

Accounting Students Perception on Online Homework Software (OHS)

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Abstract – Recent technologies provide variety of tools for educators in all field including accounting. One of these tools is Online Homework Software (OHS). This study collects survey data from accounting students at Universiti Putra Malaysia to explore their perception of OHS in accounting courses. Analysis of the survey data indicated several differences between OHS users and nonusers. There are a positive correlation between shortterm performance and the hours spent of revision to the use of OHS. The ANOVA analysis show no significant difference in current CGPA (long term performance) between OHS users and nonusers. The users of OHS have reveal that the educators using OHS for assigned graded homework and the quizzes but not using OHS for formal exam. The user of OHS agree that OHS will give benefit in accounting course and able to reduce time spent in revision. Respondents also belief that OHS is a cost effective learning tool. However, the strongest concern express by the respondents is whether the use of OHS really improves their learning. The data collected is important in promoting dialog concerning OHS usage and developing recommendations for continued improvements in the software. **Copyright** © 2015 Penerbit Akademia Baru - All rights reserved.

Keywords: Accounting education, Online homework software, Universiti Putra Malaysia

1.0 INTRODUCTION

In the past twenty years, the availability of internet-based technology provides unique opportunities for human being. Via internet, our daily lives productivity kept increasing every day activities such as communications, information, lifestyles and many others. Any contents from internet are assessable 24 hours and 7 days a week with affordable cost. In Malaysia context, Malaysian Communications and Multimedia Commission (MCMC) reports that up to the year of 2013 the internet penetration in Malaysia was about 67.3% and still growing until today.

As previously mention, internet already affects our day life activities including education. Like other field, technology via internet has spurred the innovation in education. The most uses of internet involve in the creation and integration of many recent learning tools. These tools may have the potential to improve course, time management and allowing instructors to concentrate on high-value-added activities that promote improved teaching effectiveness. Additionally, these tools allow instructors to provide students with more individualized learning opportunities [1, 2].

One of the popular tool uses in the process of teaching and learning is an interactive learning teaching system. Humphrey and Beard [3] call it as online homework system (OHS) and has been utilised as emerging trends in accounting education [4]. In this study, OHS is defined as web-based accounting work completed by the student. The work includes solving accounting problems and answering multiple choice questions. A student's work under OHS is immediately computer-graded. In OHS, the instructor can elect whether the software gives automated feedback to students on their submitted answers. The instructor can also select the number of student attempts allowed for each assignment and whether to vary the given numbers in each attempt. At the onset of this study, the researchers had implemented OHS in their introductory financial accounting courses and were curious about the prevalence of OHS usage in undergraduate accounting curricula and the perceptions of OHS by other accounting educators. Textbook publishers are quick to claim students learn accounting better with OHS than without. Students should be queried to gain their views of OHS in terms of learning effectiveness, performance, and product satisfaction [3]. This study is about to investigate the students' perceptions toward online homework software (OHS).

This article is organised in the following manner. First, this paper presenting literature review. Second, the paper describes the research method including the design of the questionnaire and followed by the analysis. The paper then concludes with discussion of results, limitations and recommendations of future research.

2.0 LITERATURE REVIEW

Research on OHS crosses disciplines of sciences (physics, chemistry, mathematics) or social science (finance, economics and accounting) reveal the benefit of OHS such as improve students' performance or discuss perception of student or educators towards OHS.

2.1 Benefit of OHS to Students and Faculty

A number of benefits from student usage of OHS have been identified. Among the benefit are can provide immediate homework feedback to each student [5, 6], increased student understanding of the course material [7], better knowledge retention [8, 9], increase student effort and preparation outside of the classroom [10, 11], manage personalized homework efficiently [1] and improves student performance [1, 2, 6, 8, 9, 12].

OHS also benefits the faculty and their institutions. Cole and Todd [13] reported that using OHS saved faculty time by not having to grade homework problems for 200 students in a chemistry course. Arora et al. [9] pointed out that assigning unique problems to each student with OHS reduces, if not eliminates, student cheating by copying each other work.

