THE IMPACT OF DEMOGRAPHIC VARIABLES ON ACCOUNTING STUDENTS' PERFORMANCE IN BLENDED LEARNING

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ABSTRACT

This paper examines the impact of some demographic variables (e.g. gender, age, ownership of a computer and connection to the Internet), on student performance and some factors that influence student performance in blended instruction courses (e.g. student participation in online activities, perception of the use of technology, perception of the interaction of instructors, student attitude towards blended learning, computer experience, self efficacy, motivation, prior performance and current performance). The study surveyed 473 undergraduate students enrolled in two blended instruction accounting courses (i.e. Managerial Accounting and Intermediate Accounting) at the Hashemite University in Jordan.

The results indicated significant gender differences for student perception of the interaction of the instructor. Significant age differences were found for motivation. Significant computer ownership differences were found for student participation, current performance and prior performance. Moreover, significant differences were found for student participation, motivation, current performance and prior performance in regard to the availability of Internet connection. In light of these findings this paper concludes by providing some potential implications and recommendations that may help in improving student performance and teaching practices in blended instruction courses.

Keywords: blended learning, performance, demographic differences, interaction, Jordan

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INTRODUCTION

It has been claimed that online education has many advantages over traditional learning in that it is available any time and any place for a worldwide society of learners (McDonald, 2002). That is, it provides freedom as to the time and place the course material is accessed and as to the time and place others are interacted with the learning environment through asynchronous and synchronous learning (Sun et al., 2008).

However, e-learning was mainly criticised for the absence of human interaction (Laurillard, 2003) as the quality of e-learning and its outcomes have been affected negatively (Lim and Morris, 2009). Problems related to pure online learning and traditional learning systems led to the idea of combining the two learning environments to overcome disadvantages of each learning environment (Delialiogh and Yildirim, 2007). Therefore, educators made more efforts to combine the benefits provided by traditional learning (e.g. social interaction between students and instructors) with those benefits provided by online learning (e.g. flexibility in terms of time and place and efficiency) (Delialiogh and Yildirim, 2007; Orhan, 2007). Combining these two main features of traditional learning and e-learning might improve the quality of the learning process (Orhan, 2007). This merger of the two learning methods led to what is called hybrid or blended learning (Osguthorpe and Graham, 2003; Orhan, 2007). In other words, blended learning combines the strengths of conventional learning and online learning. Therefore, the adoption of blended learning is increasing significantly and steadily in the education process due to its essential contribution to the learning process in the present and the belief in its importance in the near future.

Currently many universities are adopting web-based management tools such as WebCT™ and Blackboard™. This has stimulated accounting educators to use these packages to enhance student outcomes by designing an effective virtual learning environment (De Lange et al., 2003). Most universities in Jordan, including the Hashemite University, are currently adopting blended learning (Al-khadash and Abuloum, 2005). The rapid growth in the use of blended learning in Jordan's universities has led to the acknowledgement of the probable important influence of this type of learning on learning outcomes of students (Al-Adhaileh, 2010).

The Hashemite University led the Jordanian public universities in integrating web-based learning into its courses and was the first public university accredited for blended learning by the ministry of higher education in Jordan (Al-Khadash and Abuloum, 2005). The Accounting Department at the Hashemite University is considered the foremost department in applying web-based learning. The availability of a learning management system (Blackboard) enabled this department to apply collaborative learning pedagogy, which assumes that knowledge is created through interaction and sharing experiences between population members (Mitnik et al., 2009). This is achieved by encouraging students to interact and discuss ideas and thoughts in virtual and face-to-face meetings. Therefore, it is important to understand how a new form of learning can affect the learning process, especially when it is used by different learners and whether demographic differences among students affect their performance.

