Determinants of Instructional Technology Adoption: *A look at University of Oregon Faculty Web Pages*

Abstract

I analyze the determinants of faculty home page adoption within the University of Oregon College of Arts and Sciences. The analysis focuses on how gender, age, faculty rank, and department differences influence the creation of faculty web pages. I discuss the data collection techniques and how the data can be verified. I analyze the statistical significance and degree of the affect that each factor has on home page creation. I also briefly discuss the policy implications and avenues of further research that might provide similarly interesting results.

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Signature Page

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Introduction

As we move into the 21st century it is becoming increasingly obvious that the internet and other new technologies are rapidly changing the way we live, learn, and work. Here at the University of Oregon, President Dave Frohnmayer has recognized the importance these technologies will have on university education and has commissioned a task force to understanding the impact of these new technologies and to suggest how to best incorporate them into the university. The University has already shown that it is very adept in adopting new technologies. Recently, for a second consecutive year, Yahoo: Internet Life magazine ranked the university in the top 10 universities nationally for its use of available instructional technology. The university has also been recognized with a CAUSE award from CAUSE-EFFECT magazine for having the best campus network in the nation. This recognition is due in large part to the number of teachers actively using the World Wide Web (WWW) as a medium to further enhance their teaching.

The goal of this paper is to add insight into the primary determinants of faculty adoption of instructional technology in higher education. These determinants include both internal (personal/behavioral) and external factors (institutional/environmental). The WWW has become the dominant medium for instructional technology by such a margin, that in this paper I will only concentrate on this medium's use by faculty members. Previous models closely examined the benefits of web-based course materials, but failed to take into account other rewards such as personal enjoyment, professional recognition, increased visibility for research, and the ability to display information not directly related to a course but still of interest to students or scholars within the discipline.

This paper will show that gender has no significant impact on faculty adoption of instructional technology while faculty rank and department differences strongly affect the creation of web pages. It also addresses some policy issues, ideas for further research, and the role that this analysis should play in the formation of future educational technology here at the university.

Literature Review

Internet based instructional technology at the University level is so new that it has only recently emerged as a topic for discussion in working papers and journal articles (Klopfenstien, 1997). While there is a fair amount of economic research dealing with this new medium most of it deals with its unique pricing structure, and the effects that the internet will have on commerce and information exchange. The researchers that have started to tackle the issues that pertain to the internet's use in the classroom have mostly been psychologists, sociologists, and educators.

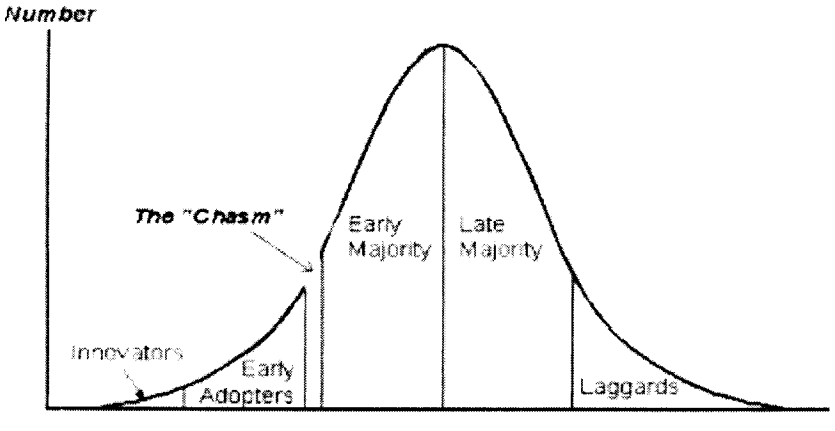
A popular vein of research dealing with the internet and its use, is the gender issue. Since the emergence of the internet, it has been generally accepted that male users out number female users two to one. Statistics as recent as October 1995 (O'Reilly, 1995) seemed to support this claim. But more recent surveys have shown that the gap is much narrower, if not nonexistent (Intelliquest, 1997). Unfortunately no research or statistics are available on the gender makeup of those who design and create web content. It is one of the goals of this paper to show that within the field of higher education there is no gender bias when it come to the use of instructional technology.

