **Facilitating Conditions**

	Mean	Std. Deviation
I have the resources necessary to use Wireless Technology.	4.1	0.92
I have the knowledge necessary to use Wireless Technology.	4.12	0.82
The system I use is not compatible with Wireless Technologies or lacks the ability to connect to a Wireless Device.	1.84	1.07
A specific person (or group) is available for assistance with system difficulties. (i.e. Service Provider)	3.45	1.04

Table 22 shows the results for the questions regarding Facilitating Conditions. Question 3 struck as exceedingly odd as its Mean was opposite entirely from all the other questions generally asked period. This was until we realized the 'not and lacks' wording of the question since in fact we know that the system people are using is compatible with wireless technologies, it threw respondents off. It was for that reason that we ended up striking this question from the

results due to it being misleading. Other than that, respondents clearly showed that they feel they have good conditions under which to utilize wireless technology.

Table 23 **Voluntariness of Use**

	Mean	Std. Deviation
Although it might be helpful, using Wireless Technology is certainly not compulsory in my schooling.	3.1	1.14
My University requires me to use Wireless Technology.	2.31	1.10
My professors expect me to use Wireless Technology.	2.42	1.21
I am expected to have a knowledge of Wireless Technology because of my peers.	3.08	1.20

In Table 23 Voluntariness of Use is looked at, and expectedly many consider that using a wireless technology is purely voluntary on their part and not an imposition. However, as was the case with Facilitating Conditions, there was one question, question 1, that we felt had a bad connotation with the usage of the word ‘not’ again, meaning that respondents might have had their responses skewed a little bit. In fact when question 1 was removed, the Cronbach Alpha score rose significantly. The other questions however match with what is to be expected at the University of Delaware; the University nor professors require students to use a wireless technology. However a majority of the respondents expect that their peers have at least a basic knowledge of wireless technologies.

4.3 – Reliability

Measurements for reliability tests were conducted on the constructs used for the creation of the survey. The results are provided in Table 19. The Cronbach Alpha score is commonly used to find consistency and reliability.

Table 24 Constructs and Reliabilities

CONSTRUCTS	Reliability Alpha
Behavioral Intention	0.70
<ol style="list-style-type: none"> 1. I use Wireless Technology on a regular basis. 2. I intend to use Wireless Technology in the next 12 months. 3. I plan to use Wireless Technology in the next 12 months. 4. I have no plans to use Wireless Technology. 	
Performance Expectancy	0.90
<ol style="list-style-type: none"> 1. I find Wireless Technology useful in my education. 2. Using Wireless Technology enables me to accomplish tasks more quickly. 3. Using Wireless Technology increases my productivity. 4. If I use Wireless Technology, I will increase my chances of getting a better grade. 5. I do not use wireless technology. 	
Effort Expectancy	0.90
<ol style="list-style-type: none"> 1. My interaction with Wireless Technology would be clear and understandable. 2. It would be easy for me to become skillful at using Wireless Technology. 3. I would find Wireless Technology easy to use. 4. Learning to operate Wireless Technology is easy for me. 	
Social Influence	0.83
<ol style="list-style-type: none"> 1. People who influence my behavior think that I should use Wireless Technology. 2. People who are important to me think I should use Wireless Technology. 3. The faculty at the University have been helpful in the use of Wireless Technology. 4. In general, the University has facilitated the use of Wireless Technology. 	
Facilitating Conditions	0.66
<ol style="list-style-type: none"> 1. I have the resources necessary to use Wireless Technology. 2. I have the knowledge necessary to use Wireless Technology. 3. A specific person (or group) is available for assistance with system difficulties. (i.e. Service Provider) 	
Voluntariness of Use	0.85
<ol style="list-style-type: none"> 1. My University requires me to use Wireless Technology. 2. My professors expect me to use Wireless Technology. 3. I am expected to have a knowledge of Wireless Technology because of my peers. 	

The correlations between each section of the constructs were analyzed together with Cronbach's alpha for each of the constructs overall. One item was removed from both the Facilitating Conditions and the Voluntariness of Use construct. Question 1 in Voluntariness in Use was removed from the construct, and in doing so, the reliability factor went from .52 to .85, making it far more reliable. This was taking out the usage of the word 'not' which seemed to throw many respondents off when answering. For the Facilitating Conditions, there was again, a negative connotation to question 3 ("The system I use is not compatible with Wireless Technologies or lacks the ability to connect to a Wireless Device.") that seemed to throw off respondents and set the alpha at under .30. After the removal of item 3, the alpha with the remaining four items came to over 0.60. What perhaps the question should have asked was "The system I use is compatible with Wireless Technologies and has the ability to connect to a Wireless Device.". Because of this the numbers were heavily skewed for the construct, and it was therefore as said, removed. This enabled the score to be closer to .7, which is considered the standard approach for evaluation. "Consequently, reliability alpha can be viewed as a measure of how well the selected items capture the expected score in the entire domain, even if that domain is heterogeneous", (Cronbach, 1951). (Mozeik, 2007). In other words, it is an estimation based on the correlation among the variables comprising the set and affirms to the internal consistency of the constructs (Garson, 2005). (Mozeik, 2007).