Therefore, this study attempts to answer a major question: "what are the impacts of the demographic differences on student performance in blended instruction courses"? According to the above discussion, this study aims to explore the impact of demographic differences on students' performance in blended instruction courses. This study involved students from the Hashemite University in two undergraduate web-based accounting courses, Intermediate Accounting and Managerial Accounting. Note that this is not the same as investigating factors that affect student performance in blended instruction courses. A full detail of such study can be found in Al-Hadrami (2012).

Variables that affect student performance in web-based courses

Several studies were conducted to investigate the relationship between student demographic variables (such as age, gender and GPA) and their performance in web-based courses; for instance, Ergul (2004) investigated the relationship between student characteristics and academic achievement measured by the average grade per lesson. The study population was 124 students enrolled in more than one web-based distance-learning course, such as finance, economics, industrial and business administration and public administration. The researcher found no significant relationship between student demographic variables (e.g. gender and age) and academic performance.

Sungkyoo et al. (2009) investigated the influence of some demographic variables (i.e. age, GPA, gender, marital status and working hours) on student performance measured by their final test score. Participants were 91 students (54 online and 37 offline) enrolled in online and offline accounting courses at California State University; these courses were supported by the Blackboard system and taught by the same instructor. The study sample was divided into two subgroups (high GPA and low GPA). The findings indicated that student performance for both groups was affected positively only by GPA. Gender and GPA affected the performance of offline students more than the performance of online students.

Further investigations were conducted by several researchers to investigate a range of other student characteristics in web-based education such as computer experience, self-efficacy, motivation and attitude (Leasure et al., 2000; Swan et al., 2000; Hong, 2002; Wang and Newlin, 2002; Dowling et al., 2003; Daymont and Blau, 2008). The following sections discuss each factor separately.

Computer experience

In the context of this factor, the literature concentrates on computer skills and prior experience with technology. Research results differ where the influence of computer skills on student performance is concerned (Thurmond, 2003). Some researchers have highlighted the importance of this factor on student performance in web-based courses prior to enrolment in such courses (Leasure et al., 2000; Swan et al., 2000). For instance, Muse (2003) conducted a study to explore factors that led to success in web-based courses. Participants were 350 students out of 1,028 students enrolled in web-based courses at Montgomery University. The researcher found that the computer skills variable was the main factor that explained the variation in student performance and that this factor explained 25% of the variation in student achievement. However, Hong (2002) found that initial computer skills had no relationship to the achievement of 26 students enrolled in a Master of Science program at University Malaysia Sarawak in Malaysia.

Motivation

It has been argued that student motivation is an important factor for success in web-based courses (Schuemer, 1993), because students need to work independently on difficult issues as

well as control their time (Sankaran and Bui, 2001). Other studies have found that motivation is one of the best predictors of student outcomes (Shih and Gamon, 2001; Thompson and Lynch, 2003).

For example, Shih and Gamon (2001) investigated the impact of student motivation among other variables on their achievement measured by students' grades at the end of the semester. The researchers distributed a questionnaire to 99 students enrolled in two biology courses at a U.S. university. The results showed a significant positive relationship between student achievement and motivation. Moreover, student motivation explained about 28% of the variance in student achievement.

Student attitudes towards web-based learning (SA)

Several studies have concentrated on students' enjoyment of web-based learning and students' evaluations of the attractiveness of web-based learning (Piccoli 2001; Hammoud et al., 2008; Xie and Ke, 2009). Moreover, learners believe that web-based learning provides new knowledge, saves time and cost and allows freedom of learning (Yu and Yang, 2006). Several studies have found that student attitudes and feelings of comfort towards technology and the course format affect their performance directly (Sankaran et al., 2000; Sivo et al., 2007). However, Shih and Gamon (2001) found that student attitudes do not affect student achievement, as it explained only 1% of the variance in student achievement in their study.

Sivo et al. (2007) conducted another study on the effect of student attitudes toward web-based courses on their performance. Participants were 217 students enrolled in a web-based psychology course using the WebCT system. The findings of this study revealed that student attitudes were the only factor that significantly affected student performance (measured by final grade).