2.2 Student and Faculty Perception toward OHS

A students' positive feelings of toward OHS in learning science has been reported through several study such as Bonham et al. [14] in learning physics and Zerr [11] in calculus course. In a study of chemistry courses, Chamala et al. [15], Richards-Babb et al. [6], Arasasingham et al. [1] found that students have positive attitude toward the online homework as long as it's well organised and integrated with the course material. In social science several positive feedbacks have been revealed in several studies. For example Smolira [5] found that students preferred online homework to traditional homework assignments in study finance course. In accounting, Peng [16] and Wooten and Dillard-Eggers [2] found that a student's computer

efficacy and less intrinsic motivation have a positive correlation with amount of use and beneficial view of OHS. Wooten and Dillard-Eggers [2] also found that both required and not-required users rated OHS favourably compared to traditional pen- paper homework (PPH). Morgan [17] expanded the work of Peng [16] and developed a model to be used in measuring the impact of OHS on student performance in accounting courses. The model included the relationship among student self-efficacy, need for cognition, computer self-efficacy, and facilitating conditions with performance expectancy, effort expectancy, and social influence.

Several studies mentions the perspective of faculty on OHS in different field such as chemistry [1, 13] and physics [10]. Interestingly, OHS studies are found in disciplines that require mathematical computations or manipulation. Accounting definitely fits into the genre of the disciplines that requiring the use of numbers and methodical problem-solving skills.

Humphrey and Beard [3] published research in accounting field by comparing faculty who are OHS users, nonusers, and faculty who had discontinued the use of OHS. Faculty indicated the tool is helpful when teaching in the online format and that OHS saves faculty time by reducing the time spent grading and processing student work. Users of OHS raised concerns about whether and how the tool helps students learn, how the students view the tool, and the cost of OHS.

2.3 Mixed Result on OHS Benefit to Students' Performance

The literature on whether OHS improves students' performance is mixed. Some researchers such as Fisher and Holme [18], Bonham et al. [10] and Cole and Todd [13] have found no correlations between student performance and use of OHS versus PPH. In addition, Chamala et al. [15] Halcrow & Dunnigan's [19] found little correlation between students' scores on OHS assignments and scores on examinations. Hall, Butler, Kestner, and Limbach [20] found a correlation of completion of OHS assignments and performance on short term performance but failed to find a correlation of completion of OHS assignments on long term performance in an economics course. They believed this finding indicates a deterioration of OHS impact over time.

Phillips and Johnson [21] and Hahn, Fairchild, and Dowis [22] explained the differences in online homework packages and intelligent tutoring systems (ITS). Phillips and Johnson [21] reveal that online homework packages have issues relating to accuracy. Intelligent tutoring systems (ITS) allow students to ask questions, receive instant feedback, and can demonstrate the steps needed to solve problems better than OHS. Phillips and Johnson [21] also found that accounting principles students using ITS performed higher on transaction analysis than students that using OHS. Hahn, Fairchild, and Dowis [22] founds no significant learning advantage was found with OHS or ITS in comparison to PPH. The implication of their study is that Computer-Based Learning tools (such as OHS and ITS) may not add value to courses already being taught with an active-learning course delivery.

3.0 RESEARCH METHOD

A survey was developed to collect data on the use of OHS. The questionnaire used for this study was constructed by adapting and modifying the questionnaire from Humphrey and Beard [3]. After testing the survey through a pilot study, the survey was modified by adding an exploratory question about OHS users' concerns with the tool, reformatting some questions so that they were easier to answer and adding a demographic question. The final version of

questionnaire was divided into four sections. In the first part, the questions related to the profile of student. For the second part, it proceeded with whether they use the OHS as a main tool of their learning. Third part, the characteristics of the OHS usage advantages was listed. Subsequently, in the fourth part, the question concerning on the perception of the students on the uses of OHS. Likert Scale also used in section three, where value 1 assigned to strongly disagree and highest value 7 assigned to strongly agree.