4.4 – Multiple Regression

In order to learn more about the relationship between the independent or predictor variables, Behavioral Intention, Performance and Effort Expectancy, Social Influence, Facilitating Conditions, and Voluntariness of Use, and the dependent variable, which is the Behavioral Intention to use a Wireless Technology for Internet access, two separate multiple regression tests were conducted. One for testing Behavioral Intentions against all the other

constructs, and the other a step-wise regression using the most significant constructs, Social Influence and Performance Expectancy.

The multiple regression technique establishes that a set of independent variables can explain a proportion of the variance in a dependent variable at a significant level (through a significance test of R^2) (Garson, 1998). It can also establish the relative predictive importance of the independent variables by a comparison of beta weights, (Garson, 1998). Beta is an average amount, such that when the dependent increases, the independent increases one standard deviation, while the other independent variables are held constant. If an independent variable has a beta weight of .5, this means that when other independent variables are held constant, the dependent variable will increase by half a standard deviation, .5 as well. The ratio of the beta weights is the ratio of the estimated unique predictive importance of the independents. By using the predictor variables for the sample, and knowing that R^2 is the relative predictive power of a model, the closer this number is to one, the greater the model has the ability to predict (Mozeik, 2007).

Table 25 Multiple Regression with Dependent Variable: Behavioral Intention WT

Independent Variable	Un-standardized Beta	P-Value	Adjusted R²	F, p<.000
Performance Expectancy	0.358	.000	.122	22.33
Effort Expectancy	0.319	.000	.096	17.23
Social Influence	0.423	.000	.174	33.20
Facilitating Conditions	0.343	.000	.112	20.21
Voluntariness of Use	.202	.006	.049	7.86

Table 20 shows that the R² values for each construct, with the exception of Voluntariness of Use, are all between .09 and .180. The ANOVA test indicates a significant model for each construct, again with the exception of Social Influence. All p values for the other constructs are less than .001, indicating a high significance for each. From this data, inferences can be made in regards to our hypothesis.

H1 theorizes that Behavioral Intention will be effected by Performance Expectancy, and moderated by gender and age. Just looking at the data as is, it is apparent that Performance Expectancy does indeed play a significant role in effecting Behavioral Intention. Thus the first hypothesis is supported insofar as having an effect on Behavioral Intention, however the second battery of tests, which include the T-Test will determine if gender and age had a further effect on its influence. **H2** states that Effort Expectancy will have a significant effect on Behavioral Intention, and again, looking at the p=.000, it does. However again like **H1**, further tests will have to be done to see if gender and age also effect the results. **H3** follows the first three hypothesis steps in that like the first two hypothesis, **H3** was proven to be correct. The p value for Social Influence was .000, well in the range of making it significant, again, this is not yet taking into account gender and age. **H4-A** was proven incorrect as far as the data shows, while

one item in the Facilitating Conditions construct was removed due to its misleading nature, the effect and influence it has on Behavioral Intention, while not as strong as Social Influence and Performance Expectancy, it in fact *did* have a strong influence on Behavioral Intention. **H4-B** will be tested using a T-test in the next section along with the other constructs. **H5** postulates that Behavioral Intention will have a significant influence on the usage of WT, and according to the data, this hypothesis is directly supported by the factors acting on Behavioral Intention. **H6** is supported in that the UTAUT does account for a significant percent of the variance (adjusted R²) in usage intention of wireless technologies.