Another factor that cannot be overlooked in a University setting is the make up of the faculty. The tenure system helps change the focus of a faculty member as they move through the

rankings to full professor. Research has shown that younger faculty members trying to solidify their status within the university by spending more time on research than older faculty (Singell, 1993). If this is the case then we may find that older professors have more time to spend designing new web integrated curriculum. On the other hand younger faculty have all ready accrued some of the knowledge necessary to create a web page through their interaction with computers.

That the internet will be a benefit to educators is not in doubt, but how significant these benefits will be is the subject of much discussion. Some have argued that the internet will increase efficiency in education and allow teachers to become facilitators while putting the burden of learning on the students (Duncan, 1997). Others see the value of internet technology in its ability to offer a form of instant mass distribution of information (Butler, 1995) or as means of enhanced communication between student and teacher (Duncan, 1997).

An interesting view of instructional technology and its adoption has been proposed by William Geoghegan of IBM Academic Consulting. Geoghagan acknowledges that higher education has fallen short of its goals concerning the adoption of instructional technology, and proposes a model that he believes illustrates the current situation facing universities. This "technology adoption life cycle" that he proposes describes five distinct groups of faculty members and how they make up the cycle. The first group, the innovators, is on the leading edge of technology and is more interested in the technology than its general applications. The next group, the Early Adopters, are the visionaries that realize the technologies potential and apply it to concrete applications. The



next group, the early majority, are those who are reasonably comfortable with technology and have seen how the early adopters have applied the technology. They see the value and do not hesitate to react and implement the technology themselves. The fourth group, the late majority, is more conservative than the early majority and prefers more packaged solutions before they apply the technology. The fifth and final group, the laggards, are the group of faculty who are most likely not to employ most of the instructional technological advances. Geoghagan also proposes that we are currently stuck in a chasm between the early adopters and the early majority as seen in figure 1. I believe that this university unlike most has bridged that chasm and is currently near or at the top of the parabola, it is one of the goals of this paper to show the make up of the faculty that constitute the innovators, early adopters, and early majority.

Hypotheses

The decision to create a home page is just like any other utility-maximizing decision. The faculty member weighs the costs and perceived benefits of the home page and then if the benefits outweigh the costs they will go ahead and create a home page. This can be shown in a simple marginal decision formulae; *IF (Benefits > Costs) THEN (create web page).* We can add a further level of detail by defining *Costs = C(E)* where costs are a function of an individuals experience with computers(E). By using B to represent Benefits we can rewrite this condition as

$$B > C(E) \qquad (1)$$

A factor that has received a lot of attention is the relation that age has on a person's ability to learn a new technology. Looking at our equation (1) lets assume that the benefits of a home page are constant in relation to age. While the costs of creating a home page varies in relation to age and experience with computer technology. The younger generation of faculty

members should be more familiar with computers having already a greater endowment of computer skills due to their educational background. This is because computer education was relatively scarce when the older generation of faculty was educated. This can be modeled in the equation E(Age) where experience with computers(E) is a function of age. Plugging this into our equation (1) we can see that as age increases the level of computer skills decrease which in turn raises the costs of the individual while holding the benefits constant. Thus directly linking age and costs of adoption as positively correlated, and the analysis of the data should show a negative relationship between age and home page creation.

Within the system of higher education another important factor that affects decisions is the faculty rank of an individual. While we can assume that the costs of creating a home page are constant across faculty rank, holding everything else constant, the perceived benefits may differ based upon rank or status. Non-tenured faculty members may be more devoted to research and publishing than a faculty member who has already reached tenured status and would find a home page is beneficial in displaying their research. On the other hand, to a tenured faculty member who is more devoted to teaching than an assistant or associate professor, a web page would be useful in enriching their curriculum. The impact of faculty rank is theoretically ambiguous and I am unable to predict what sign our analysis should be.

Since the beginning of time gender has always been viewed as an important difference that influenced our preferences, skills, and our abilities. In the past the physical nature of work, and social conventions determined the work roles of each sex. Though now as we enter the computer age, gender differences are becoming increasingly minimized. The argument that the gender of a faculty member influences whether they create a web page relies on the foundation that gender influences either the costs or benefits, or both of adopting a web page. Our analysis

while not being able to explain if gender's creates different costs or benefits, it will be able show to what degree gender has an affect on home page creation.