In the invitation to participate in the survey, it was estimated that the survey would take less than 10 minutes to complete. Respondents for this study were selected from first year until final year undergraduates accounting students at Faculty of Economics and Management, Universiti Putra Malaysia. There are approximately a total of 400 fulltime accounting students in the faculty. While conducting this study, third year students (around 100 students) going for practical training. The selection process resulted in 100 accounting student response to the questionnaire which is 33.33%.

4.0 RESULTS

The analysis consists of four sections. The first section is the profile of respondents, there are breakdown to the OHS user and non-user of OHS, and the demographic details. The second section is to compares the characteristics of the user and non-user of OHS, and how OHS was being used in accounting courses by looking at the utilization of OHS. The third section reports what are the perspectives among the users on OHS. Lastly, the fourth section presents faculty concerns relating to the use of OHS.

4.1 Profile of Respondents

All accounting students in Faculty of Economic and Management, University Putra Malaysia are involve in this survey except the third year batch which the majority of them going for industrial training. Based on the data obtained, 22% of the respondents are male and 78% of the respondents are female. 40% of respondents are from first year, 40% of from second year and 20% from fourth year. There are 90% of respondent used the internet connection provided by university and another 10% of respondents were use their own internet connection. Based on the data also, 81% of respondents age are between 20 to 21 year old, 17% of respondents age are between 22 to 23 year old while the remaining 2% of the respondents age are 26 year old and above. The table below shows the statistic of the respondent age. From 65 respondents who using OHS, 64 or 98% of them used laptop to access the OHS while only one respondent who using tablet to access the OHS. From 65 OHS users, 42 of them (65%) use McGraw-Hill's Connect, 14 of them (22%) use Wiley's Wiley Plus and 9 of them (13%) stated that they use the other software such as Edmodo. Most of them use OHS when taking basic courses either accounting courses or non-accounting courses. Table 1 summarised the above result.

Table 1: Basic profile of respondents

		No.	Percentage
Gender	Male	22	22%
	Female	78	78%
	Total	100	100%
Year of study	First year	40	40%
	Second year	40	40%
	Fourth year	20	20%
	Total	100	100%
Internet connection	University	90	90%
	Own internet	10	10%
	Total	100	100%
Age	20 – 22	81	81%
	23 – 25	17	17%
	26 and above	2	2%
	Total	100	100.0%
User category	Users	65	65%
	Non-users	35	35%
	Total	100	100%
Category of OHS (Based on user category)	Mcgraw-Hill's Connect	42	65%
	Wiley's Wiley Plus	14	22%
	Others	9	13%
	Total	65	100.0%

4.2 Differences between Users and Nonusers

The performance of students using OHS tend to more high (mean 78.1231) compared to the students that not using OHS (mean 64.5714). This midterm result taken from introductory accounting subject in the respective year when respondents took the subject. An ANOVA between the dependent variable (Shorterm Performance) and the independent variable of (User Group) shows the significant difference ($F=48.560$, $p < 0.001$).

According to the survey, the hours spent for revision tend to lesser (mean 7.8308) for the user of OHS compared to the students that not using OHS (9.7714). An ANOVA also shows the significant difference ($F=20.218$, $p < 0.001$) between the dependent and independent variables. Thus can conclude that there are a positive correlation between shorterm performace and the hours spent of revision to the use of OHS. The ANOVA analysis show no significant difference in current CGPA (long term performance) between OHS users and nonusers ($F=1.584$, $p=0.203$). Table 2 summarised this result.