4.5 – Post Hoc Tests

Table 26
(Stepwise Criteria: Probability-of-F-to-enter $\leq .050$, Probability-of-F-to-remove $\geq .100$)

Independent Variable	Un-standardized Beta	P-Value	R Squared	F, p<.000
Social Influence	0.328	0	0.213	20.399
Performance Expectancy	0.206	0.012		

Table 27**Post Hoc: Age (N=154)**

(I) What is your age?	(J) What is your age?	Means Difference (I-J)	Std. Error	Sig
18-19	20-22	-0.40	0.1665	0.081
	23-25	-0.95	0.3041	0.009
	Above 25	-0.69	0.201	0.004
20-22	18-19	0.40	0.1665	0.081
	23-25	-0.56	0.3069	0.264
	Above 25	-0.29	0.2052	0.492
23-25	18-19	0.95	0.3041	0.009
	20-22	0.56	0.3069	0.264
	Above 25	0.27	0.3269	0.544
Above 25	18-19	0.69	0.201	0.004
	20-22	0.29	0.2052	0.492
	23-25	-0.27	0.3269	0.844

Using a post hoc test and using the Tukey HSD method, the data shown in Tables 26 and 27 clearly shows there is a significant effect on Behavioral Intention for different age groups, and thus, for differing reasons. In looking at the other number available, it appears that the 18-19 respondents have a large Behavioral Intention due to WT being effected by Social Influence. They look for the ‘cool/in’ technologies that everyone else has regardless of price and function. The older 23 and above crowd on the other hand are far more effected by the Performance Expectancy of an WT. For them it is much more about having an item that gets the job done and helps them with their work, making them more productive rather than does it look good and does everyone have one.

Table 28**Post Hoc: Adoption of Tech (N=154)**

(I) How would you rate yourself in terms of adopting new technologies?	(J) How would you rate yourself in terms of adopting new technologies?	Means Difference (I-J)	Std. Error	Sig
1	2	0.60	0.2146	0.027
	3	0.57	0.2446	0.088
	4	0.86	0.3955	0.13
2	1	-0.60	0.2146	0.027
	3	-0.03	0.1813	0.999
	4	0.26	0.3598	0.886
3	1	-0.57	0.2446	0.088
	2	0.03	0.1813	0.999
	4	0.29	0.3785	0.873
4	1	-0.86	0.3955	0.13
	2	-0.26	0.3598	0.886
	3	-0.29	0.3785	0.873

Table 28 further emphasizes the dichotomy of people on both sides of the spectrum, with the greatest significance being between those who adopted new technology first and those who adopted new technology last at 0.13. However, as Table 29 below shows the breakdown in numbers, it is also clear that most feel they are indeed followers not leaders, with 88 respondents selecting one choice right above being 'last'.

Table 29 Homogeneous Subsets acting on BI (Tukey HSD)

How would you rate yourself in terms of adopting new technologies?	N	Subset for alpha = .05	
		1	2
I am usually the last to adopt new technologies	7	3.10	
2	88	3.36	3.3696
3	36	3.39	3.3889
I am usually the first to adopt new technologies	23		3.9627
Sig.		0.79	0.208

Table 30**Post Hoc Test: Class Effect on BI (Tukey HSD)**

(I) What is your class?	(J) What is your class?	Means Difference (I-J)	Std. Error	Sig
Freshman	Sophomore	-0.28	0.2313	0.753
	Junior	-0.27	0.2207	0.742
	Senior	-0.58	0.2448	0.122
	Graduate Student	-0.73	0.192	0.001
Sophomore	Freshman	0.28	0.2313	0.753
	Junior	0.01	0.2688	1
	Senior	-0.31	0.2889	0.829
	Graduate Student	-0.45	0.2458	0.351
Junior	Freshman	0.27	0.2207	0.742
	Sophomore	0.00	0.2688	1
	Senior	-0.31	0.2805	0.797
	Graduate Student	-0.46	0.2358	0.289
Senior	Freshman	0.58	0.2448	0.122
	Sophomore	0.31	0.2889	0.829
	Junior	0.31	0.2805	0.797
	Graduate Student	-0.15	0.2585	0.98
Graduate Student	Freshman	0.73	0.192	0.001
	Sophomore	0.45	0.2458	0.351
	Junior	0.46	0.2358	0.289
	Senior	0.15	0.2585	0.98

Table 30 shows the expected affirmation of age analysis. The significance factor between freshman and graduate students, at .001, shows clearly that there is a significant influence on Behavioral Intentions between those two groups. Even freshman and seniors have a significance factor of .112, not low enough to be truly significant, but low enough to add credence to the differences. This again illustrates the differing reasons both freshman and graduate students would choose a WT. There is a low response rate for the middle classes

(sophomores-seniors), however a non-response bias analysis was conducted and no difference has been found between early and late respondents, meaning that any more respondents would not have made an appreciable difference in the results.