Self-efficacy (SE)

Among the personal factors that have an impact on student performance is self-efficacy, which refers to "people's judgment of their capabilities to organize and execute courses of action required to attain a designated type of performance" (Bandura, 1986: 391). Wang and Newlin (2002) conducted a study to investigate whether student self-efficacy regarding online classes would predict their performance. Participants were 122 students enrolled in one of six web-based

sections of Research Methods of Psychology at the University of Central Florida in the U.S. Researchers found that students with high self-efficacy had better performance.

In Taiwan, Liu et al. (2008) examined the effect of self-efficacy among other variables on learner achievement and interaction. Participants were 46 students enrolled in a web-based computer course. The researchers distributed a seven-point Likert scale questionnaire to measure students' self-efficacy level. They also collected students' grades on course projects and homework as a measure of student performance. They found a significant positive relationship between student self-efficacy and overall student performance.

Prior performance (PP)

It has been indicated by the literature that the main predictor of student performance is student prior performance (Mckenzie and Schweltzer, 2001; Dowling, 2003; Roberts and Dyer, 2005). For example, Mckenzie and Schweltzer (2001) conducted a study on 197 first-year Australian university students enrolled in the faculties of science and information technology to investigate the influence of previous academic performance and psychosocial, cognitive and demographic variables on student performance. They found that the most significant predictor was the student's score on the university entry exam (prior performance), as this explained 39% of the variance in student GPA. Moreover, Roberts and Dyer (2005) studied students enrolled in all online courses given over six weeks at the University of Florida in the U.S. They found that student prior performance in a parallel pre-test was one of the main predictors of student achievement on a post-test.

Additionally, several studies were conducted to investigate other factors that might affect student performance in web-based learning. One of the most important factors that has been examined is student interaction (Thurmond, 2003) in web-based courses, which is considered a key principle for providing and developing good education (Thurmond, 2003). Several studies investigated the interaction activities in e-learning and its effect on student outcomes. These studies tested the interaction of instructors (Dennen et al., 2007; Gallien and Oomen-Early, 2008), student perceptions of the use of technology (Billings et al., 2001; Thurmond, 2003) and student participation in the online learning environment (Wang et al., 2001; Coldwell et al., 2008). These

factors must be taken into consideration while designing and delivering online courses (Alstete and Beutell, 2004). These factors are discussed in the following sections.

Student perceptions of the interaction of the instructor (II)

The instructor's role is considered one of the most important factors that affect the effectiveness of web-based education (Collis, 1995) and a major influence on student outcome (Webster and Hackley, 1997). A number of studies have focused on the importance of instructor interaction with students (Soon et al., 2000; Swan, 2001; Thurmond et al., 2002; Thurmond, 2003). For example, Dennen et al. (2007) conducted a study to investigate the importance of 19 actions of the instructors in e-learning as to student performance. Participants were 32 instructors and 170 students from a private online university and a public university. The researchers found that instructors considered almost all of the 19 actions important to student performance.

Instructor feedback helps students to increase their level of understanding and knowledge of their mistakes, which affects their future performance positively (Mason and Bruning, 1999). Soon et al. (2000) found that the failure of instructors to respond on time has a negative effect on student outcome. Thurmond et al. (2002) found that instructors' timely comments were significantly related to student satisfaction, which leads to better performance. In contrast, Pridemore and Klein (1995) compared student performance of two different groups. The first group received prompt feedback, but the other one did not. The results revealed that there was no significant difference between the performance of the two groups.

Student perceptions of the use of technology (UT)

Recently, researchers have started to evaluate e-learning technology and its influence on student outcomes and learning (McGorry, 2003). Some researchers have indicated that the quality of technology plays a major role in the effectiveness of e-learning (Webster and Hackley, 1997). Others have concentrated on the necessity of taking system and Internet quality into consideration in designing web-based courses (Graham and Scarborough, 2001; Li, 2002).

