A Model of User Acceptance of Learning Management Systems: a Study within Tertiary Institutions in New Zealand

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1

Overview

- Background
- Models of User Adoption
- Prior Research
- Findings
- Discussion

2

Background to the study

- Technology innovation and User Acceptance
- Lack of LMS Uptake
- Lack of prior research in the context of IS acceptance
- Lack of theoretical frameworks for LMS acceptance

3

Work to date

- A case study within a Polytechnic – Nov' 2004
- Presented the Research article at:
  - ISTA Conference, Massey University –May'05
  - Tertiary IT Directors Conference – Sep'05
  - e-fest Conference – Sep'05
- Wider study within NZ tertiary institutions – completed - June' 2006

4

What is E-learning / LMS ?

- **E-learning** is defined as education delivered via internets or intranets, which are synchronous, and enables anytime, anyplace learning (Ministry of Education, 2001).
- **LMS** is a software application or Web-based technology to plan, implement and assess a specific learning process (Search CIO, 2005).

5

Why e-learning?

- Institutions are adopting e-learning
  - To give learners greater choice?
  - Capture new markets?
  - Low cost delivery?
  - Because it's there?
  - Modern image?
- Governments are promoting e-learning
  - eg NZ DoE development funds etc
  - UK Online University

6

Uptake

- 6% faculty staff in USA (US DoE 2002)
- 2.2% Australian Graduates (NCVER 2000)
- 8% NZ ITP Face to Face courses had online support (Nichols 2003)
- 51% of NZ ITP staff were not involved in e-learning development. Only 20% involved in at least one online course (Mitchell et al. 2005)

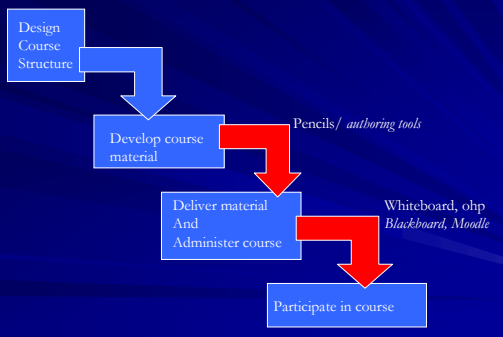
7

Aims of research

- Identify the barriers for content development & delivery
- Identify which barriers that staff view as most critical
- Introduce a theoretical framework for user acceptance
- Help to improve future uptake

8

E-learning process



9

Models of Technology Adoption

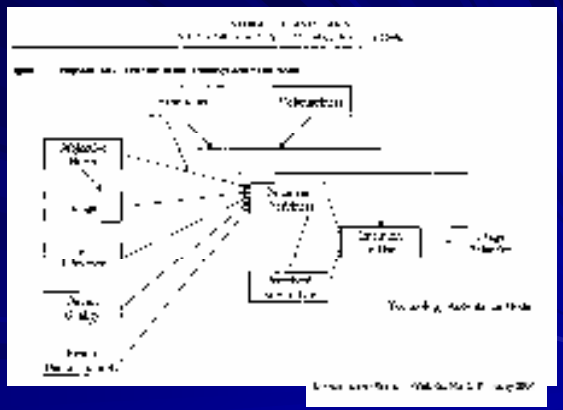
Diffusion of Innovations (Rogers, 1983)

TAM (Davis, 1993)

TAM-2 (Vankatesh & Davis 2000)

UTAUT (Vankatesh et al. 2003)

10



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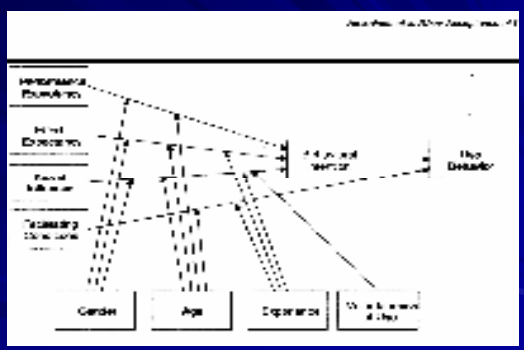
Unified Theory of Acceptance & Use of Technology (UTAUT)



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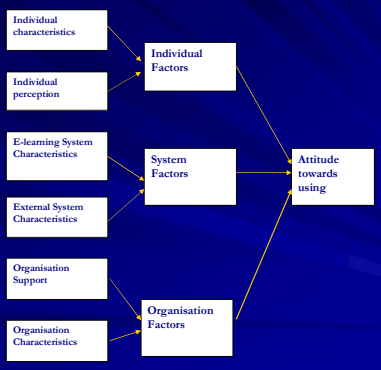
Theoretical Framework for User Acceptance of Learning Management Systems