Table 31 Homogeneous Subsets Class on BI (Tukey HSD)

What is your class?	N	Subset for alpha = .05	
		1	2
Freshman	54	3.124	
Junior	24	3.393	3.393
Sophomore	21	3.401	3.401
Senior	18	3.706	3.706
Graduate Student	37		3.853
Sig.		0.131	0.342

4.6 – T-tests

H1-H4 conjectures that gender will have a strong influence on each of the constructs. A T-test will show if the means between two groups are significantly different from one another. These paired samples have no relationship; however the means were similar between informational intentions and transactional purposes.

Table 32 T-Test of Means

Dependent Variable	Gender?	N	Mean	Std. Deviation	t-Statistic	p-Value
Behavioral Intention	Male	51	3.46	1.02	.088	.259
Behavioral Intention	Female	103	3.44	.905		

In Table 32 we see that the Behavioral Intention of both males and females is in fact not significant enough to have an effect on our constructs. Therefore this aspect of **H1-H3** and **H4-B** are proven to be false insofar as having an effect on their influence of Behavioral Intention. The p value of 0.259 in table 32 is well above the accepted value of 0.001 or less to show having a significant effect as well.

Table 33

Summary of the Research Hypotheses

Hypotheses	Description	Results
H1	The influence of performance expectancy of wireless technologies on behavioral intention will be moderated by gender and age, such that the effect will be stronger for men and particularly for younger men.	Supported (conditionally)
H2	The influence of effort expectancy of wireless technologies on behavioral intention will be moderated by gender, age, and experience, such that the effect will be stronger for women, particularly younger women, and particularly at early stages of experience.	Supported (conditionally)
H3	The influence of social factors towards wireless technologies on behavioral intention will be moderated by gender, age, voluntariness, and experience, such that the effect will be stronger for women, particularly older women, particularly in mandatory settings in the early stages of experience	Supported (conditionally)
H4-A	Facilitating conditions of wireless technologies will not have a significant influence on behavioral intention.	Supported (conditionally)
H4-B	The influence of facilitating conditions on usage of wireless technologies will be moderated by age and experience, such that the effect will be stronger for older workers, particularly with increasing experience.	Not Supported
H5	Behavioral intention will have a significant positive influence on usage of wireless technologies.	Supported
H6	The UTAUT will account for a significant percent of the variance (adjusted R ²) in usage intention of wireless technologies.	Supported

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 – Limitation

Due to this study being somewhat of a pioneer in what it was looking at, there are some limitations. Further research is needed to see if the same results could be achieved at different college campuses. A major limitation to this survey is the number of responses gathered for the classes between freshman and graduate students, as well as their majors. However, if the same (or approximate) number of individuals from every major responded, it would place greater weight on the those responses from those in smaller programs. Therefore, what might be better to attempt in a future study would be to seek getting the approximate same percentage of respondents from each program as the percentage of majors in the program compared to the total university. This research has however gotten the ground work established for future research and could be further implemented as a tool to assess campuses acceptance of certain wireless technologies.

Many of the previous studies involving the UTAUT were focused specifically on a certain piece of technology, and not on a broader scale such those used here. This research however does just that, it took an entire field of wireless devices and technologies and asked a large population to respond to questions about them. Regardless, the overall purpose of this study was to see if Behavioral Intention could be measured by using the UTAUT and then to add in the college and major items to act upon the constructs. What we got back was in keeping with virtually all of our hypothesis.

5.2 – Discussion

A recent survey divided cell phone users into three categories: the Cellular Generation, Transitioners, and Adult Adopters. The follow was said about each:

- The Cellular Generation- Ages 18 to 24, these young adults grew up with cell phone awareness, experiencing cell phones as a part of their everyday lives.
- Transitioners - Ages 25 to 34, these people fall in between two distinct groups: those who grew up with cell phone knowledge and those who did not. Cell phones began to infiltrate everyday life during their teen years and early adulthood.
- Adult Adopters - Age 35 or older, this group was not exposed to cell phones until adulthood. Adult Adopters tend to have the most functional view of cell phones, with many requiring just the basics and showing limited interest in emerging technologies. (PR Newswire US, 2007)

Cell phones offer far more than simply a means of voice communication. They can provide entertainment, convey social status, and express one's individuality. While consumers in both the Cellular Generation and Transitioners are likely to view their cell phones as multi-dimensional devices, adult adopters tend to have a more functional view. Approximately one-quarter of both the Cellular Generation (26 percent) and Transitioners (25 percent) said that “trendiness” was of high importance when selecting a cell phone, as compared to just 10 percent of Adult Adopters. Additionally, 41 percent of Cellular Generation consumers strongly agree with the statement "I like my cell phone to be personalized" with options such as color schemes and ring tones, while only 19 percent of Adult Adopters feel the same. (PR Newswire US, 2007) This is in keeping with almost *exactly* what our results say. The students between 18-22 are far

more likely to want a wireless device that is trendy and “cool” rather than the functionality of the 23 and above population. The older population would much rather have a device that has good functionality and usability that will help them be more productive rather than a device that is more hip and ‘in’.