The last and most subjective factor that I believe relates to home page adoption is the department that a faculty member belongs to. The College of Arts and Sciences is by definition a combination of departments considered arts or sciences. Faculty members of science departments like Computer and Information Science, Economics, and Chemistry will have lower costs than faculty members of the arts due to an educational background that was more likely to relate with computers and the internet. In addition science departments may have increased benefits from home pages when compared with art related departments. Our analysis should show that ceterus parabis faculty members of a science department would be more likely to create a home page than if they were in a discipline of the arts.

Data

In order to test the hypotheses the data for this research covers all College of Arts and Science faculty working during the current 1997-98 school year. This list of faculty was compiled from the University Bulletin and cross-referenced with the departmental web pages, and a list of faculty maintained by the Office of Communications. Faculty members were defined as assistant, associate, adjunct and full professors as well as instructors and research associates. Because of a lack of class participation Professor Emeritus were not included in the sample data. Information collected from these sources included name, department, faculty rank, and date of bachelor's degree. If the faculty rank differed among the three different sources the highest rank was chosen. Also faculty that work for more then one department were only counted once under which department they were listed in the bulletin. This date was used in

formulation of an age variable. I took the current year (1998) minus the year of graduation and assuming that most faculty continued from high school straight into college added twenty-two as the age of graduation.

The verification of whether a faculty member had a home page was more difficult to ascertain than the list of faculty members due to a lack of source of faculty home page links. After all obvious faculty links from the thirty individual department pages were exhausted I used the University's intranet search engine, waterfall.uoregon.edu, in conjunction with the university's electronic phone book. First a search of the intranet was done on a faculty member's name. If that search failed to reveal a home page then the faculty member's phone was pulled and the e-mail address became a search for the Waterfall intranet search engine. This search turned up any pages that belonged contained a link to the faculty member's e-mail or web-site. Because the intranet server does not record pages until after a couple weeks of their creation, I also pointed my browser at the individuals email address to see if there by chance was a new site that hadn't been picked up by the search engine. If these methods failed it was determined that the individual did not possess a home page.

Early on in the process of data collection a major question came up specifically regarding web pages of Biology and Chemistry faculty. Members of the labs that the faculty member's headed created many of the faculty member's pages, and the question was could these pages be considered the faculty member's own pages. After further consideration it was decided to include these pages under that assumption that the faculty member was the instigator of the decision to build a web site. The faculty member was enjoying all the benefits that a web site possess, and given that a site was already created it was highly unlikely that they would create their own duplicate site.

It is one thing to have a web page and quite another to have a web page with useful content on it. For each faculty member who had a web page, its URL address was recorded and after all faculty members had been searched, I went back to each page and recorded that type of content into five different categories; vita, teaching aide, class links, working papers, personal enjoyment. The five categories constituted what I believed the benefits of a home page would be for a faculty member, as a career development tool, a teaching tool, and lastly a chance for personal expression and enjoyment.

The first, whether the site contained a faculty member's curriculum vitae, was an effort to calculate how many individuals used their web sites as a career development tool. Posting a curriculum vita is a passive way of soliciting responses from potential job offers.

The second category, whether the site was used as a teaching aide, tried to capture all content on the site that was not directly related to a class but was in some way related to the faculty member's area of study and would be useful to students or others that visited the site. Examples include, discussions of research, links related to a certain field of study and other resources for students.

The third category, whether the site contained class links, recorded any class material on the web site or links to classes taught by the faculty member. Information ranged from online syllabi to all class related material including homework, exams, news, notes, reading, and professor e-mail address. This type of information is the most researched of all of the five topics, and while the variable does not take into account the extent to which the site is integrated into the teaching curriculum it does allow us to take into account faculty use of online class material.

The fourth category, working papers, was whether a site contained any research or working papers written by the individual. A research or working paper is very similar to both the vita and the research aide. Like a vita it helps promote in individuals work and career, but at the same time it can be used as information for students and faculty much like a teaching aide.

