

THE DETERMINANT OF FACULTY ATTITUDE TO ACADEMIC (OVER-)WORKLOAD: AN ECONOMETRIC ANALYSIS

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ABSTRACT

Academic (over-)workload is an issue in tertiary education globally nowadays. This paper examines the socio-demographic factors of the academics that influence academics' perception to (over-)workload at an Australian university using data collected from the University of Southern Queensland (USQ) during the period of February-March 2014. This study has used descriptive and inferential analysis to achieve the objective of the paper. The main finding of this study is that native language status (a measure of ethnicity) of the academics is a statistically significant factor that determine the academics' perceptions toward (over-)workload. The policy implication is that education administrators will have to give attention to the working conditions of the academics in order to expand online education successfully.

JEL Classification: I22

Key words: ICT, Academic (over-)workload, probit model, elasticity, Australia

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1. INTRODUCTION

The availability of online courses at tertiary education institutions (colleges and universities) increases dramatically over the last decade in many countries, including Australia (Chang, Shen, & Liu, 2014; Anderson, Johnson, & Saha, 2002). In Australia between the years 1980 and 2010 student enrolments in off-campus education increased steadily. The figure reached nearly 18 per cent of total student enrolments in 2013 compared to around 10 per cent in 1980 (Norton, 2014). Universities are taking up state-of-the-art information and communication technologies (ICTs) to facilitate the expansion of online teaching and learning facilities. Whilst many claims and suggestions are made about the educational potential of these technologies, studies have suggested that the technologies are responsible for at least some of the extra work-related pressure of academics (Anderson et al., 2002; Bolliger & Wasilik, 2009; Jensen & Morgan, 2009; Winter, Taylor, & Sarros, 2000). In Australia, "technological duress" is identified as one of the factors contributing to overload, especially in the e-learning environment (Jensen & Morgan, 2009). The threat is partly might be linked to potential extra works related to the handling technology. Some literature shows that academics have started labelling the extended working hours an "excessive work pressure" (or over-workload) (Winter & Sarros, 2002). Owing to the likely pressure of working extra hours, academics have become less enthusiastic to participate in the adoption of online instruction as a mode of teaching (Chen & Chen, 2006).

Whilst educational managers and entrepreneurs are expanding online education opportunities, at least some academics are becoming less enthusiastic about the initiative. As a result, a complex and in many ways contested working environment for academics is emerging in tertiary institutions. At the same time, academics' job satisfaction is highly correlated with students' learning outcomes (Hartman, Dziuban, & Moskal, 2000). Therefore, it is an imperative to maintain faculty members' satisfaction up to the highest level in order to ensure good student learning outcomes. Furthermore, this will result in a successful expansion of online teaching opportunities. However, individual academics differ markedly from one another in their abilities to handle job stress. Some are successful in stress management, and some are not (Jensen & Morgan, 2009). So far it is unknown in literature to what extent socio-economic and demographic characteristics of academics are correlated to their perceptions of (or their reactions) to (over-)workload. This paper examines the issue by investigating a relationship between the

academics' demographic characteristics and their perceptions to (over-)workload. Thus, this paper extends the existing body of literature in this scholarly field by contributing to the theory generation about contemporary academics' work and identities factor related to teaching in online learning environments. It is recognised that although opportunities exist for the deployment of ICTs, adverse attitudes can prevent the use of technology (Seyal, Rahman, & Rahim, 2002). Therefore, the identified factor (or determinant) will assist the education managers in tertiary institutions of the concerns of the academics such as job stress and thereby, make the expansion of online education successful.

This study is carried out at University of Southern Queensland (USQ), partly because the university is initiated a doctoral research project to investigate the (over-) workload issue. Secondly, the institution is well-recognised for its reputation worldwide for off-campus mode of teaching and learning. In recognition of this reputation, USQ won a Prize of Excellence in 1999 for distance education from the Executive Committee of the International Council for Open and Distance Education, which is based in Oslo, Norway (Reushle & McDonald, 2000).

The remaining elements of the paper are organised in the following ways. Section 2 discusses the background literature. Section 3 discusses data, variables and summary statistics. Section 4 presents the research methodology and the associated models. Section 5 analyses the regression results. The paper ends with the conclusions and policy recommendations.

