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STUDENT COURSE PERCEPTIONS: A PERCEIVED-EASE-OF-USE-- PERCEIVED-USEFULNESS FRAMEWORK

Somjit Barat

Rajasree K. Rajamma
Fairfield University, rrajamma@fairfield.edu

Mohammad Ali Zolfagharian

Gopala Ganesh

Peer Reviewed

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Somjit Barat, Pennsylvania State University Mont Alto
Rajasree K. Rajamma, Fairfield University
Mohammad Ali Zolfagharian, The University of Texas – Pan American
Gopala Ganesh, University of North Texas

ABSTRACT

This study focuses on students' perceptions about a hybrid marketing course, delivered in independent face-to-face and online formats, at a southwestern U.S. university. Based on the Perceived-Ease-of-Use (PEOU) – Perceived Usefulness (PU) framework, it examines the associations of PEOU and PU with each of two constructs viz., Comparative Evaluation and Communication with the Instructor. The research throws light on hitherto unexplored dimensions of students' course and teacher perceptions. In addition, from a marketing perspective, educators can utilize the findings to make their instruction more effective for their "customers." Finally, data analyses supporting the hypotheses, academic and research implications as well as ideas for future directions are presented.

INTRODUCTION

This study focuses on undergraduate students' perception of a hybrid marketing math course that was delivered both face-to-face and online. While students of both formats had access to all materials and tools, those in the face-to-face format were able to access the online resource materials for each topic only after it had been covered in class. Specifically, this research was designed to investigate (i) how easy it was for students to use the tools provided by the instructor in this course and (ii) if and how the tools benefitted them.

There is substantial research on student performance; tools for measuring teaching effectiveness in the classroom and how students evaluate teacher instruction. Nonetheless, opinions regarding the efficacy and usability of such evaluation methods are equivocal. The first disagreement among academics appears to stem from a concern about whether students have the capability to "judge" instructors. For example, it has been reported that different students have different expectations from classroom instruction (Davis et al. 2000) and from the course itself (Redish et al. 1996). If a student lacks the motivation to attend classes, there remains serious concern about the student's ability and/or desire to evaluate the course and its effectiveness.

More confusion results from the myriad of models and/or tools that deal with teaching effectiveness, both at the theoretical and at the implementation levels. In the past, for example, academics have used the Social Learning Theory (Bandura 1976), the "four-level" evaluation theory (Kirkpatrick 1976), trainee behavior theory (Alliger and Janak 1989), and Bloom=s taxonomy of self-evaluation and learning (1956) to anchor their research on student perception. This study resulted from a desire to untangle some of this confusion, as there is considerable scope for further contribution and/or clarification in this field. In the process, those dimensions of student perception of the teacher and his/her teaching that have been hitherto overlooked are explored. Hence, the current research has good potential to contribute to knowledge in this area.

Four hypotheses are presented herein, based on the Perceived Ease of Use-Perceived Usefulness framework. These are subsequently tested for feasibility and robustness. The primary beneficiaries of the findings of this study would be teachers/administrators who can incorporate these into designing a more effective instructional methodology for their customers, i.e., the students. On a less likely note, students can also utilize the findings of this study to make better course selections.

RESEARCH HYPOTHESES

There appears to be considerable variation in research perspectives as gleaned from a brief historical review of pertinent literature. The *perceived ease of use* (PEOU) – *perceived usefulness* (PU) framework appears to be best suited for measuring student perception in such a context.