Table 2: ANOVA results on performance, hour spent to revision and current CGPA by user group

	Using OHS mean (Std Dev)	Not using OHS mean (Std Dev)	df between groups	df within groups	F	p
Performance (test one or midterm)	78.1231 (9.29299)	64.5714 (9.24276)	2	98	48.560	< 0.001
Hours spent to revision particular course	7.8308 (2.12551)	9.7714 (1.92638)	2	95	20.218	< 0.001
Current CGPA	3.3596 (.28109)	3.2826 (.26136)	2	86	1.584	0.203

4.3 OHS Utilization in Accounting Courses

The respondents who have educators that use OHS has reveal that the educators using 57.5% OHS for assigned graded homework and 68.67% for the quizzes. In contrast, educators do not using OHS for the formal examination. 100% of the respondents express that the uses of OHS depend on the lecturer. There is no compulsory requirement for lecturer to use OHS in their course. However, if the lecturers decided to use OHS in their courses, all students compulsory to use it. Table 3 below shows that the OHS utilization in accounting courses in UPM.

Table 3: OHS utilization in accounting courses

	Percentage Mean	Std. Deviation
What percentage you think lecturer/instructors uses graded homework that assigned to you using the OHS	57.5	13.08
What percentage of quizzes was assigned to you using OHS	68.67	16.13
What percentage of exam was using OHS	0	0

4.4 Perspective of OHS Benefits by OHS Users

The user of OHS agree that OHS will give benefit in accounting course (mean 5.52) and they like to use OHS (mean 5.41). Respondents also agree that OHS able to reduce time spend for revision (mean 5.24). Respondents also belief that OHS is a cost effective learning tool (mean 5.23) and significantly improved their learning (mean 5.15). Contrarily, respondents less agree if they are asked to learn an online courses using OHS (mean 4.91). This result shows in Table 4.

Table 4: Users perspectives of OHS benefits

	Mean	Std. Deviation
I believe OHS is a cost effectively learning tool for my learning	5.23	1.205
I believe the use of OHS in my courses has significantly improved my learning	5.15	1.226
I believe use of OHS in my courses has improved my course management by reducing the amount of time I spend	5.24	1.093
If I asked to learn an online courses I would definitely use OHS	4.91	1.055
I recognize the benefit of using OHS in my courses	5.52	1.202
I like to use OHS in my courses	5.41	1.173

4.5 OHS Users' Concerns

Based on Table 5, of the 65 OHS users, the strongest concern express by the respondents is whether the use of OHS able to improves their learning (46%). A number 29% OHS users also concern on OHS requires too much of their time. Other than that, 18% had no any concerns with the tool. Only 5 users (5%) expressed their concern regarding the high cost of using OHS.

Table 5: OHS users' concerns on OHS

Concerns	Percentage (%)
No concerns	18%
Concerned the cost is too high	5%
Concerned use requires too much of time	29%
Concerned whether use improves learning	46%

5.0 DISCUSSION

The result shows that there are a positive correlation between shortterm performance and the hours spent for revision to the use of OHS. The result on short term performance is consistent with the finding from Hall, Butler, Kestner, and Limbach [20]. They found that there is a correlation of completion of OHS assignments and performance on the mid-term exam but failed to find a correlation of completion of OHS assignments and final exam performance in an economics course. This result may related to utilisation of the use OHS which are more emphasis on homework assignment and quizzes. The format of the quizzes and the assignment are same as the format of midterm test. The structure of the question in OHS which is more to the multiple choice questions will also may effect the result since that type of questions are not suitable for final exam which is more to essay type of questions . OHS prompt feedback

may challenge students' belief that they understand the reading material. Pashler, et al. [23] suggest that many students experience an "illusion of knowing" in which they overestimate their mastery of new material they have studied. This illusion of knowing is reflected in the assertion that many students make they receive a poor grade on a test: "But I studied so hard. I thought I really knew the material cold. How could I have failed?" (pg 23).

The respondents who have educators use OHS has reveal that the educators using 57.5% OHS for assigned graded homework and 68.67% of the quizzes were assigned using OHS. But, for the exam there were not assigned using OHS. Type of questions, nature of courses and assessment may contribute to the result. Multiple choices type of questions may suit for short term assessment such as quizzes and assignment. Final examination normally this type of assessment required higher level of thinking such as analysis, interpretation and decision making. Test also normally will conducted in very limited time, close book and out of discussion as well as communication. Although OHS will provided unique questions for every student, they are able to open the book or open excess to internet to find answers and also free for discussion.