2. LITERATURE REVIEW

Online education is a process (Curran, 2008) involving the interaction between students and teachers via Internet-based learning technologies either mobile or fixed. In a university setting, the interaction takes place through the eLearning environment.

E-learning environment, a special arrangement for online teaching and learning, contributes to the transition of higher education delivery systems worldwide. The traditional, classroom-based teaching is replaced by the technology-based teaching (Chang et al., 2014; Prestridge, 2012). This environment has created a co-operative learning and student-centred approach (Smeets et al., 1999). Subsequently, it affects the roles and responsibilities of academics¹ by increasing their job stress (Anderson et al., 2002). Anderson et al. (2002) have defined "job stress" as "simply the reaction to work overload" (p. 102). Their studies further suggest that the job stress is increasing in Australia among the academics, because of the e-learning environment. The teaching academics start feeling work-related stress in their workplaces. This phenomenon is created because of academics working for significantly extra hours. They are required to learn new computing skills, including computer software application skills, and effective communication skills. These additional skills are required to interact with students in diverse learning spaces effectively (Hew & Cheung, 2012)². Moreover, academics are preparing digital content and using teaching platforms to teach students online. On top of that, frequent changes to the computer software programs are taking place (Jensen & Morgan, 2009). This imply that the e-learning is demanding additional time and tasks from academics (Smeets et al., 1999). Therefore, the interactions between the academics and the students in these e-learning environments inevitably depend upon the affordances of such environments. "The term *affordance* refers to whatever it is about the environment that contributes to the kind of interaction that occurs. One also needs a term that refers to whatever it is about the agent that contributes to the kind of interaction that occurs" (Greeno, 1994, p. 338). Affordances arise because of the real physical properties and symbolic properties of the e-learning environment-related hardware and software.

In the past, some studies have discussed both positive and negative affordances of ICTs within a framework of a working relationship between humans and technologies. Because the physical properties of ICTs are real properties and the symbolic properties are the perceptions of the users. The relationship between affordances and the symbolic properties are implicit, and can be considered as positive or negative (Conole & Dyke, 2004). The previous studies (for example, Bower, 2001; Churchill, Fox, & King, 2012; Huijuan, Chu, & Wenxia, 2013; Idris & Wang, 2009; Jamian, Jalil, & Krauss, 2011; Kay, Wagoner, & Ferguson, 2006; McLoughlin & Lee, 2007) are based on diverse and multiple perceptions of the e-learning environment.

¹ Academic's work is conceived here as "teaching, research and scholarship along with some administration and services to the community" (Anderson et al., 2002, p. 8).

² For example, these diverse learning spaces include university-sponsored study environments such as Moodle and Study Desk, and also social software such as Facebook, blogs and Twitter.

We have searched for literature that highlighted factors responsible for differentiated attitudes among academics towards their interactions with ICTs, and with e-learning environments in particular. We have found a study that has speculated that the academics' socio-economic, demographic and professional factors influence their perceptions of (over-)workload (Xu & Meyer, 2007). However, the empirical research evidence about this speculated relationship is insufficient. At the same time, we are encountered a few studies that has highlighted the academics' attitudes to the use of technology-based teaching resources in their teaching.

Xu and Meyer (2007) have examined the factors that influence the uses of technologies in teaching by academics in the United States. The researchers have combined two measures – Internet use and e-mail – to measure the use of ICTs (a dependent variable in the study) in teaching. They also have divided the independent variables into four blocks: institutional, demographic, professional, and teaching, research and service productivity. The research findings suggest that age and Internet access are important factors influencing faculty members' uses of technologies. The researcher further indicate that the faculty with higher teaching loads are using both e-mail and the Internet relatively more. Faculty members with higher research productivity are using e-mail more than they are using websites. Meyer and Xu (2007) also investigate the issue within the framework of the Bayesian Networking Model and Bayesian Statistics and found the evidence that the faculty members' highest degrees and teaching/research fields also influence their uses of technologies. The study has provided a theoretical support that the ages of the academics might have some influence on their perceptions of the usefulness of e-learning environments.

In another study, Mahdizadeh, Biemans, and Mulder (2008) have examined the determinants of the participating academics' perceptions of e-learning environments in the Netherlands. The study used quantitative data drawn from Wageningen University. Based on factor analysis, the researchers found evidence that faculty time was an influential factor in the academics' perceptions of e-learning environments. This study has provided confirmation that academics' teaching loads are determinants of faculty perceptions too.