Justification of the Hypotheses

Learning is an integral part of the consumer decision-making process. It is defined as *any change in the content or organization of long-term memory or behavior* (Mitchell 1983) that results from information processing. Perception, on the other hand, has three components according to Hawkins et al. (2007, p. 282): exposure (which "occurs when a stimulus comes within a range of a person's sensory receptor nerves"), attention (which occurs when the stimulus is "seen") and interpretation ("assignment of meaning to the received sensations"). In the present context, students are subject to incremental levels of information which they need to process within a limited period of time, and then apply to case studies that they are regularly tested on. As a result of this process, students form opinions about the course itself, its components, the teacher, and method of instruction. In other words, students develop their own perceptions of the course. Naturally, it can be argued that learning and perception are strongly related. It may be noted that the relationship between learning and perception has been used as a theoretical framework in past research, such as for measuring faculty teaching attitudes and their association with student classroom learning perceptions (Angulo et al. 2007). This framework has also been applied in personality profiling, such as by using the Myers-Briggs Personality test to check whether job candidates were compatible with certain profiles (Amato et al. 2005). In fact, it is quite common for organizations to subject their current employees and potential recruits to various learning environments and Ameasure@ their perception of the organization in the hope of reducing potential personality clashes. This logic is extended to lay the framework for the present research.

The ease with which a tool can be used is considered the perceived ease of use (PEOU), while the benefit that the individual derives by using the product is regarded as its perceived usefulness (PU). Typically, students are enrolled in multiple courses, enabling them to compare the focal course objectively against the backdrop of other courses, a feature referred to as "comparative evaluation" in this research. It is believed that comparative evaluation plays a role in influencing the PEOU of the focal course. Moreover, the ability of the student to compare the focal course against several other courses stimulates the individual's performance goals (Barron et al. 2003), leading to a healthy "learning environment" (Leveson 2004) for the student. As such, it is also proposed that comparative evaluation is associated with the PU of the course.

Past research (Sinickas 2007) suggests that "communication" is not only a tool to exchange messages between individuals but also helps in establishing social networks, leads to questioning and consensus-building. The ability of the teacher to deliver his/her message to students through effective communication puts the students at ease and better equips them to navigate the course. Therefore, it is surmised that communication with the instructor has a bearing on the PEOU of the course.

Students perceive teachers with better communication capabilities to deliver better value in course design and/or interaction, in web-based courses (Oliver et al. 2009) and hence, typically rate such teachers higher than those who lack such abilities. In an extensive cross-cultural study on student perception of importance of teacher traits, Alshare et al. (2009) found that communication abilities ranked very high, more so for American students than their Chilean and Jordanian counterparts. In fact, Smart et al. (2003) reported similar results when they surveyed marketing professors who were considered superior to their colleagues by their respective departmental chairs. Referring to this study, Alshare et al. (2009) note: "These professors associated success with characteristics reported by outstanding professors in several earlier studies, some dating from the 1980s. Valued characteristics included excellent communication skills, interactive teaching styles, a real-world focus, empathy for others, and both organizations as well as presentation skills" (p. 108). Therefore, it is proposed that communication with the instructor is associated with the PU of the course as well.

Background for Theoretical Framework

Several models deal with the perceived quality of learning experience (Peltier et al. 2007), reflective learning (Peltier et al. 2005, 2006), structured case analysis augmenting critical thinking skills (Klebba and Hamilton 2007) and learning style differences (Morrison et al. 2006; Karns 2006a). There have also been attempts to use certain instruments for measuring student perception, such as the one based on the "Job Diagnostic Survey" (Jackson et al. 2006). While acknowledging such diverse research streams through a brief historical review of pertinent literature, we believe that the *perceived ease of use* (PEOU) – *perceived usefulness* (PU) framework appears to be the most appropriate in the context of student perception research. Introduced by Schultz and Slevin (1975) and Robey (1979) and later refined by Davis (1989), the PEOU-PU framework proposes that if an instrument is easy to use, it is also perceived to be beneficial by the user of the instrument. These two constructs were found to be relevant in and evolved from diverse research streams, such as self-efficacy (Bandura 1982), behavioral decision theory (Jarvenpaa 1989), and adoption of innovations (Tornatzky and Klein 1982). While there appears to be remarkable similarity in past research findings (Davis 1989), it must be noted that there is lack of robust evidence regarding the directional relationship between PEOU and PU and hence, it was decided to leave that question out of the purview of the current research.