The fifth and final category, personal enjoyment, captured any use of the site that in no way related to any of the above categories. This included pictures, list or links of hobbies and favorite site, music pages, and any other obvious subject distinct from the individuals professional career.

Without running any statistical regressions it is sometimes helpful to look at simple percentage statistics to gather interesting facts and a simple analysis. In tables 1-3, I have shown the percentages of home pages by department, faculty rank, and age. Table 1 is an effective indicator of how different departments rank in relation with one another. In table 2 it is interesting to note that the percentages by rank do not differ very much save for research associate and adjunct professor, but this may be due to such a small sample from those two groups. Table 3 is just as effective at showing how there is a slight downward trend as age increase but surprisingly that percentages are very close, with those over 65 a surprising 37% likely to have created a home page. After our statistical analysis these statistics will be useful to see how the analysis results differ.

Empirical Results and Interpretation

When working with a bivariate dependant variable, deciding which model to use is as important as choosing the regressors. In addition to a standard OLS linear probability model, probit and logit models are often used with bivariate dependant variables. These models are

superior in explaining the effect of the regressors on the dependant variable because they rely on a probability distribution. Unfortunately because of the nature of the data set (some departments had no members with home pages), logit and probit models were not effective in analyzing the data. The probit and logit analysis was also very similar to the regression results from the OLS model, so for simplicity the OLS model was chosen because it afforded a relatively accurate picture, while not having to introduce the data set to many distributional restrictions.

My initial specification defines a dependent variable that takes a "1" if the faculty member has a web page of not. However, from the data section above, its is clear that creators of these web pages may have heterogeneous motivations. The three primary, but distinct, motivations seem to be 1) content for career development, 2) content as a teaching aide, and 3) content created for personal enjoyment. These motivations may differ by variables I have hypothesized determine web page usage in general. For example, tenured professors may be less likely to have a web page with a career focus, but more likely to have a web page with a teaching emphasis. To address these issues to some extent, I ran 3 alternative dependant variables on the same set of regressors. These alternate regressors are 1) A "1" for the joint occurrence that the faculty member has a web page and career content and "0" otherwise, 2) A "1" for the joint occurrence that the faculty member has a web page and teaching content and "0" otherwise, 3) A "1" for the joint occurrence that the faculty member has a web page and content for personal enjoyment and "0" otherwise. The results of the regressions using these four different dependant variables can be seen in tables 4-7.

Within each table four different equation results can be seen. This was done to see which confirm different hypothesis about the dependant variable. All four variations are listed below with home page as the dependant variable. The first equation explains the dependant variable

with age, gender, and a variable TTrack which is a dummy variable that is 1 for all faculty who are assistant, associate, or full professors. ($HP = \beta_0 + \beta_1 Age + \beta_2 Gender + \beta_3 Ttrack$) The second equation still includes age and gender but replaces ttrack with two dummies Tenured (one when an associate or full professor), and AssistantProf (one when an assistant professor). ($HP = \beta_0 + \beta_1 Age + \beta_2 Gender + \beta_3 Tenured + \beta_4 AssistantProf$)

The third and fourth models are identical to the first two save the addition of dummy variables representing each department. The economics department (DD9) was not included in the equation to allow the coefficients of the department dummies to be in relation to the economics department and avoid perfect multicollinearity.

3. $(HP = \beta_0 + \beta_1 Age + \beta_2 Gender + \beta_3 TTrack + \beta_4 DD1 + \beta_5 DD2 + \beta_6 DD3 + \beta_7 DD4 + \beta_8 DD5 + \beta_9 DD6 + \beta_{10} DD7 + \beta_{11} DD8 + \beta_{12} DD10 + \beta_{13} DD11 + \beta_{14} DD12 + \beta_{15} DD13 + \beta_{16} DD14 + \beta_{17} DD15 + \beta_{18} DD16 + \beta_{19} DD17 + \beta_{20} DD18 + \beta_{21} DD19 + \beta_{22} DD20 + \beta_{23} DD21 + \beta_{24} DD22 + \beta_{25} DD23 + \beta_{26} DD24 + \beta_{27} DD25 + \beta_{28} DD26 + \beta_{29} DD27 + \beta_{30} DD28 + \beta_{31} DD29 + \beta_{32} DD30)$