In an earlier comprehensive study, Crooks, Yang and Duemer (2003) have examined the effects of various demographic factors on academics' perceptions of specific resources and their attitudes to the web-based instructional resources in the United States. Based on Multivariate Analysis of Variance (MANOVA), the study found that experienced academics displayed favourable attitudes toward the web resources. The study further showed that female academics were comparatively more concerned than their male counterparts regarding the use of web resources. The study provided theoretical support that the gender of the academics might have some influence on their perceptions of the usefulness of e-learning environments.

The influence of gender on computer-related attitudes in higher education institutions is discussed in a few studies too (Ahadiat, 2005; Sieverding & Koch, 2009). In the Free University of Berlin (Germany), Sieverding and Koch (2009) examined the influence of gender on performance expectations, attribution of success, perceived computer competence, and self-evaluations of computer competence. The research evidence suggested that computer-related tasks and performance are independent of gender. The finding was also consistent with Ahadiat (2005). In a study, Ahadiat (2005) examined the influence of socio-demographic factors of the (Accounting) faculty's decisions to use instructional technology in the USA. Ahadiat (2005) did not find any differences in attitudes by gender (male versus female among the Accounting faculties). Further, age, teaching experience, academic rank, and ethnicity (Ethnicity is defined by Hispanic, African American, Asian-Pacific Islander, Caucasian American, Middle-Eastern, and others) were directly associated with their attitudes towards the use of educational technology in teaching. In another study, Wong and Hanafi (2007) examined the differences in attitudes between genders towards the use of educational technology among future university teachers at a Malaysian university. The research found no significant difference between genders in teachers' attitudes towards the use of educational technology at the Universiti Putra Malaysia (Malaysia). They used multivariate analysis of variance (MANOVA) to analyse the data.

Whilst there is evidence of the contribution of socio-demographic factors to faculty members' attitudes towards educational technology, no research study has examined the relationship between the socio-demographic factors of the academics and their attitudes to their working environment pertaining to eLearning environments. The current research contributes to the knowledge gap providing evidence from an Australian university.

3. DATA

The data generated in this study are collected from the participating academic teaching staff members of USQ in the period of February – March 2014, as a part of the first-named author's doctoral research project. According to the USQ data warehouse, in the year 2013, 466 (four hundred sixty-six) teaching staff members were engaged in teaching. Eighty-seven per cent of them were working full-time and the remaining staff members were working part-time. The part-time employees were either casual, sessional or contractual staff members. For data collection, we were expecting participation from both full-time and part-time employees except casual and sessional employees. So the total population size for this study was approximately 400 (four hundred), who were distributed across the then five faculties of the university.

The Office of the Vice-Chancellor sent an e-mail to all teaching staff members, inviting them to participate in an anonymous questionnaire-based survey on behalf of the researchers. In the e-mail, a website link was given that took the interested participants to the online survey platform hosted by Qualtrics. The participants were required to log into a secure server site to complete the questionnaire. The estimated time required to fill in the questionnaire was approximately 10 minutes. In response to the invitation, 83 (eighty-three) participating academics took part in the survey. The participation rate was twenty-one per cent. Among them, 55 (fifty-five) per cent were male and 45 (forty-five) per cent were female. We exported the data into a spreadsheet and conducted some data cleansing. After that cleansing, we found 65 usable responses for our study.

The survey instrument consisted of 24 questions divided into open-ended and closed question types. The open-ended questions were about the academics' socio-demographic characteristics. They were age, gender, academic qualifications and household expenditures for ICT devices and services. The closed questions were about the academics' perceptions of the effects of using e-learning environments such as online study desks on teaching and research workloads. Among the 24 questions, the academics were asked a Likert-type statement (question), which was that "the use of ICTs in teaching and learning increases teaching and research workloads". This question was asked to explore the academics' reactions regarding their perceptions of the influence of the use of e-learning environments on their academic workloads. The academics gave their replies, which were measured on a 6-point Likert scale: 1 = strongly agree; 2 = agree; 3 = uncertain; 4 = disagree; 5 = strongly disagree; and 6 = not applicable. Therefore the data used for this analysis were Likert-type quantitative data. There is a difference between Likert-type items and Likert scale items. Likert scale data are analysed at the interval measurement scale. Likert scale items are created by calculating composite scores from more than one type of items. For more detailed information, (please see Boone and Boone ,2012).