13

Research Methodology

- Survey of staff by Online Questionnaire
- The questionnaire based on the factors identified in the theoretical model
- Sample frame
  - Staff at 6 Polytechnics and 2 Universities
- Stratified by adopter groups:
  - Non, partial and full adopters
- Sample size - 95 respondents

14

Sample Characteristics

- Wide range of
  - Institutions
  - Age
  - Gender
  - Qualification & Experience
- The Staff age, gender or the institution type had no influence on responses areas

15

Prior Research – E-learning

- **Individual Factors**

– *Individual Characteristics*
  - Understand the pedagogy
    - Inglis, Ling,Loosten 99;Gulati 2004; Graves 2001..
  - ICT skills, basic and for LMS
    - Neil 2004;Varsidas 2004; Levine & Sun 2003..
  - Teamwork & Project skills
    - Neil 2004

16

Prior Research – E-learning

- **Individual Factors**

– *Individual Perceptions*
  - Influence of colleagues
  - System relationship to quality of F2F teaching
  - School culture towards e-learning
    - O'Quinn & Corry 2004
  - Perceived impact on relationships with students
    - Oblinger, Barone & Hawkins 2001

17

Results – Individual Factors

	N	Mean	Std. Deviation	t	Sig. (2-tailed)
I would be more likely to adopt a LMS if my content design and development knowledge is high	90	2.38	.842	-7.007	.000
I would be more likely to adopt a LMS if my content delivery knowledge is high	88	2.52	.982	-4.558	.000
My decision to adopt or reject a LMS could be influenced by my colleagues	92	2.65	1.074	-3.108	.003
I would be more likely to adopt LMS if I perceive it will imporve the quality of my face to face teaching	91	3.01	1.337	.078	.938
I would be more likely to adopt LMS if it is relevant to my face to face teaching	91	2.14	.901	-9.070	.000
I would be more likely to adopt LMS if my faculty or school culture is positive towards e-learning	90	1.98	.912	-10.638	.000

18

Prior Research – E-learning

- **System Factors**

– *E-learning System Characteristics*
  – Appropriate Flexibility and Functionality
    - Berege 1997; Vrasidas 2004
  – Usefulness
    - TAM, UTAUT
  – Ease of use
    - TAM, UTAUT

19

Results – LMS System characteristics

	N	Mean	Std. Deviation	t	Sig. (2-tailed)
I would be more likely to adopt if the LMS provides appropriate flexibility and functionality to teach online	93	1.91	.843	-12.430	.000
I would be more likely to adopt if the LMS provides appropriatecourse content design and devlopment tools	92	1.91	.780	-13.374	.000
I would be more likely to adopt if the LMS improves my work performance	93	1.82	.779	-14.634	.000
I would be more likely to adopt if the LMS is easy to learn	92	1.71	.688	-18.032	.000

20

Prior Research – E-learning

- **System Factors**

– *External System Characteristics*
  – Capacity of ICT infrastructure
  – Reliability of ICT infrastructure
  – Online library resources
    - Hitt & Hartman 2002
  – Online administrative systems
    - Britain et al. 2002; Graves 2001

21

Results – External System Characteristics

	N	Mean	Std. Deviation	t	Sig. (2-tailed)
I would be more likely to adopt if there is sufficient ICT infrastructure available	92	1.91	.736	-14.164	.000
I would be more likely to adopt if the ICT infrastructure is reliable and efficient	92	1.73	.757	-16.105	.000
I would be more likely to adopt if an online enrolment system is available	91	2.77	.920	-2.393	.019
I would be more likely to adopt if distance library services are available	89	2.53	.943	-4.723	.000
I would be more likely to adopt if distance student support services are available	89	2.38	.983	-5.932	.000
I would be more likely to adopt if online assessments are reliable and secure	89	3.27	1.259	2.020	.046
I would be more likely to adopt if a secure medium is available to post student results	91	2.33	1.044	-6.125	.000

22

Prior Research – E-learning

- **Organisartion Factors**

– *Organisation Support*
  – Staff training to design deliver online papers
    - Graves 2001; Clarke 1999; ….
  – ICT Training
  – Time, incentives, rewards
    - Levine & Sun 2003; Moskal & Dziuban 2001; Care 2002….
  – Helpdesk Support
    - Hitt & Hartman 2002