On the other hand, Internet availability and lack of speed can affect student perceptions of the use of technology in learning because they will encounter problems when accessing the course content (Thurmond, 2003) and this will negatively influence student performance

(Piccoli.,2001). For example, Webster and Hackly (1997) examined the effect of Internet speed and system quality on the learning outcomes of 247 students enrolled in 29 different online courses in different majors such as accounting, mathematics, chemistry, physics, computer science, engineering, political science and sociology. The results highlighted the importance of this factor on student outcome, and they found that system quality (audio, video and graphics) related positively to student learning outcomes. However, other studies have not found that difficulties in accessing technology affect student outcome negatively (Leasure et al., 2000; Kenny, 2002).

Student participation in online learning environments (SP)

Several studies have found that student participation in the online environment (e.g. interacting with peers, instructors and content) positively affects student performance (Wang and Newlin, 2000; Wang et al., 2001; Alstete and Beutell, 2004). For example, Coldwell et al. (2008) investigated factors that influence students' final grades in online courses. They tested student participation in online discussions. Participants were 500 students enrolled in fully online courses to earn a bachelor's degree in information technology in Australia. The researchers collected data on student participation from students' tracking tools available from the online learning system, which provides statistics about the time each student spends online, number of messages read and posted by each student and course documents viewed by each student. The researchers divided students into five categories according to their final grades: high distinction, distinction, credit, pass and fail. The findings of this study revealed that students who obtained high grades (i.e. high distinction, distinction and credit) participated substantially more than those who obtained lower grades.

Methodology

Given the existence of numerous published articles dealing with the current study's variables, the prior literature represents an important source of content for measure development; thus, all indicators that could be used to measure constructs are identified, and previous studies in the same context are used to identify the final list of indicators. Accordingly, the study instrument (questionnaire) was developed and translated into Arabic (the native language of the

respondents) by two professional translators. Then a pilot study was conducted using students from the Accounting Department at the Hashemite University. The final version of the study questionnaire was delivered by hand to students enrolled in two web-based accounting courses and collected directly (self-administrated). This method enabled the researcher to check who had answered the questions (Saunders et al., 2009), establish rapport and motivate respondents. It also clarified doubts and increased the response rate to almost 100% (Sekaran, 2003). The study questionnaire consisted of three sections. The first section included information about the research and confidentiality, the second section included questions about student demographics and the last section included questions to measure the study's main variables. The variables were measured using 43 items: 36 items had seven-point Likert-type responses that ranged from strongly disagree to strongly agree. For example, the statement "I enjoy web-based learning" was included as a potential measure of student attitude towards web-based learning. The questionnaire also included six items that had categorical responses; for example, the item "On average, regardless of whether you posted a message or not, how often did you access the course's website each week?" was used to measure student participation in the online learning environment.

One item was used to obtain a measure for each student's prior performance and current performance. Pre-requisite grades were used as a measure of prior performance. Student performance was measured using final grades at the end of the semester. Exploratory factor analysis (EFA) was used to ensure that all factors differed from one another. Principal component analysis (PCA) was conducted on 43 items with orthogonal rotation (VARIMAX). PCA was used as an attempt to reconstruct eight composite factors. When interpreting the rotated factor pattern, an item was considered to load on a factor if the factor loading was 0.4 or more (Nunnally, 1974). This criterion was used to examine the rotated pattern matrix for items that did not load on a factor with other items from the same scale (1-7). The PCA showed that eight factors were extracted. All factor loadings were larger than 0.4, and there were no cross loadings on multiple factors.