In more recent research, Peltier et al. (2003) suggest a model based on "virtual communities." The authors include six dimensions of perceived effectiveness/usefulness in an online context namely instructor support and mentoring, instructor-to-student interaction, information delivery technology, course content, course structure, and student-to-student interaction. In addition, Karns (2006b) suggests how learning style differences impact perceived effectiveness of twenty-one different learning activities. Specifically, his study investigates whether customizing courses according to student's perceived learning styles is worth the effort. These studies indicate that academics have used the concepts of PEOU and PU from different perspectives in the field of teaching as well.

The remainder of the paper is laid out as follows: the next section is devoted to a discussion of the theory based on a review of the literature, which leads to model development. Following that is a description of the data collection method, analysis, and the results of hypotheses testing. The concluding section is devoted to discussing the academic implications and limitations of the study and to providing ideas for further research.

LITERATURE REVIEW AND MODEL DEVELOPMENT

Ease is defined as "freedom from difficulty or great effort" (www.dictionary.reference.com). In the present scenario, different factors influence the student's perception of how easy it is to use the tools (of the course), which is referred to as *PEOU*. "On the other hand, from an economic standpoint, students evaluate the usefulness of a course using a benefit-cost approach, (i.e., how the benefit derived from a course compares with the cost incurred for the course). If the benefits outweigh the costs associated with the course, the student's PU of that course is positive. For the purpose of this study, therefore, we refer to the benefit-cost as the PU of the course." Since PEOU measures how user-friendly a particular tool or method of instruction is, if a tool is perceived relatively user-friendly, the user will be more inclined to utilize the tool. Conversely, the harder a tool is to use, the more likely the user is to reject it. At the same time, the degree of acceptance or rejection of a tool by the subject depends on the level to which the user feels it will be of any benefit at present and/or in the future (Shim and Viswanathan 2007). Research suggests that both PEOU and PU bear a positive relationship with the user=s self-reported level of current and future usage. The focal course (one of the four or five courses that undergraduate students take in a typical semester at a four-year program at any U.S. university) is designed such that students are exposed to incrementally more challenging materials. At each stage, students use the skills acquired previously, and are tested for their mastery over the topics. Since the degree to which students feel that they can utilize the tools of this course for present and future purposes is of critical interest, research on perceived ease of use, perceived usefulness, and self-reported current and future usages by students are reviewed next.

From a behavioral perspective, consumers make decisions based on *bounded rationality* (Arthur 1994), i.e., their ability to compare among different products is limited by their information-processing capability. Consequently, customers often apply several surrogate indicators (price, etc.) and evaluative criteria (attribute-by-attribute, conjunctive rule, disjunctive rule, elimination-by-aspects etc.) in helping them select the "best" alternative. Such evaluative rules and criteria are widely used in consumer decision-making because they reduce the time required in arriving at a decision and post-purchase dissonance (Lamb, Hair, and McDaniel 2008; Hawkins, Mothersbaugh, and Best 2007). The net result is often a positive opinion about the product of interest. Drawing an analogy to the present scenario, the students (customers) apply surrogate indicators (number of hours studied per week, number of assignments, number of exams, etc.) and evaluative criteria to judge the focal product (course) against others (courses). Such student behavior is typical of undergraduate introductory and/or basic courses (as the focal course is), which ". . . are taught as large lectures, use multiple choice exams to evaluate students' learning, and assign grades based on normative curves. Competence is clearly defined in terms of relative ability and normative comparisons" (Barron and Harackiewicz 2003, p. 359). Consequently, is argued that the benefit of comparative evaluation of the focal course positively influences its perceived ease of use by students (see Figure 1 for the theoretical model).

H$_1$: The comparative evaluation of the course will bear a positive association with the PEOU of the course.