3.1. DESCRIPTIVE ANALYSIS

3.1.1. Perceptions of (Over-)workload

As we noted above, the participants rated their views about the statements using the Likert scale: 1 = strongly agree through to 6 = not applicable. For this study, we collapsed two scale items, 3 = uncertain and 6 = not applicable, to generate a single item that was 3 = uncertain. Collapsing the data was required because the number of frequencies for item 6 = NA was in single figures. This was very small and likely to be seen as an outlier in the dataset. Secondly, one reviewer of an earlier version of this paper suggested dropping this item. So the dependent variable was a 5-point Likert scale. Table 1 reports that the respondents were equally divided between the two categories "agree" and "disagree". On the other hand, 16 per cent of the total participants "strongly agreed" with the statement, against around 9 per cent of the participants who "strongly disagreed".

TABLE 1: DEPENDENT VARIABLE

Dependent ordinal variables	Freq.	Per cent
Strongly agree (Category 1)	11	16.42
Agree (Category 2)	16	23.88
Uncertain (Category 3)	18	26.87
Disagree (Category 4)	16	23.88
Strongly Disagree (Category 5)	06	8.96
Total	67	100.00

Source: Author's calculation

3.1.2. Socio-demographic Variables

The control variables of the study were age, gender, status of native language, highest academic degree achieved and academic rank. By the term “status of native language”, we attempted to ascertain the participants’ immigrant status in Australia where applicable. In this paper, the assumption was made that, if academic speak English as a first language at home or at the office, they were non-immigrant academics. By identifying the immigration status we controlled a variable: the academics’ ethnicity. The distributions of the variables are presented in Table 2.

TABLE 1: INDEPENDENT CATEGORICAL VARIABLES

Categorical variables	Freq.	Per cent
Other language speaker	18	26.87
English language speaker	49	73.13
Female	28	41.79
Male	39	58.21
Other degree holder	13	19.40
Doctoral degree holder	54	80.60
Associate lecturer	4	5.97
Lecturer	30	44.78
Senior lecturer	19	28.36
Associate professor	7	10.45
Professor	7	10.45

Source: Author's calculation

3.1.3. Native Language

According to Table 2, in our dataset, around 73 per cent of the academics were native English language speakers, and the remaining 27 per cent were non-native English language speakers. Native English speaker academics came from different English-speaking countries, such as Australia, New Zealand, England, South Africa and the United States. By contrast, non-native English speaker academics came from Bangladesh, India, China and Sri Lanka. To reflect the immigration status of the academic, the native language of the academic staff member was selected as an explanatory variable (Table 2). Figure 1 indicates that, compared to native English language speakers (N=49), non-native English (N=18) were more likely to disagree strongly with the statement.