4. $(HP = \beta_0 + \beta_1 Age + \beta_2 Gender + \beta_3 Tenured + \beta_4 AssistantProf + \beta_5 DD1 + \beta_6 DD2 + \beta_7 DD3 + \beta_8 DD4 + \beta_9 DD5 + \beta_{10} DD6 + \beta_{11} DD7 + \beta_{12} DD8 + \beta_{13} DD10 + \beta_{14} DD11 + \beta_{15} DD12 + \beta_{16} DD13 + \beta_{17} DD14 + \beta_{18} DD15 + \beta_{19} DD16 + \beta_{20} DD17 + \beta_{21} DD18 + \beta_{22} DD19 + \beta_{23} DD20 + \beta_{24} DD21 + \beta_{25} DD22 + \beta_{26} DD23 + \beta_{27} DD24 + \beta_{28} DD25 + \beta_{29} DD26 + \beta_{30} DD27 + \beta_{31} DD28 + \beta_{32} DD29 + \beta_{33} DD30)$

In all eight models that did not include the department dummy variables gender is significant in influencing the dependant variables. This seems to support older research and views that gender does play a large role in the adoption of instructional technology and the use o the internet. Yet when we include the department dummies as part of the models the data suggests the effect of gender is not statistically different from zero. This highlights the importance of the department dummies, and what effects the department characteristics play in determining faculty adoption of web pages. In addition the adjusted R^2 rises about ten fold when the department dummies are added further pointing to the necessary addition of them into the analysis. The F-test of all the equations also indicates that the models chosen fit well with the true hypothesis.

Looking at tables 4-8, age significantly effects all four-dependant variables in 15 out of the 16 total regressions. Even though age is significant it is interesting to note its effect on the dependant variables are very small. This supports the analysis of able 3 where the percentage of home pages slowly decreased over increasing age groups. While age is significant on the other hand gender does not significantly influence any of the four dependant variables when the department dummies are included. These results confirm the earlier hypothesis that gender does not significantly effect the creation of a web page.

An interesting result of the analysis can be seen on table 5 where the assistant professors are much more likely to use web pages for career promotion either through a vita, or working papers than associate or full professors. Both with and without department dummy variables the assistant professor dummy significantly effects the use of the web for career advancement. This compliments research by Larry Singell Jr. where he discusses how a full professor is more likely to devote time to teaching than to research. Along the same lines there is some weak evidence that tenured professors are less likely to use their home pages for personal enjoyment. This also compliments the view that more senior faculty feel compelled to use their home pages as instructional tools.

Having already seen table 1 with its rankings of departments by percentage of faculty with web pages, it is interesting to look at table 8. Table 8 shows the effect that different departments have on faculty adoption of web pages holding gender, age, and rank constant. One thing that is unmistakably clear is the distribution of the science departments and the art departments. The science departments hold all top ten spots, and are in general higher than the art departments. In the reverse the art departments garnered the bottom ten spots along with in general being the below most science departments. This departmental influence on the

dependant variable also is very large holding all other things constant, which indicates that either the costs of the science departments are lower, or the benefits are higher, or a combination of both.

Conclusion

After thoroughly analyzing the data and its conclusions I believe that there is little surprise in the results. The question now should be what policy implications do these results have for the University and for campus internet usage in general. I believe that it is important to show that gender does not play a large role in the development of instructional technology. This has been an excuse and a crutch for some in recent years, and I believe that highlighting its insignificance should help point the spotlight on some of the more important and relevant issues. One important result of this analysis is the highlighting of the important role departments play in the creation of instructional technology. While some may argue that some disciplines lend themselves more readily to the creation of instructional technology, I would argue that the policy and planning of the departments themselves is equally important in governing the extent of adoption. Another interesting area that would have been nice to explore further is any connections between faculty and classes with web pages and teachers evaluations. This seems like a logical question to ask, because as teachers the ultimate goal is to find the most effective way to impart knowledge to a student. Teacher evaluations are a good indicator how effective they believe this delivery of knowledge is. Understanding what makes a faculty member more likely to adopt instructional technology is an important tool that can help us answer some of the pressing questions we face today and allows us a greater control of the future of higher education.