23

Results – Organisational Support

	N	Mean	Std. Deviation	t	Sig. (2-tailed)
I would be more likely to adopt if adequate training and support is available to design and deliver online papers	95	1.88	.836	-13.006	.000
I would be more likely to adopt if I was given sufficient time to design and deliver online papers	92	1.46	.776	-19.073	.000
I would be more likely to adopt if I was offered incentives to teach online	91	2.34	1.185	-5.307	.000
I would be more likely to adopt if there is sufficient ICT training and support to teach online	92	1.91	.860	-12.123	.000
I would be more likely to adopt if there is suitable IT helpdesk support to teach online	92	1.87	.841	-12.885	.000

24

Prior Research – E-learning

- **Organisation Factors**

– *Organisation Characteristics*

– Faculty culture & support
  - Dillon & Walsh 1992;

– Institutional leadership
  - Oblinger, Barone & Hawkins 2001

– Institutional e-learning strategy
  - Hitt & Hartman 2002

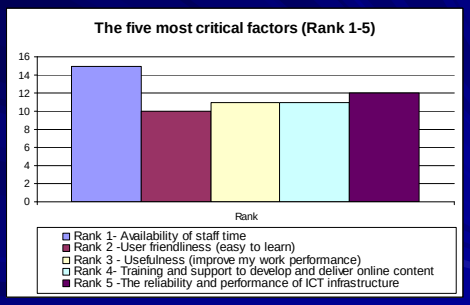
25

Results – Organisational Characteristics

	N	Mean	Std. Deviation	t	Sig. (2-tailed)
I would be more likely to adopt if there is a faculty-wide e-learning strategy fro e-learning development	90	2.13	1.073	-7.665	.000
I would be more likely to adopt if the organisation culture is positive towards e-learning	91	1.97	.809	-12.181	.000
I would be more likely to adopt if there is strong institutional leadership for e-learning	89	1.88	.636	-16.656	.000
I would be more likely to adopt if there is an institute wide e-learning strategy and funding priority for e-learning development	90	2.04	.873	-10.385	.000

26

Ranking of Issues by Respondents



27

Ranking of Issues by Mean Responses

	N	Mean
I would be more likely to adopt if I was given sufficient time to design and deliver online papers	92	1.46
I would be more likely to adopt if the LMS is easy to learn	92	1.71
I would be more likely to adopt if the ICT infrastructure is reliable and efficient	92	1.73
I would be more likely to adopt if the LMS improves my work performance	93	1.82
I would be more likely to adopt if there is suitable IT helpdesk support to teach online	92	1.87

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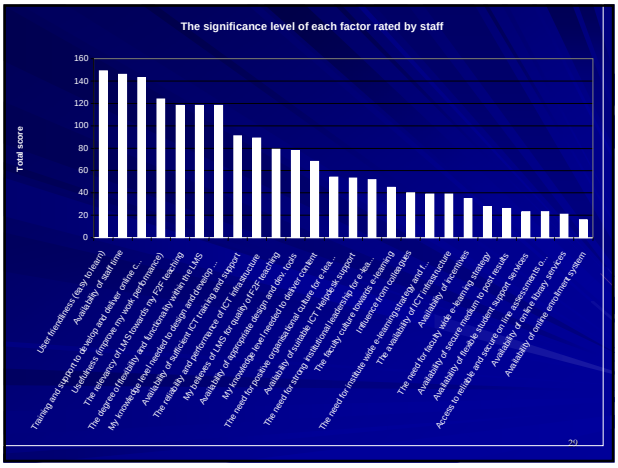

29

Conclusions

- Model was validated and most factors were found to be important
- Staff time seen as the most significant barrier
- *Ease of use* and *usefulness* very important
- Sound ICT infrastructure is important, but other online services not seen as so important by staff

30

Recommendations/ Future Work

- Institutions should instigate an action plan address all barri individual, system & organisational levels
- Organisational and System aspects require priority attenti
  - Staff release time
  - Staff training – Online content design and development
  - Staff should be made aware of the usefulness of LMS
  - Adopt a user-friendly LMS
  - Ensure the reliability and the performance of ICT infrastructure
- Similar study should be undertaken to ascertain factors for students

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Questions?

- Full Thesis:
  http://www.boppoly.ac.nz/LMSresearch/index.htm