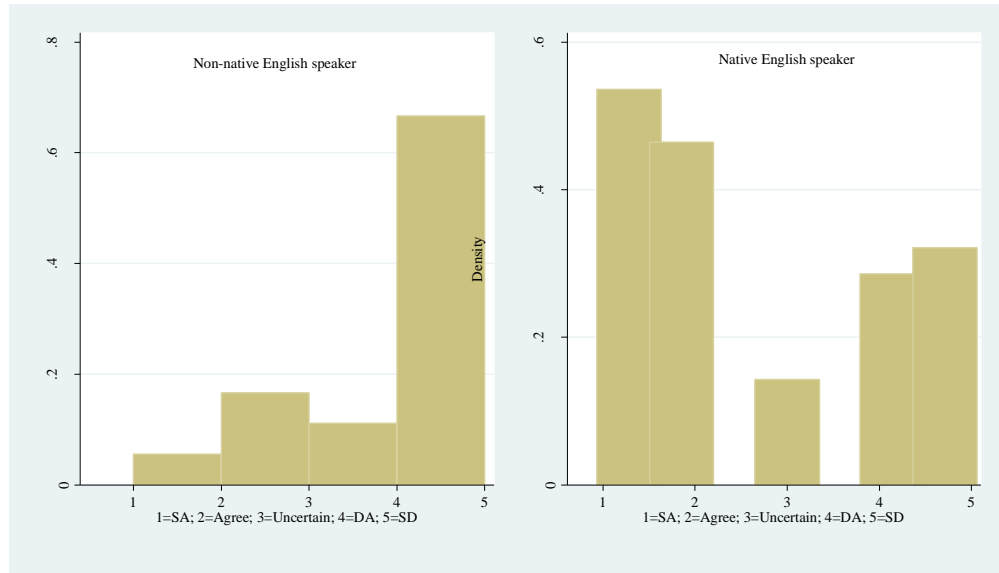


Figure 1: Frequency distribution by native language status

3.1.4. Gender, Academic degree and Rank

The other socio-demographic variables were gender, highest academic degree and academic rank (see Table 2). Table 2 highlights that in the dataset around 58 per cent of the academics were male, and around 42 per cent of the academics were female. Around 80 per cent of the academics had a doctoral degree and the remaining 20 per cent of the academics had either masters or bachelor degrees as the highest academic qualification.

Table 2 demonstrates further that the majority of the academics in the dataset held the rank of lecturer and senior lecturer. Around 45 per cent of the academics held the rank of lecturer, and 28 per cent held the rank of senior lecturer. Figure 2 indicates that by gender female academics (N=28) were slightly more likely to agree strongly with the statement compared to their male counterparts (N=39).

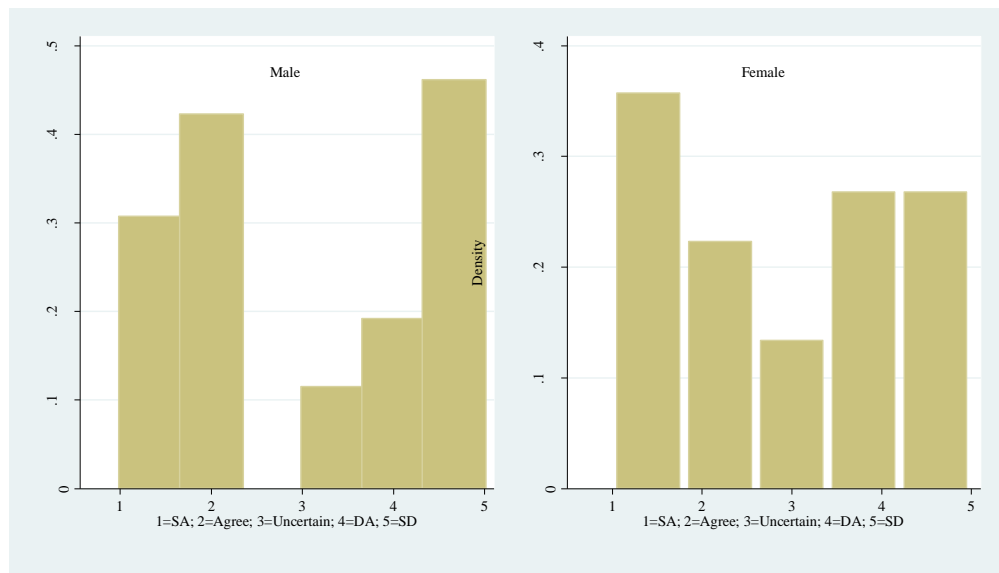


Figure 2: Frequency distribution by gender

3.1.5. Age, Internet use and Teaching load

It is generally accepted that age is an important demographic variable influencing human behaviour. Table 3 presents the ages of the academics who participated in the survey. According to the table, the participants' youngest age was 27 years and the highest age was 72 years.

At USQ, currently a non-administrative full-time academic is engaged in work for 1725 hours per year³. A full-time academic receives a maximum of 30 per cent of the 1725 hours for research work (this can be increased for academics demonstrating exceptional research performance). Further, a full-time academic receives 10 per cent of the 1725 hours for service by default. This information was provided during a personal face-to-face interview with an academic at USQ. We also asked the academics to report their average teaching loads in the previous two years (that is, 2012-2013). Table 3 reports that the participants' average teaching load were 45 per cent.

We assumed that the use of the Internet by the participating academics might influence their teaching and research workloads. Based on our assumption, we asked the participants about their use of the Internet at work and at home for work-related purposes (we meant teaching and research related work only). Based on the age groups of the participants, the frequency distribution of the data is presented in Figure 3, which depicts weekly Internet use in hours by age group. We considered three clusters: weekly 0-4 hours; 5 hours-8 hours; and 9 hours-12 hours. According to Figure 3, on average the academics within the age bracket 35-49 years were using the Internet frequently compared to the academics who belonged to the other age brackets. The academics in the age bracket 65 years and above were not using the Internet for their academic work. Table 3 demonstrates that on average the weekly use of the Internet was approximately 42 hours.