The current study used a convenience sample in that the population of the study was limited to students enrolled in only two blended instruction accounting courses from the second level of

study, namely, Intermediate Accounting and Managerial Accounting. Participants had the choice to participate in the current study. Four hundred seventy-three students agreed to participate in current study: this represents about 96% of the whole population. Twelve questionnaires were excluded from the study as they included more than 5% missing data. Thus, 461 questionnaires were included in the analysis. Participants were 250 females and 211 males. The attendance policy of the university requires that students attend three hours face-to-face per week. Approximately 48% of the students were under 20 years old, 47.5% of the students were between 20 and 22. Students enrolled in Intermediate Accounting comprised 56.2% of the participants and the remaining were enrolled in Managerial Accounting. The majority of the students (53.4%) were not working, a little less than half (44.9%) were part-time workers and the remainder (1.7%) were full-time workers. In terms of computer ownership, 86.1% of the students owned computers. The majority of the students who owned computers also had a connection to the Internet (79.4%). Full details of the study methodology can be found in Al-Hadrami (2012).

Data analysis

Several analyses of variance (ANOVAs) were conducted to determine the impact of demographic differences on current performance (CP), student participation (SP), perception of the use of technology (UT), perception of the interaction of instructors (II), student attitudes (SA), computer experience (CE), self-efficacy (SE), motivation (MO) and prior performance (PP). The F-ratios and the significance levels of the F-ratios are presented in Table 1.

Table 1. ANOVA results

Factor	Gender	Age	Computer	Internet
	Male= 211	22 and under= 441	Ownership	Connection
	Female= 250	Over 22= 20	Yes= 397	Yes= 366
			No= 64	No= 95
Computer Experience (CE)	1.321 (0.251)	1.51 (0.698)	0.118 (0.731)	0.77 (0.781)
Student Participation (SP)	0.176 (0.675)	0.202 (0.654)	**2.955 (0.086)***	**2.926 (0.088)***
Student Attitude	0.608	1.327	0.033	0.101

(SA)	(0.436)	(0.25)	(0.856)	(0.751)
Self-efficacy (SE)	0.205	0.747	0.003	0.382
	(0.651)	(0.388)	(0.953)	(0.537)
Motivation (MO)	0.010	**4.189**	0.289	**3.583**
	(0.922)	**(0.041)***	(0.591)	***(0.059)***
Student Perception of Use of Technology (UT)	2.101	0.091	0.669	0.857
	(0.148)	(0.763)	(0.414)	(0.355)
Student Perception of Instructor Interaction (II)	**3.053**	0.828	0.591	0.119
	(0.081)	(0.363)	(0.442)	(0.73)
Current Performance (CP)	0.402	0.296	**2.965**	**3.467**
	(0.526)	(0.587)	**(0.086)***	**(0.063)***
Prior Performance (PP)	0.441	0.582	**5.102**	**3.906**
	(0.507)	(0.446)	**(0.024)***	**(0.049)***

* $p < 0.10$

The cut off point used in this test is 10%. The first figure in each cell represents the F-ratio while figures between brackets show the significance levels. The bold figures in this table show significant differences in means. Significance levels in italic font indicate the direction of the difference in favour of the second group listed in the column header. For example, female students exhibited a higher level of perception of instructor interaction than male students.

Discussion

The results showed significant gender differences only in students' perceptions of the interaction of their instructors. Female students perceived the interaction of their instructors better than male students. This is consistent with the findings of a number of studies (Fisher and Richards, 1997; She and Fisher, 2002; Frumkin, 2006) that female students usually perceive their learning environment better than males and so they rate their instructors' interaction better than males (Fisher et al., 1995). This might also be due to the availability of an interesting learning

environment that combines face-to-face activities and online activities. Another finding of the current study revealed that there were no significant gender differences for participation in the online learning environment. This finding was surprising as some studies have indicated that Arab culture and traditions limit interaction between different genders (Al-Harthi, 2005; Azaiza, 2010), but in this study these two limitations did not affect female students' participation. This might be due to the use of anonymous participation in the online learning environment. Nevertheless, this finding was consistent with some Western studies, which indicated that both genders usually participate equally in a web-based learning environment (Poole, 2000; Davidson-Shivers et al., 2003). However, it was inconsistent with other Western studies (Gunn et al., 2003; Coldwell, 2008) that indicated female students usually participate more than male students in an online learning environment. Another reason gender differences may be insignificant for participation in an online learning environment in this study is because students might feel their online activities are monitored by their instructors and therefore they want to show their interactivity, especially if their participation is graded and mandatory.