What does this mean though overall to a wireless industry that is growing by leaps and bounds? From the upcoming WiMax rollout, to the almost finalized 802.11n IEEE standard, all are pointing to a faster, stronger, and more widely used wireless infrastructure for the United States population. Due to this, companies need to be marketing towards specific age groups differently if they want to sell their products in the future.

If a company wants to design and sell a product to people under 22 or so, then they need to make the product flashy, trendy, something like the Razor from Motorola that everyone wanted and had to have, or the iPod-something that stands out as the chic item to have and own as a status symbol and to be able to customize as your own. Customers from the under 22 age bracket are far less concerned with the functionality of their device as they are with the other factors as well, meaning it does not have to do as much, or do it as well as a differing device in the same price range for a consumer to buy it.

The population of 23 and older customers however, must be marketed to differently. For them, the functionality of the device and how much it will help them in productivity along with being cost effective will win the day. To them, marketing needs to show a device that will help them get through their day, let them stay connected to each other and their businesses, and make sure it is at a price point where these consumers will be willing to even pay a little more extra for that piece of mind in knowing it will get the job done well rather than just look flashy.

The bottom line however is that wireless technology overall, while already in use in today's world, has really yet to come of age in comparison to some other countries in the world. Right now cell phones, PDA's, and BlackBerry's are just starting to evolve into being more than just what they "are". Soon though they will be GPS devices, have RFID tags in them, be able to be swiped at a store for instant purchases, be able to access reviews of nearby restaurants, instantly access the Internet at high speeds, and much more. This is not a possibility; it is an upcoming reality that retailers need to be ready for if they want to survive. In designing wireless specific technology or software for this revolution, suppliers will have to cater to specific subsets of the population and be willing to tailor their product to each different segment. On the plus side, there is a huge market of willing buyers according to our results, and though many respondents already have cell phones and/or a wireless laptop, technology is always changing and people always want the latest and greatest piece of it. For companies to adopt wireless technologies and cater to them is no longer just an optional aspect of business, it is now rapidly becoming a requirement to even stay competitive.

5.3 – Implications

The findings of this study clearly show a trend towards both young adults (18-20) and older students (23-Up). Each of the age brackets want wireless technology for different reasons, one for the 'hip' factor, and the other for the performance factor respectively. What does this mean to someone looking to market new wireless technologies to the masses? Simply put, know your segment and what they're looking for. If you want to market something to young teens and under, forget making sure it works well, but rather make it look stylish and make sure everyone *has* to have one, ala the RAZR. If you're planning on trying to sell a product to the middle generation, 23-40 or so, make sure that above all else, it performs well, is easy to use, and improves productivity as this is what this age bracket is looking for. They could care less about what cool color it comes in and what fashion accessories it can have attached. However, looking

at these results, it is my opinion that the next big thing in wireless is going to be a merging of these two worlds (being both chic and 'in' as well as having high productivity capabilities) as well a little something else mixed in. We can already see some of this with the advent of the Ultra Mobile PC's and the Cell Phones that are more media centers, PDA's, Smart Phones, and Blackberry's all in one. Imagine a device that has the computing power of a small laptop, the multimedia abilities of an iPod, the ability to play live streaming video and TV, the out-of-office capabilities of a Blackberry, and the size of small Smart Phone? Sound far fetched? Take a look at some of the new phones coming to market now: the iPhone, the MotoMING, the Blackjack, and the Motorola Q. The iPhone above all is looking to do just that. It merges a multitude of wireless technologies into one sleek device that has both excellent performance to appeal to the older crowd *and* is very stylish and will appeal to the younger crowd.

For this reason I predict that the iPhone, while not being the best phone on the market per se, is going to sell out virtually everywhere when it launches. Further study into this area will uncover much more about exactly what to market to older people as well as those even younger; for example 40-75 and 10-18. Marketing persons in large companies would also do well to heed the results of this survey and might want to conduct it on a larger scale to ensure that those whom they aim their products are in fact the sector that will be buying said products. Only the future will show for sure if that ends up being right, but right now, it's the way all the signs are pointing as well as the numbers. Either way, wireless technologies are here to stay, and have only one direction to head: being smaller, faster, more capable, and eventually, cheaper.

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