Undergraduate students typically need to maintain a passing grade in each of their courses. This has been referred to as the multiple goal perspective in extant literature (Barron and Harackiewicz 2001). It has been argued that when students are required to prove their ability in a "comparative scenario" (be it relative to other students or to other courses), they achieve additional benefits in their mastery of academics. Several researchers (Barron and Harackiewicz 2001; Harackiewicz et al. 2002; Pintrich 2000) have argued that an attempt to achieve multiple goals leads to "optimal motivation" (Barron and Harackiewicz 2003). In other words, when the student is able to compare the focal course with other courses, the PU of that course also increases, which motivates the second hypothesis as follows:

H$_2$: The comparative evaluation of the course will bear a positive association with the PU of the course.

FIGURE 1
CONCEPTUAL FRAMEWORK AND HYPOTHESIZED RELATIONSHIPS
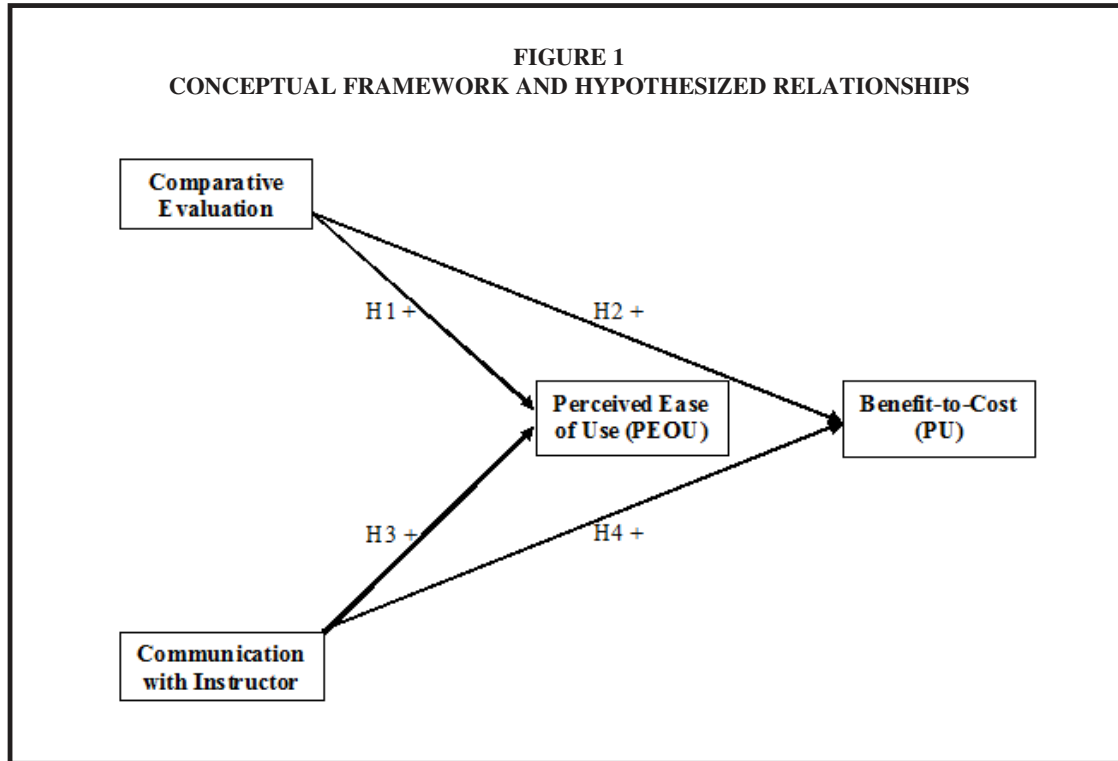
In reviewing extant literature, no evidence was found that the relationship between comparative evaluation and PU and PEOU of a course were moderated by (1) number of courses the student was enrolled in, (2) how many courses the student had already completed and (3) how many of those courses the student took at other institutions. Hence, these associations are not explored in this research.

