TAM Model as an Assessment Method for Moodle E-Learning Platform

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Outline

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- O PLS-PM vs SEM path model
- 4 Research findings
- 6 Conclusions

E-learning platform

- Internet service (education oriented) consists with free and authorized access:
 - predefined content to authorized users,
 - environment for educational processes,
 - monitoring of educational progress
 - content management

Modular Object-Oriented Dynamic Learning Environment

- MOODLE one of best known e-learning platform(70000 users in 200 countries and 100 languages)
- Popular in Poland
- Interventional framework (social constructivism)
 - Constructivism
 - Constructionism
 - Social constructivism

Intro Model and results Conclusions

Technology Acceptance Model

- TAM (Davis, 1989; Davis, Bagozzi i Warshaw 1989) based on theory of reasoned action (Fishbein i Ajzen, 1975, 1980) and theory of planned behavior (Ajzen, 1985, 1991)
- Overlaps and modifications: TAM2, TAM3, UTAUT



(Davis, Bagozzi i Warshaw 1989, s. 985)

The constructs and indicators

Indicator	Constructs and items				
PEOU	Perceived ease of use				
PEOU1	E- platform CUE is easy to use				
PEOU2	E-platform CUE is convenient				
PEOU3	E-CUE platform is easy to mastering the material				
PEOU4	E-CUE platform is easy to understand				
PEOU5	E-platform CUE is readily available				
PU	Perceived utility				
PU1	E-Platform CUE allows to learn more effectively				
PU2	E-Platform CUE allows to learn in a faster way				
PU3	E-CUE platform allows greater control of the learning process				
PU4	E-CUE platform saves time				
PU5	E-CUE platform allows for significant advancement of knowledge				
Α	Attitude towards the platform				
A1	E-Platform CUE is an attractive method of teaching				
A2	E-Platform CUE is an improvement of the educational process				
A3	E-CUE platform satisfies my need for e-learning				
A4	I like to use e-Platform CUE				
В	Behavior and use of system				
B1	I use the CUE-platform to prepare for the exam session				
B2	I am using e-Platform CUE on daily basis				
B3	I am using e-Platform CUE whenever I have a problem to solve				
B4	I am using e-Platform CUE because I can do it at any time				
B5	I am using e-Platform CUE regularly				
NPS	Net Promoter Score				
PNPS	Please specify the extent to which you will recommend the use of e- Platform CUE to other students				

* Variables PEOU1-5, PU1-5, A1-4 and B1-5 are measured on a 5-point Likert scale. PNPS variable is measured on a 1-10 scale.

SEM vs PLSPM model

SEM	PLS-PM
Hard modeling	Soft modeling
Explanatory	Predictive
Structural and measurement model	Inner and outer model
Reflective indicators	Reflective and formative
Multidimensional normal distributions	Assumption free
Consistent, unbiased	Consistent at large, biased
Small models	Large models
Large sample size (> 200)	Small sample size ($< 100)$

TAM - SEM model



 $\chi^2=$ 419,78 (165) , p = 0,00. ; RMSEA = 0,10 TLI = 0,82 ; CFI = 0,84 Low GOF and explanatory power of the model

Mediation effects

Effects PU - B	Estimates	Std. error	P - level
Total	0.56*	0.11	0.00
Indirect	0.53*	0.14	0.00
Direct	0.03	0.15	0.75

Intro Model and results Conclusions

TAM - PLSPM model



Mediation effects

Effects PU - B	Estimates	Std. error	P - level
Total	0.48*	0.06	0.00
Indirect	0.24*	-	-
Direct	0.24	-	-

Measurement models

		SEM			PLS-PM		
		Estimates	C.I	\mathbb{R}^2	Estimates	C.I.	R ²
PEOLI	PEOU1	0.76	0,67-0,84	0,57	0,61	0,44-0,76	0,36
FEOU	PEOU2	0,77	0,68-0,85	0,59	0,75	0,61-0,84	0,56
	PEOU3	0,66	0,55-0,77	0,43	0,89	0,78-0,95	0,79
	PEOU4	0,81	0,73-0,88	0,64	0,73	0,56-0,84	0,53
	PEOU5	0,61	0,49-0,72	0,37	0,69	0,47-0,83	0,47
PII	PU1	0,82	0,75-0,89	0,68	0,83	0,71-0,91	0,70
rυ	PU2	0,78	0,70-0,85	0,60	0,78	0,62-0,89	0,60
	PU3	0,52	0,40-0,65	0,27	0,64	0,46-0,77	0,41
	PU4	0,65	0,54-0,75	0,42	0,77	0,66-0,80	0,60
	PU5	0,74	0,65-0,82	0,54	0,76	0,64-0,82	0,57
٨	A1	0,79	0,72-0,86	0,63	0,87	0,82-0,90	0,75
A	A2	0,75	0,67-0,83	0,56	0,82	0,75-0,88	0,67
	A3	0,60	0,49-0,71	0,36	0,67	0,55-0,76	0,45
	A4	0,81	0,75-0,88	0,66	0,84	0,80-0,89	0,71
в	B1	0,62	0,51-0,73	0,38	0,74	0,66-0,81	0,55
Б	B2	0,45	0,32-0,59	0,21	0,61	0,47-0,71	0,37
	B3	0,71	0,59-0,80	0,51	0,83	0,73-0,85	0,64
	B4	0,65	0,55-0,76	0,43	0,75	0,66-0,81	0,56
	B5	0,49	0,36-0,62	0,24	0,67	0,52-0,78	0,46
Model fit	χ ² RMSEA	419,78 (165), 0.10, (0.09 – (P=0,00		GoF	0.5	3
	ALCOLDA .	-,, (0,0)	.,)				12/14

Structural models

Parame	Variables	and	SEM-ML		PLS-PM	
ters	relations		Estimates	C.I.	Estimates	C.I
Path	PU -> B		0,05	-0,25-0,35	0,24	0,02-0,39
	A -> B		0,89	0,61-1,16	0,46	0,32-0,66
	PEOU -> A		0,36	0,21-0,52	0,39	0,28-0,52
	PU -> A		0,63	0,48-0,78	0,51	0,39-0,62
	PEOU -> PU		0,59	0,46-0,72	0,61	0,50-0,73
\mathbb{R}^2	PEOU		0,00		0,00	0,00-0,00
	PU		0,35		0,37	0,25-0,53
	А		0,79		0,65	0,57-0,73
	В		0,86		0,44	0,36-0,58
	Moo	del R ²	0,87			

Summary

- Attitudes toward Moodle explain usage and recommendation of the platform
- Operative analysis shows that:
 - SEM model has lower explanatory power in comparison to PLS-PM
 - SEM models have broader C.I. in comparison to predictive PLS-PM model
- Future research:
 - Larger and more representative sample
 - Need to explain the content of courses with respect to social constructivism pedagogy
 - Model that includes educational effects (average grades)