The type of courses may also explain why educators do not use it for examination or test. The type of questions may not suitable for the nature of certain courses. The difference in the course content and the homework structure could explain why OHS is more adopted for some courses and not for others. Introductory Accounting for example, would have many homework assignments requiring transaction analysis and mathematical computations. Repetition of the material is necessary to reinforce the content. On the other hand, Auditing, Accounting Theory, Ethics and Governance, Advance Financial Accounting, Advance Management Accounting and Taxation for example would require deep-level thinking and intergrated case study in the course assignment. Those type of courses requires essay or problem based learning type of questions which are not available or hard to automatic graded by using OHS. In the previous literature also reveal that OHS were conducted in courses that needing heavy repetition only such as chemistry and heavy computation such as math, physics and finance.

Most users of OHS recognize the benefit of using OHS in their courses. However, even though respondent view that OHS can improved time management by reducing the amount of time spend in the course, cost effectively and believe the use of OHS has significantly improved their learning but still hold the idea to continue using the product OHS. Users' top concern (46%) was whether OHS really improves their learning. This result consistent with Humphrey and Beard [3]. This information suggests more research should be undertaken on whether OHS helps student learn accounting content. If OHS doesn't not improve student learning, why faculty continue to use a tool. Maybe educators view OHS as the best tool to make their job easier without concerning about student long life learning. In addition, educators looking for a way to perform multi tasks with the increasing of their workload and higher key performance index (KPI) requirement.

The second most voiced concern by OHS users was requires too much of time. This may be due to the internet or technology problems since most of them (90%) using university internet. The speed of the internet getting slower if the number of user keep increasing. The opinion regarding the characteristic (such as user friendly) of OHS need to investigate. The result shows that respondents prefer to use McGraw Hill's connet higher than other type of OHS (65%). The factors that contribute to the result need to consider to make sure that the OHS have the high level of effectiveness, user friendly and comfortability to use.

6.0 LIMITATION AND SUGGESTION FOR FUTURE RESEARCH

This study has some limitation, which may provide several implications for future research in Online Homework System.

Respondents limited to students from Universiti Putra Malaysia and accounting programme only. Respondents should be extended to more universities because OHS consider a latest trend. Based on previous studies, OHS used for subjects that transaction analysis, mathematical computations and repetition. Opinion about the appropriateness of OHS for other subjects which are use variety type of assessments and high level of thinking skill such as auditing, ethics and governance must also be obtained.

A study of how students utilize the tool will help instructors better use for the tool in their courses. Research should continue to explore the usefulness of OHS to faculty and students and explore the benefits and concerns in more depth and detail. The qualitative factors should also taken into consideration.

This study doesn't not indicate the signifincant differences toward the view of OHS among students with respect to age and gender. With respect of CGPA level, there was no significant difference to the use of OHS. The study of how OHS can benefit or give intrinsic motivation to lower performance students need to conduct.

7.0 CONCLUSION

This study surveyed accounting students in the University Putra Malaysia to inquire their use and perceptions on OHS. Many of the respondents had favorable comments toward OHS. However, this study also collected evidence of concerns and questions about OHS. This data indicates there is a positive perception regarding OHS but there also some concern about OHS. The concern more to the effectiveness of the tool to improve learning. There also a lot of improvement needed to make OHS more effective.

REFERENCES

- [1] R.D. Arasasingham, I. Martorell, T.M. McIntire, Online homework and student achievement in a large enrollment introductory science course, *Journal of College Science Teaching* 40 (6) (2011) 70–79.
- [2] T. Wooten, J. Dillar-Eggers, An investigation of online homework: Required or not required? *Contemporary Issues in Education Research-Second Quarter* 6 (2) (2013) 189–198.
- [3] R.L. Humphrey, D.F. Beard, Faculty perceptions of online homework software in accounting education, *Journal of Accounting Education* 32 (2014) 238-258.
- [4] C. Ng, Emerging trends in online accounting education at colleges, *Pennsylvania CPA Journal* 82 (1) (2011) 1–3.
- [5] J.C. Smolira, Student perceptions of online homework in introductory finance courses, *Journal of Education for Business* 84 (2) (2008) 90–94.