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Departments by Web Page Usage

Table 1

Ranking	Department	%
1	Computer and Information Science	95%
2	Geological Sciences	93%
3	Physics	78%
4	Mathematics	75%
5	International Studies	67%
6	Geography	64%
7	Economics	59%
8	Psychology	44%
9	Chemistry	40%
9	Honors College	40%
9	Linguistics	40%
12	Biology	38%
12	Exercise and Movement Science	38%
14	Anthropology	37%
15	Comparative Literature	33%
15	Sociology	33%
17	Theater Arts	29%
18	Political Science	28%
19	History	23%
20	Romance Languages	21%
21	English	20%
22	East Asian Languages and Literatures	18%
23	Russian	17%
24	Creative Writing	14%
25	Germanic Languages and Literatures	13%
25	Philosophy	13%
27	Classics	0%
27	Environmental Studies	0%
27	Religious Studies	0%
27	Women's Studies	0%

Faculty by Percentage with Web Pages

Table 2

Faculty Rank	Total	%
Research Associate	5	60%
Professor	178	46%
Asst. Professor	136	43%
Associate Professor	116	40%
Instructor	35	37%
Adjunct Professor	5	20%

Age Groups by Percentage with Web Pages

Table 3

Age	Total	%
Under 35	51	53%
35-44	143	44%
45-54	159	42%
55-64	103	39%
65 and Over	19	37%

Table 4

Dependant Variable: Home Page

	Regression 1	Regression 2	Regression 3	Regression 4
Constant	0.5255***	0.63419***	0.79703***	0.81665***
	(0.12619)	(0.15522)	(0.15460)	(0.17388)
Age	-0.52959E-02**	-0.76322E-02**	-0.61721E-02***	-0.66231E-02**
	(0.22996E-02)	(0.30108E-02)	(0.21479E-02)	(0.28181E-02)
Gender	0.16148***	0.15740***	0.10660E-01	0.10235E-01
	(0.48586E-01)	(0.48682E-01)	(0.47650E-01)	(0.47732E-01)
Tenure Track	0.51013E-01		0.35851E-01	
	(0.76926E-01)		(0.72128E-01)	
Tenured		0.82292E-01		0.41479E-01
		(0.81178E-01)		(0.75699E-01)
Assistant Professor		0.11552E-02		0.25978E-01
		(0.87374E-01)		(0.82488E-01)
Dept. Dummies	No	No	Yes	Yes
Adjusted R^2	0.02352	0.02444	0.20604	0.20435
F-Test (p-value)	4.81	3.97	4.84	4.69
	(0.00262)	(0.00353)	(0.00000)	(0.00000)

Note: *** = 99% Significance Level, **=95%, *=90%

Table 5

Dependant Variable: Cat_1 (Career Development)

	Regression 1	Regression 2	Regression 3	Regression 4
Constant	0.30293***	0.19403	0.46589***	0.31486**
	(0.96258E-01)	(0.11827)	(0.12730)	(0.14231)
Age	-0.67004E-02***	-0.43595E-02*	-0.68624E-02***	-0.33913E-02
	(0.17541E-02)	(0.22940E-02)	(0.17686E-02)	(0.23065E-02)
Gender	0.11887***	0.12296***	0.51052E-01	0.54330E-01
	(0.37061E-01)	(0.37093E-01)	(0.39236E-01)	(0.39067E-01)
Tenure Track	0.12520**		0.12677**	
	(0.58678E-01)		(0.59392E-01)	
Tenured		0.93856E-01		0.83451E-01
		(0.61853E-01)		(0.61957E-01)
Assistant Professor		0.17515***		0.20277***
		(0.66574E-01)		(0.67514E-01)
Dept. Dummies	No	No	Yes	Yes
Adjusted R^2	0.04483	0.04786	0.09499	0.10395
F-Test (p-value)	8.42	6.96	2.55	2.67
	(0.00002)	(0.00002)	(0.00001)	(0.00000)