Moreover, the current study did not find significant gender differences for performance, which is contrary to the findings of several studies (Gunn et al., 2003; Alstete and Beutell, 2004; Coldwell et al., 2008) that indicated females usually outperform males. These studies indicated that the main reason for this significant difference is that females are usually more motivated and they have better ability to work independently than males, which is reflected positively in their performance. However, in the current study this was not found as there were no significant gender differences for motivation. Nevertheless, this finding was consistent with a number of studies in the field of accounting (Montondon and Eikner, 1997; Monem, 2007). Accordingly, this study supports prior studies' results in that gender does not have any impact on student performance in accounting courses.

Significant age differences were found for motivation only in that younger students were more motivated than older students. This result is consistent with the finding of Justice and Dornan (2001), who found that, in general, younger students were more motivated to achieve better. It is also consistent with the finding of Hedberg (2010), who found that younger students were more motivated to learn more than older students in training courses. But this finding is contrary to the

argument that older students are usually more motivated to achieve better than younger students because older students usually have better experience and sometimes they have more ability to adopt a rigorous learning approach (Monem, 2007). Justice and Dornan (2001) explained the significant age differences for motivation in favour of younger students in that older students are more motivated to achieve better in their overall academic performance but not in a particular course. This is the case in the current study as motivation measures focus on motivation to achieve better in a specific accounting course not in the whole accounting degree programme. Another explanation for this finding is that the population of older students was very low as the majority of participants (96%) were young (less than 22). These reasons might also have caused the insignificant age differences for performance and participation in the online learning environment.

The results of this study indicated that students who owned a PC and had a connection to the Internet performed significantly better than those who did not. This is consistent with the findings of Sankaran and Bui (1999), who found that students who owned a PC and had access to the Internet performed significantly better than those who did not. Moreover, the results revealed that computer ownership and the availability of a connection to the Internet at home contributed to a significant difference in participation in an online learning environment. This result was unsurprising as the availability of these two factors is essential for online participation.

CONCLUSION

According to the findings of this study computer ownership and connection to the Internet have significant impact on student performance in web-based courses. Very important questions that must be taken into consideration and addressed are whether every student has the financial ability to afford the cost of owning a PC and connecting to the Internet and whether the use of blended learning favours one set of students over another. Therefore, the Hashemite University must set a policy to support students with required resources in order to better engage them in the learning process, especially those who do not own a PC and do not have a connection to the Internet at home. This could be done by extending lab hours beyond 5 p.m. and by opening some of the university's labs on weekends in addition to supporting the students financially to enable them to connect to the Internet and to buy their own computers. Moreover, the university may

lend computers to those students who cannot afford the cost. Finally, the university may sign agreements with Internet providers to provide students with Internet service at low prices.

In summary, rapid changes in the learning environment put universities in a position of adopting and developing new and explicit policies and strategies in web-based learning. This will help universities in achieving their goals and objectives. Therefore, policies related to enhancing student access might help educators to improve student performance.

LIMITATIONS AND RECOMMENDATIONS FOR FURTHER STUDIES

Student participation in online activities was self-reported and not based on statistics of the leaning system; therefore, this might cause an imprecise measurement of this factor. This might be worthy of consideration in further studies. Self-efficacy in this study was defined as students' evaluation of their confidence, ability and comfort using the Blackboard system. This definition does not encapsulate the concept of digital literacy, which focuses on measuring the user's ability to use, analyse, evaluate and understand information using digital technology. Hargittai (2005) indicated that self-efficacy cannot be an indication of the user's digital literacy. Therefore, if this study had included measures of digital literacy instead of self-efficacy, this might have provided different results. Additionally, this study used a sample of students enrolled only in the second level of study. The inclusion of other levels may provide a better explanation of the impact of demographic differences on student performance.

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