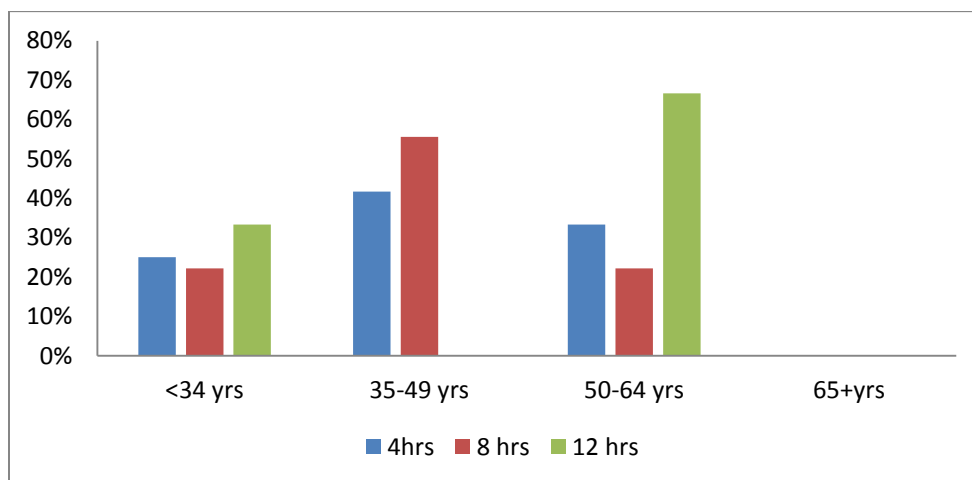


Figure 3: Daily use of the Internet for work-related purposes

TABLE 3: DESCRIPTIVE STATISTICS

Variable notation	Description	Obs	Mean	Std. Dev	Min	Max
x_1	Average teaching load in the last two years in per cent age	67	45.07	28.96	0	100
x_2	Weekly Internet use in hours	67	42.73	22.14	7	112
x_3	Age in years	67	46.16	10.04	27	72

Source: Author's calculation

³ According to USQ's Work Allocation Policy and Procedure, a standard working hour is 37.5 hours per week over a period of 46 weeks. The policy document is available at <http://policy.usq.edu.au/documents.php?id=13470PL>

4. METHODOLOGY

As we noted above, different data analysis procedures exist for Likert-type and Likert scale data (Boone & Boone, 2012). In this study, we have used Likert-type data, where the scale of measurement was represented by ordinal numbers and the numbers expressed a “greater than” type relationship. However, the extent of the relationship (or how much greater than) is not implied here. Because of that, Likert-type items fall into the ordinal measurement scale. To analyse the data, descriptive analysis as a data analysis method was adopted (Ary, Jacobs, & Sorensen, 2010; Boone & Boone, 2012).

Furthermore, as the outcome variable (or the dependent variable) is a latent variable and ordinal in nature, in order to study the causal relationship between the dependent variable and a set of independent variables, an ordinal regression model (ORM) was selected as a suitable model (Maddala, 1992). The ordinal variables may be ordered and unordered inherently. When the ordinal variables are multiple and ordered inherently, ordered regression model is suggested too. In our dataset, the ordinal outcomes were ordered inherently, and accordingly we used the Ordered Probit Regression analysis method. The basic structure of the model used in this study was as follows:

$$y_i^* = X_i\beta' + u_j \quad \text{Eq (1)}$$

where y_i^* = latent ordinal outcomes. The (ordered) outcomes were:
 1= strongly agree; 2 = agree; 3 = uncertain; 4 = strongly disagree; 5= disagree. X_i is vector of independent variables. β' is vector coefficients. u_j is statistical error terms.