Teaching involves "communication" from the "source" (i.e., instructor) to the "recipient" (i.e., the student), using a "medium" (i.e., the tools and technology). Previous research has clearly established that people tend to seek different goals in their communications (e.g., task vs. social) and utilize different patterns of communication (e.g., information sharing vs. questioning and consensus building) in order to accomplish those goals (Sinickas 2007). In a face-to-face (F2F) setting, it is the teacher who controls the source, medium and "noise" (i.e., distraction) in the communication environment. Students by contrast (especially in large classes), play the role of passive participants as the recipients of the communications (Orlich et al. 1998). Consequently, when access to online resources either supplement (as in a hybrid class) or supplant (as in an online class) the traditional classroom, students are likely to derive significant benefits. They have the freedom, flexibility, and ability to interact with the instructor and fellow students anytime and anywhere they choose, in several ways such as audio, visual, text,

video, electronic mail, and chat. In other words, in an online setting, the onus of making maximum use of the instructor's communications resides relatively more with the student instead of with the instructor. Therefore, the communication aspect plays a critical role in the students' perception of the focal course in an online environment. Consequently, the more effectively the instructor can support and synchronize traditional tools with online tools in the focal course, the easier it will be for the students to utilize the knowledge and tools. Therefore, it is argued that the student's PEOU of the knowledge and tools gained from a course depend on interaction and communication characteristics, which motivates the next hypothesis:

H$_3$: The perceived effectiveness of communication with the instructor will bear a positive association with the PEOU of the course.

In a hybrid course, consequently, students get a more holistic and realistic experience, have a better chance to ". . . think critically, use the information and communicate effectively and work in a team" (Mat 2000; Neo and Neo 2004; Tway 1995; Hua, Sher, and Pheng 2005), leading to an enhanced perception of PU of the course and the next hypothesis:

H$_4$: The perceived effectiveness of communication with the instructor will bear a positive association with the PU of the course.

METHOD AND RESULTS

Data was collected from about 920 students enrolled in a junior-level marketing math course, representing more than 90 percent of final enrollment over a 4-year period, at a south-western university. However, only 30 percent were in their junior year, while the majority (68.2%) reported senior status, perhaps reflecting a tendency to put off "math-intensive" courses as much as they can! The course was offered by the instructor in two modes, i.e., face-to-face and online. A voluntary and anonymous online survey was administered to all students during the last week of class. About 60 percent of the responses came from the online classes. The high level of participation was undoubtedly helped by a half a percent "bonus point" boost to the student's semester percent. Nearly 53.2 percent of the respondents were female, 93.7 percent were in-state residents, and 22.9 percent had never taken an online class before. Their average age was 22.8 years (with the median at 22).

The students were asked how they perceive the focal course in terms of (1) how easy it was for them to use critical course components, and, (2) whether and how the students benefitted from (the knowledge gained by) using such tools.

An Exploratory Factor Analysis (EFA) was performed on the scales using principal component extraction and varimax rotation to observe their underlying structure. Five factors emerged including: communication with the instructor (COMM), comparative evaluation with other courses (COMP), perceived ease of use (PEOU), perceived usefulness (PU), and comfort level. It was decided to exclude the comfort level factor because it lacks support in extant literature and therefore does not justify its inclusion in the backdrop of the theoretical model. The other four factors have a strong presence in past research and showed adequate levels of reliability (Cronbach's $\alpha > 0.70$) in the analysis. For each of these factors, items with main loading of 0.50 or higher were retained (9 items for COMM, 4 items for COMP, 13 items for PEOU, and 9 items for PU) and averaged to form these four key constructs.

Since data were collected over 10 semesters and across two different instructional formats, the four key constructs were naturally examined as dependent variables in a MANOVA, with semester and format as the independent variables. While the main effects for semester and format were significant, so too was their interaction, meaning that the main effects cannot be uniformly interpreted. However, per Table 1, the mean and median for the four constructs across semesters and formats were pretty similar. There was no dramatic shift in the scale location of the mean and median across semester, across format, compared to the aggregate.