Note: *** = 99% Significance Level, **=95%, *=90%

Table 6

Dependant Variable: Cat_2 (Teaching Aides)

	Regression 1	Regression 2	Regression 3	Regression 4
Constant	0.61454***	0.64498***	0.89882***	0.86574***
	(0.12197)	(0.15024)	(0.15457)	(0.17382)
Age	-0.73452E-02***	-0.79995E-02***	-0.83500E-02***	-0.75896E-02***
	(0.22226E-02)	(0.29141E-02)	(0.21475E-02)	(0.28172E-02)
Gender	0.13034***	0.12919***	0.33505E-02	0.40686E-02
	(0.46960E-01)	(0.47119E-01)	(0.47641E-01)	(0.47717E-01)
Tenure Track	0.40822E-02		-0.29330E-01	
	(0.74352E-01)		(0.72115E-01)	
Tenured		0.12842E-01		-0.38819E-01
		(0.78572E-01)		(0.75675E-01)
Assistant Professor		-0.98802E-02		-0.12682E-01
		(0.84569E-01)		(0.82462E-01)
Dept. Dummies	No	No	Yes	Yes
Adjusted R^2	0.02601	0.02419	0.15259	0.15100
F-Test (p-value)	5.22	3.94	3.67	3.55
	(0.00149)	(0.00373)	(0.00000)	(0.00000)

Note: *** = 99% Significance Level, **=95%, *=90%

Table 7

Dependant Variable: Cat_3 (Personal Enjoyment)

	Regression 1	Regression 2	Regression 3	Regression 4
Constant	0.35264***	0.32251***	0.89882***	0.44337***
	(0.80913E-01)	(0.99650E-01)	(0.15457)	(0.11254)
Age	-0.47329E-02***	-0.40854E-02**	-0.83500E-02***	-0.34001E-02*
	(0.14744E-02)	(0.19329E-02)	(0.21475E-02)	(0.18241E-02)
Gender	0.70168E-01**	0.71300E-01**	0.33505E-02	0.41605E-02
	(0.31153E-01)	(0.31253E-01)	(0.47641E-01)	(0.30895E-01)
Tenure Track	-0.67002E-01		-0.29330E-01	
	(0.49324E-01)		(0.72115E-01)	
Tenured		-0.75671E-01		-0.90432E-01*
		(0.52115E-01)		(0.48997E-01)
Assistant Professor		-0.53184E-01		-0.45425E-01
		(0.56093E-01)		(0.53392E-01)
Dept. Dummies	No	No	Yes	Yes
Adjusted R^2	0.02497	0.02346	0.15259	0.19038
F-Test (p-value)	5.05	3.85	3.67	4.38
	(0.00189)	(0.02346)	(0.00000)	(0.00000)

Note: *** = 99% Significance Level, **=95%, *=90%

Departments by Web Page Usage

Table 8

Rank	Department	Coefficient
1	Geological Sciences	0.38935 **
2	Computer and Information Science	0.38588 ***
3	Physics	0.24821 *
4	Mathematics	0.21941
5	International Studies	0.14146
6	Geography	8.16E-02
7	Economics - **Reference Department**	0
8	Psychology	-0.10548
9	Chemistry	-0.13013
10	Linguistics	-0.13017
11	Honors College	-0.1318
12	Biology	-0.14694
13	Anthropology	-0.15349
14	Exercise and Movement Science	-0.18175
15	Sociology	-0.21469
16	Theater Arts	-0.22983
17	Comparative Literature	-0.26238
18	Political Science	-0.27417 *
19	History	-0.32131 **
20	English	-0.33515 ***
21	Romance Languages	-0.35294 **
22	Russian	-0.35949 *
23	East Asian Languages and Literatures	-0.37479 **
24	Philosophy	-0.42852 **
25	Creative Writing	-0.42863 **
26	Germanic Languages and Literatures	-0.44381 **
27	Religious Studies	-0.52932 *
28	Women's Studies	-0.53456 *
29	Classics	-0.57927 **
30	Environmental Studies	-0.58431

Note: *** = 99% Significance Level, **=95%, *=90%