In an ordered probit model, a probability score is estimated as a linear function of the independent variables and a set of cut points. The probability of observing outcome i corresponded to the probability that the estimated linear function, plus a random error, was within the range of cut points estimated for the outcome:

$$P_r(\text{Outcome} = i) = P_r(k_{i-1} < y_i^* \leq k_i) \dots\dots\dots\text{Eq (2)}$$

Where $y_i^* = \beta_{x_1}x_1 + \beta_{x_2}x_2 + \beta_{x_3}x_3 + \beta_{x_4}x_4 + \beta_{x_5}x_5 + \beta_{x_6}x_6 + \beta_{x_7}x_7 + u_j$ u_j is assumed to be normally distributed. In this case, we estimated the coefficients $\beta_{x_1} \dots \beta_{x_7}$ together with the cut points k_i through k_{j-1} . We assumed that $k_0 = -\infty$ and $k_5 = \infty$.

- Where
- x_1 = percentage of teaching load
 - x_2 = weekly Internet use in hours
 - x_3 = age
 - x_4 = dummy for native English language
 (1 = English; 0 = Otherwise)
 - x_5 = dummy for Gender (1 = male; 0 = Otherwise)
 - x_6 = dummy for academic qualification
 (1 = doctoral; 0 = otherwise)
 - x_7 = dummy for academic rank

u_i is assumed to be distributed in ordered logit. We estimated the parameter coefficients $\beta = \beta_1, \beta_2, \dots, \beta_k$ together with the cut points k_1, k_2, \dots, k_{k-1} , where k was the number of possible outcomes. k_0 was taken as $-\infty$ and k_k was taken as $+\infty$.

5. Results

Table 4 presents estimates of the ordered probit model. The table shows that the estimated log-likelihood was – 93.47. As maximum likelihood estimates run between 0 and 1, the log-likelihood estimation is always negative. The Chi-square distribution statistic was 20.72 (the degree of freedom was 10). It rejected the null hypothesis that coefficients of all explanatory variables in the model were simultaneously equal to zero. It was statistically significant at the 5 per cent level. This meant that at least one of the predictor’s coefficients was not equal to zero. The table further shows four cut points with reference to five outcomes. These cut points behave like a constant in a

regression function.

The estimated coefficients of three variables were statistically significant at the 5 per cent level. These variables were: the use of the Internet per week (x_2); the native language (English) dummy (x_3); and the academic qualification dummy (x_5). Since the regression table (Table 4) depicts coefficients, direct interpretation from the table is not suitable here. We are required to estimate marginal effects to estimate the results. However, the signs of the coefficients gave an indication of their effect. The positive sign of the variable coefficient meant that by changing the variable by one unit one could expect that the academics would be more likely to be in the higher category. On the other hand, the negative sign of the variable coefficient meant that by changing the variable by one unit one could expect that the academics were more likely to be in the lower category.

In a table in the Appendix, we have presented the estimated marginal effects of the three explanatory variables found in Table 4. The table in the Appendix shows that, if other elements remain constant, the changes in weekly Internet use (x_2) have a negligible marginal effect on the first outcome (that is, strongly agree). For a unit change in weekly Internet use, the probability of an academic who was a native English speaker and who held a PhD degree, to be in the first category increases by 23 percent. If other elements remain the same, for a change in the academic qualification from a non-doctoral degree (that is, = 0) to a doctoral degree qualification (that is, =1), the probability of an academic to be in the second category increases by 17 per cent. This meant that, because of a change of native English status from 0 to 1, we could expect that an academic was 23 per cent more likely to be in the first category (that is, strongly agree). Further, if an academic is a native English language speaker, because of a change in academic qualification from a non-doctoral degree to a doctoral degree, an academic is 17 per cent more likely to be in the first category also

TABLE 4: ORDERED PROBIT REGRESSION RESULTS

Dependent variable	Coefficients	Std. Err	Z	P> z
Teaching load (x_1)	0.008	0.009	(0.94)	0.346
Internet use (x_2)	0.022	0.012	(1.93)**	0.054
Age (x_3)	0.007	0.024	(0.31)	0.003
Native	-1.91	0.634	(3.01)*	0.801
Sex (1=M; 0=F) (x_4)	0.137	0.532	(0.26)	0.021
Degree (1= PhD; 0=otherwise) (x_5)	-1.49	0.645	(2.31)**	0.021
Academic rank (x_6)				
Lecturer	-0.149	1.29	(0.12)	0.908
Senior lecturer	0.244	1.06	(0.24)	0.809
Associate professor	0.723	1.28	0.57	0.571
Professor	-0.181	1.08	(0.17)	(0.867)
/cut1	-2.31	1.616		
/cut2	-0.956	1.59		
/cut3	0.487	1.58		
/cut4	0.419	1.58		
Log-likelihood	= - 93.47			
Prob > χ^2	= 0.02			
LR $\chi^2_{(10)}$	= 20.72			
Obs	= 67			