Next, these results were treated as constituting an *a priori* model and a confirmatory factor analysis was carried out using AMOS 15.0 to (a) confirm the underlying structure observed in EFA and (b) to determine the convergent and discriminant validities of the four constructs. The results of the first attempt suggested an opportunity to improve the model fit by eliminating one of the PU items. The results of the second and final attempt reported in Table 2 confirm the hypothesized underlying structure of the scales and provide support for the convergent and discriminant validities of each construct (Bagozzi and Heatherton 1994). Specifically, the standard loadings range from .64 to .89, the average variance extracted in each factor range from .60 to .66, and indexes indicating the model fit show acceptable values; the comparative-fit index (CFI) = .933; incremental fit index (IFI) = .931; root mean square error of approximation (RMSEA) = .066. The convergent validity of each construct is evident from the fact that the loadings and the average variances extracted are all above recommended thresholds (McDonald and Ho 2002). To determine discriminant validity, squared inter-factor correlations were compared against the average variances extracted per factor (Fornell and Larcker 1981). Since the range of the squared inter-factor correlations (from .04 to .48) falls below that of the average variances extracted (from .60 to .66), the factors are considered to possess adequate discriminant validity.

To test the hypotheses, the pertinent data were subjected to structural equation modeling in AMOS 15.0. As reported in Table 3, the resultant indexes suggest that the tested model has a decent fit. Specifically, the model is acceptable because those indices are above their respective thresholds: CFI = .930; IFI = .928; and RMSEA = .068. The resultant coefficients weights reported in Table 3 provide the results of direct testing of the hypotheses. H1 posits a positive association between comparative evaluation of the course and the perceived ease of use of the course. This hypothesis is supported ($\gamma = .378$; $P < .001$). The model does not find support for H2, which assumes a positive association between comparative evaluation of the course and the perceived usefulness of the course ($\gamma = -.004$; $P = .931$). H3 held a positive association between communication with instructor and the perceived ease of use of the course. This hypothesis is also supported ($\gamma = .551$; $P < .001$). Finally, H4 was supported ($\beta = .333$; $\gamma < .001$), which suggests a positive association between communication with instructor and the perceived usefulness of the course.

DISCUSSION

It was predicted that when students find it easier to compare the focal course with other courses that he/she is enrolled in, such ability will have a bearing on the PEOU of the focal course (H_1). It is not surprising that this association turns out to be positive, strong and significant (standardized beta coefficients 0.5 and 0.6), and it has marketing implications. It is a challenge for consumers of