- [6] M. Richards-Babb, J. Drelick, Z. Henry, J. Robertson-Honecker, Online homework, help or hindrance? What students think and how they perform, *Journal of College Science Teaching* 40 (4) (2011) 81–93.
- [7] K.K. Cheng, B. Thacker, R.L. Cardenas, Crouch, Using an online homework system enhances students' learning of physics concepts in an introductory physics course, *American Journal of Physics* 72 (11) (2004) 81–93.
- [8] K.J. Burch, Y.J. Kuo, Traditional online homework in college algebra, *Mathematics and Computer Education* 44 (1) (2010) 53–63
- [9] M. Arora, Y. Rho, C. Masson, Longitudinal study of online statics homework as a method to improve learning, *Journal of STEM Education* 14 (1) (2013) 36–44.
- [10] S. Bonham, R. Beichner, D. Deardorff, Online homework: Does it make a difference? *Physics Teacher* 39 (5) (2001) 293–297.
- [11] R. Zerr, A quantitative and qualitative analysis of the effectiveness of online homework in first-semester calculus, *Journal of Computers in Mathematics and Science Teaching*, 26 (1) (2007) 55–73.
- [12] M.A. Gaffney, D. Ryan, C. Wurst, Do online homework systems improve student performance? *Advances in Accounting Education*, 11 (2010) 49–68.
- [13] R. Cole, J. Todd, Effects of web-based multimedia homework with immediate rich feedback on student learning in general chemistry, *Journal of Chemical Education* 80 (11) (2003) 1338–1343.
- [14] S.W. Bonham, D.L. Deardorff, R.J. Beichner, Comparison of student performance using web and paper-based homework in college-level physics, *Journal of Research in Science Teaching* 40 (2003) 1050–1071.
- [15] R. Chamala, R. Ciochina, R. Grossman, R. Finkel, S. Kannan, P. Ramachandran, EPOCH: An organic chemistry homework program that offers response-specific feedback to students, *Journal of Chemical Education* 83 (1) (2006) 164–169.
- [16] J.C. Peng, Using an online homework system to submit accounting homework: Role of cognitive need, computer efficacy, and perception, *Journal of Education for Business*, 84 (5) (2009) 263–268.
- [17] A. Morgan, Building a model to measure the impact of an online homework manager on student learning in accounting courses, *Business Education Innovation Journal* 5 (1) (2013) 67–73.
- [18] L. Fisher, T. Holme, Using web-based databases in large-lecture chemistry courses, *Chemical Educator* 5 (5) (2000) 269–276.
- [19] C. Halcrow, G. Dunnigan, Online homework in calculus I: Friend or foe? *PRIMUS* 22 (8) (2012) 664–682.
- [20] R.W. Hall, L.G. Butler, N.R. Kestner, Limbach, The effect of homework on exam performance: Experimental results from principles of economics, *Southern Economic Journal* 79 (1) (2012) 224–242.

- [21] F. Phillips, B.G. Johnson, Online homework versus intelligent tutoring systems: Pedagogical support for transaction analysis and recording, *Issues in Accounting Education* 26 (1) (2011) 87–97.
- [22] W. Hahn, C. Fairchild, W. Dowis, Online homework managers and intelligent tutoring systems: A study of their impact on student learning in the introductory financial accounting classroom, *Issues in Accounting Education* 28 (3) (2013) 513–535.
- [23] H. Pashler, P. Bain, B. Bottge, A. Graesser, K. Koedinger, M. McDaniel, J. Metcalfe, *Organizing Instruction and Study to Improve Student Learning, IES Practice Guide, (NCER 2007-2004)*, 2007, Retrieved October 2, 2015, from National Centre for Education Research, Institute of Education Science, US Department of Education: <http://ncer.ed.gov>