N. B. Significant level * means <0.01; ** means 0.05; *** means 0.10.

The variables does not influence outcome 2, outcome 3 and outcome 4. However, the variables affected outcome 5 (that is, Disagree). Regarding outcome 5, if academics have a native English language status, the marginal effect on the outcome is -0.38 per cent. On the other hand, if an academic have a native English status and a doctoral degree qualification, the marginal effect is -0.31 per cent. This meant that, because of a change of native English status

from 0 to 1, we may expect that the respondent is 38 per cent less likely to be in the fifth category (that is, disagree) if he or she have a doctoral qualification. By contrast, because of the changes in academic qualification from non-doctorate to doctorate, if the respondent are a native English speaker, we can expect that the respondent is 31 per cent less likely to be in the fifth category. Furthermore, the Appendix table indicates that the marginal effect of the use of the Internet is negligible throughout the outcomes.

6. CONCLUSIONS

Contemporary e-learning environments have replaced – or at least have challenged – the traditional, classroom-based teaching with technology-based teaching, including the online teaching and learning environments. One effect of the changes is the increasing workload of the academics, which is discussed widely in various reports and theoretical studies. This research project has added new evidence to the exiting body of studies by determining a relationship between the socio-demographic characteristics of the academics and their perceptions towards (over-)workload at an Australian university. Our empirical finding supports the hypothesis that socio-demographic factors are important determinants of faculty perceptions of workloads, more specifically, this study has found that, at an Australian university, a particular demographic characteristic – that is, academics' ethnicity – is an important factor that influenced the academics' perceptions of their workloads. Other non-demographic factors that influence the academics' perceptions are their academic qualifications. Thus, it is evident that ethnicity and academic qualifications have a considerable influence on the academics' perceptions to (over-)workloads.

The contributions of the overseas-born academics in higher education institutions, particularly in the universities, are undeniable in Australia. In our dataset, the figure is around 19 per cent. These academics have come from the socio-demographic background that are different from the native English speakers' We meant teaching and research related work only. These overseas-born academics migrate to Australia. Some economic driving forces behind their migration decision – for example, the prospect of better financial and economic security. Therefore the overseas-born academics are better-prepared to manage their own job stress and thereby, work hard to consolidate their working opportunities and earning power. As a result, they are less likely to express negative reactions to e-learning environments.

The policy recommendation is very straightforward. Educational administrators should give attention to the working conditions of the academics. Other things remaining constant, the working conditions of teaching staff members in the universities are less likely to be labelled as “negative working conditions” if the number of overseas-born academics increases. Academics who have a perception of positive affordance regarding e-learning are more likely to manage their job stress successfully. As a result, they are less likely to demonstrate a negative attitude towards the use of the e-learning environment. On the other hand, academics who cannot manage their job stress successfully are more likely to demonstrate a negative attitude towards the use of the e-learning environment.

Finally, a notable caveat of this study is that this investigation is carried out at a single Australian regional university, so it is not possible to generalise the result. However, this study gives an indication about a factor that work as a potential barrier for the expansion of online teaching opportunity. In the future, further research is recommended based on a representative sample size.

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APPENDIX 1: MARGINAL EFFECTS HOLDING INTERNET USE AT MEANS

	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5
	$\frac{dy}{dx}$	$\frac{dy}{dx}$	$\frac{dy}{dx}$	$\frac{dy}{dx}$	$\frac{dy}{dx}$
	(z-statistics)	z-statistics	z-statistics	z-statistics	z-statistics
Internet use	-0.00 (1.90)**	0.00 (1.53)	0.00 (0.55)	0.00 (1.55)	0.00 (1.87)
Native Language status	0.17 (3.35)*	0.19 (0.19)	-0.02 (0.87)	-0.06 (1.42)	-0.38 (2.85)**
Highest academic degree	0.23 (2.74)**	0.16 (0.77)**	-0.02 (0.81)	-0.05 (1.39)	-0.31 (2.12)**

N.B. * means significant at the 1% level; ** means significant at the 5% level.