Semester	Mode of Delivery		PEOU@	COMMINST@	COMPA@	PU@
f04	0 f2f	Mean	7.8607	7.9363	7.6277	3.3080
		Median	8.0714	8.0000	8.0000	3.4286
	1 inet	Mean	7.4018	7.5910	7.2970	3.1845
		Median	7.7857	7.5556	7.6667	3.1429
	Total	Mean	7.6695	7.7924	7.4899	3.2560
		Median	7.9286	7.8889	7.6667	3.2857
F05	0 f2f	Mean	6.8917	7.8333	7.4722	2.9376
		Median	7.7143	8.2222	7.7500	3.0000
	1 inet	Mean	6.1671	6.8780	6.4583	2.6317
		Median	6.5714	7.2778	6.6250	2.7778
	Total	Mean	6.5043	7.3175	6.9192	2.7724
		Median	7.1429	7.9444	7.2500	2.8889
F06	0 f2f	Mean	7.6033	8.1015	7.0255	3.1477
		Median	7.9286	8.7143	7.0000	3.2222
	1 inet	Mean	5.9229	6.2692	6.8644	2.5038
		Median	5.9286	6.6349	7.0000	2.6667
	Total	Mean	6.6783	7.0929	6.9375	2.7959
		Median	7.0000	7.3750	7.0000	2.8889
r04	1 inet	Mean	7.7889	7.5371	6.4402	3.1809
		Median	7.9615	7.5556	7.0000	3.1429
	Total	Mean	7.7889	7.5371	6.4402	3.1809
		Median	7.9615	7.5556	7.0000	3.1429
R05	1 inet	Mean	6.8300	7.4676	6.2083	2.8843
		Median	7.0000	7.7778	6.5000	2.8889
	Total	Mean	6.8300	7.4676	6.2083	2.8843
		Median	7.0000	7.7778	6.5000	2.8889
R07	0 f2f	Mean	7.3852	7.5898	6.8214	2.9266
		Median	7.6429	8.0625	6.7500	3.1111
	1 inet	Mean	7.0327	7.6481	7.0160	2.9338
		Median	7.3571	8.1111	7.0000	2.8889
	Total	Mean	7.1643	7.6263	6.9433	2.9311
		Median	7.4286	8.1111	7.0000	3.0000
s04	0 f2f	Mean	7.7153	7.8850	7.7070	3.1388
		Median	8.0769	8.3333	8.0000	3.1429
	1 inet	Mean	7.2384	7.4895	7.5135	3.0315
		Median	7.3846	7.5556	8.0000	3.0000
	Total	Mean	7.5406	7.7416	7.6361	3.0999
		Median	7.8462	8.0556	8.0000	3.1429
s05	0 f2f	Mean	7.5451	8.2862	7.6330	3.2196
		Median	7.9643	8.5000	8.0000	3.3333
	1 inet	Mean	7.0038	7.9583	7.0759	3.0404
		Median	7.1071	8.2222	7.2500	3.1111
	Total	Mean	7.2536	8.1097	7.3301	3.1239
		Median	7.6429	8.3889	7.7500	3.2222
S06	0 f2f	Mean	6.8415	8.0055	7.2969	2.8466
		Median	7.2500	8.5000	7.3750	2.8889
	1 inet	Mean	6.8414	7.5531	7.2677	2.8112
		Median	6.7857	7.6667	7.5000	2.8889

Semester	Mode of Delivery		PEOU@	COMMINST@	COMPA@	PU@
	Total	Mean	6.8414	7.7436	7.2800	2.8256
		Median	7.0000	8.0000	7.5000	2.8889
S07	0 f2f	Mean	6.9286	7.6481	6.8333	2.4259
		Median	7.2857	7.6111	7.0000	2.4444
	1 inet	Mean	6.5147	7.5032	7.1761	2.7404
		Median	6.7857	7.7778	7.5000	2.6667
	Total	Mean	6.5411	7.5124	7.1543	2.7203
		Median	6.8571	7.7222	7.5000	2.6667
Total	0 f2f	Mean	7.4508	7.9600	7.4233	3.0955
		Median	7.8462	8.2222	7.7500	3.1429
	1 inet	Mean	6.8163	7.3772	6.9840	2.8712
		Median	7.0714	7.6250	7.2500	2.8889
	Total	Mean	7.0753	7.6148	7.1625	2.9623
		Median	7.4286	7.8889	7.5000	3.0000

TABLE 1 (CONTINUED)
MEANS AND MEDIANS OF THE KEY CONSTRUCTS BY SEMESTER AND MODE OF DELIVERY

@ COMM, COMP and PEOU are measured on 1 = 10 scales with 10 = most positive. PU is measured on a 1 = 5 scale with 5 = most positive

services to rate service quality, mainly because it is subjective. The service provider, therefore, should attempt to provide some sort of comparative tool, so that the customer finds it easy to compare the focal service with other services. Such an effort potentially leads to higher service quality ratings by the service recipient (Lamb, Hair, and McDaniel 2008). No support was found for the contention in the literature that when students attempt to achieve multiple goals, they derive additional benefits from the exercise, leading to higher PU of the focal course (H_2).

Earlier, it was argued in the literature review that effective communication is at the heart of successful knowledge transfer. Communication is one of the components of *immediacy behavior,* which refers to communication behaviors aimed at reducing social and psychological distances among people (Mehrabian 1971; Myers, Zhong, and Guan 1998). Findings from several studies suggest that immediacy behavior encourages student learning and satisfaction with the course (Gorham 1988; Menzel and Carrell 1999; Arbaugh 2001). Therefore, the finding that the communication component of the focal course is indeed positively and significantly associated with its PEOU and PU vindicates the last two hypotheses (H_3 and H_4.)

Communication with the instructor has been pointed out as the most important predictor of perceptions about all aspects of a course (Dolen, Dabholkar, and Ruyter 2007). In this research, communication with the instructor emerged as a significant indicator of perceived ease of

use, and of perceived usefulness. This would imply that by establishing open communication channels with the students, an instructor can actually manage student perceptions of the course and thereby his/her evaluations by the students. Future research is encouraged to augment the conceptual model presented here by incorporating constructs that capture student participation.

Lack of a robust instrument for measuring the students' course perceptions was an impediment to this research. Even though the study is anchored in the PEOU-PU framework, the relationship between PEOU and PU is suspect. While an attempt was made to tighten as many loose ends as possible in the development of the hypotheses, there still remains an opportunity for further research, especially in crafting a stronger instrument for the "comparative evaluation" construct of this study. Perhaps test results from multiple samples in a single semester or from samples spread out over a larger span of time will open new windows for research.

When the responses of the face-to-face and online sections were separately analyzed, they revealed a factor structure different from the overall sample. Given that both sections were exposed to similar teaching materials and the fact that the face-to-face and the online students took exactly the same in-class exam concurrently in-class, such findings warrant further investigation. Teaching face-to-face is just not the same as an online class, given the total absence of dynamic student-professor interaction in the latter. Hence, exploring the factor structure for the two teaching formats and their relationships to various

TABLE 2
CONFIRMATORY FACTOR ANALYSIS (MEASUREMENT MODEL)

Latent Variable	Item	Standardized Loading	Ave Variance Extracted
COMM	satisfactory email communication with professor in WebCT	.66	.61
	content in WebCT are easy to access and review	.72	
	professor responded to messages in timely fashion	.74	
	WebCT Discussion Area effective for clarifications	.76	
	course content and materials on WebCT easy to follow	.77	
	requirements for graded assignments explained well	.78	
	instructor maintained good rapport		.82
	opportunity for clarification of exams, assignments adequate	.85	
	metal drop-off box and alpha drawers for pick up effective	.88	
COMP	more challenging than other business classes	.64	.65
	more work than other Marketing classes	.85	
	more work than other business classes	.88	
	anxious about class	.83	
PEOU	more confident "working case numbers"	.87	.66
	skills would be useful for life	.85	
	improved ability to approach methodically	.87	
	more confident using math in Marketing	.86	
	taught tools for Marketing decisions	.76	
	more confident using presentation software	.78	
	more confident using spreadsheets	.82	
	use of mini-cases appropriate	.84	
	useful overall	.89	
	more confident in job interviews	.66	
	understood accounting and finance concepts better	.74	
	by-hand mini-case analysis useful	.68	
	good value for TIME that invested	.87	
PU	M&M learning value vs. other university classes	.87	.60
	M&M pushed me to peak performance comp to other classes	.82	
	Absolute: M&M pushed me to peak performance	.80	
	M&M experience vs. expectations, regardless of grade	.70	
	receptiveness of other U.S. undergrads to web M&M	.77	
	take M&M if not elective	.76	
	$paid to university for M&M vs. benefit	.79	
	receptiveness of entrepreneurs to web M&M	.70	

Correlations and Squared Correlations between Variables *

	COMM	COMP	PEOU	PU		
COMM	1.00	.42	.48	.04	**Model Fit Indexes**	
COMP	.65	1.00	.48	.04	CFI	.933
PEOU	.69	.64	1.00	.09	IFI	.931
PU	.20	.31	.30	1.00	RMSEA	.066

* Correlations between latent variables appear below the diagonal line and the square of these correlations appear above the diagonal line.