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ABSTRACT

The research presented here was an investigation of the effect of job relevance on the acceptance of a mandated technology by child welfare professionals in Wisconsin. The research was conducted using a quantitative survey design. The sample for this research was all of the public child-welfare professionals in the state of Wisconsin that use Electronic Wisconsin Child Welfare Information System. The paper had several key findings. The first was that job relevance impacted perceived ease of use, second subjective norms impacts perceived usefulness through job relevance and image, third job relevance is shaped by both image and subjective norms, fourth case worker experience lowers perceived ease of use, and finally case load positively impacts perceived usefulness. The paper discusses theoretical and practical implications.

KEYWORDS

TAM, subjective norms, job relevance, experience, caseload, mandated technology, HCI

INTRODUCTION

This research was an investigation of the effect of job relevance (JR) on the acceptance of a mandated technology by child welfare professionals in Wisconsin. The technology that was the focus of this research was the Electronic Wisconsin Child Welfare Information System (eWiSACWIS). It was Wisconsin's answer to a federal law that required all states to mandate a system for collecting and managing child welfare data, it was fully implemented by 2004 in all Wisconsin social service agencies (Wisconsin CAPTA Plan 2011). The acceptance of eWiSACWIS, like many mandated system, varies from user to user.

Mandated implementation occurs when end-users must use a particular technology to perform their duties and keep their jobs. According to Wang et al. (2007) mandating use significantly influences user acceptance. Users see it as a loss of their freedom of choice and can lead to system under-utilization and organizational sabotage. Research on the acceptance of mandated technology is still in its infancy.

Technology acceptance has been heavily research over the past 20 years. Davis (1989) developed the first technology acceptance model (TAM) with a core of three constructs, perceived usefulness (PU), perceived ease of use (PEU), and intention to use (USE). Extant research on technology acceptance has focused primarily on voluntary use, but most organizational technology use is mandatory which makes the issue of acceptance more complex (Hennington et al. 2009). Traditionally technology acceptance is defined by the end users intention to use the technology but (Koh et al. 2010) found that it was irrelevant to look at USE when studying acceptance of mandated technology, but instead look attitude toward the technology.

The factors under analysis in this study are based on the TAM3. They are PU, PEU, image, subjective norms (SN), and JR. The TAM variable of USE was replaced with attitude toward the technology. Finally, two demographic variables were studied, case load (CL) and case worker experience (CWE). JR, SN, and image were of special interest in this research. JR was first added to the TAM by Venkatesh and Davis (2000) as a determinate of PU but not PEU. SN and image were also added as a determinate of PU but not PEU. The research presented in this article expands Venkatesh and Davis's work by looking at the relationship of these variables to PEU.

LITERATURE REVIEW
The table below provides a review of salient research on job relevance in context of mandatory and voluntary adoption

Author	Technology	Context	Constructs	Findings
Venkatesh et al. (2000)	Study 1 – new proprietary system for scheduling. Study 2 – move all operations to Windows. Study 3 – customer account management system. Study 4 – stock portfolio analysis system.	Extended the original TAM to include determinants of PU to create TAM2. Study 1 and 2 – Voluntary use. Study 3 and 4 – Mandatory use.	PU, PEU, SN, image, JR, output quality, results demonstrability, experience, voluntariness, and USE.	It was found that SN influenced image and PU. They also found that image and JR influenced PU.
Venkatesh et al. (2008)	Used the same sites as Venkatesh et al. (2000)	Extended the TAM2 to include determinants of PEU to create TAM3. Used the same technology as Venkatesh et al. (2000)	PU, PEU, USE, computer self-efficacy (CSE), perceptions of external control, computer anxiety, computer playfulness, perceived enjoyment, objective usability, and determinants of PU from the TAM2.	It was found that this new version explained 67% of the variance in PU and 52% of the variance in PEU. They also found that the determinants of PEU did not significantly effect PU for any of the sites.
Kim (2008)	Mobile wireless technology, specifically Smartphones.	Voluntary technology. Extended the original TAM model to include Perceived Cost and JR.	PU, PEU behavioral intention, actual usage, JR, and perceived cost.	Found that JR was an important factor for technology users in their determination of the usefulness of the technology.
Koh et al. (2010)	20 different applications, participants chose one of them.	Surveyed government employees. Use of all the systems was mandated.	Information quality, information satisfaction, performance expectancy, social influence, attitude, USE, overall satisfaction, and net benefits.	It was found that in mandatory use environments, the TAM variable of USE was no longer relevant but attitude was a much better measure of acceptance. They also found that the other constructs of the TAM were still significant.
Slade et al. (2014)	E-reader.	Voluntary technology. Used the second TAM.	PU, PEU, SN, image, and USE.	It was found that SN was positively related to both image and PU and on USE.

HYPOTHESIS AND RESEAERCH MODEL

Image:
Identification is an individual's belief that performing a behavior will elevate his or her social status within a referent group because important referents believe the behavior should be performed (Venkatesh et al. 2000). Venkatesh et al. (2008) argue that image make users view a technology favorably via identification. In his theory of diffusion of innovation Rogers (1983) stressed on the importance of image and one's desire to gain social status as the "most important" (p. 215) motivation to adopt an innovation.

H1: Image is positively related to PU.
H2: Image is positively related to PEU.
H3: Image positively impacts attitude.
H4: SN is positively related to image.

Subjective Norm:
Internalization is defined as the incorporation of a referent's belief into one's own belief structure (Warshaw 1980). SN make users view a technology favorably via internalization (Venkatesh et al. 2008). He et al. (2010) studied the formation of computer self-efficacy, and in doing so looked at how SN impacted attitude toward technology. It was found that SN had a positive impact on attitudes toward technology.

H5: SN is positively related to PU.
H6: SN is positively related to PEU.
H7: SN is positively related to attitude.

Job Relevance:
JR is the perception that a technology is important to the performance of tasks involved in one's job (Venkatesh et al. 2008). Both TAM2 and TAM3 using action theory, work motivation theory, and behavioral decision theory argue that JR would be positively associated with PU. In this research which is examining the use of existing –mandated technology, we argue that JR would also be associated with PEU.

H8: JR is positively related to PU.
H9: JR is positively related to PEU.
H10: SN is positively related to JR.
H11: Image is positively perceived JR.

Case Load:
Typical CL of a Child Welfare worker is about 15 and 17 or more cases is considered high according to the national association of social workers. Higher case load would necessitate the use of technology to ease the work load. Higher case load workers would have a higher "need" (Moore et al. 1991 p. 199) to use technology.

H12: CL is positively related to PU.
H13: CL is positively related to PEU.

Case worker experience (CWE):

Child welfare workers constitute a community of practice in which the workers have shared ideas, tools, and information (Smith et al. 2014). Traditionally information was gathered and shared via a paper-based system. The more experience a worker has, the more connected they are to the community of practice. This community feeling and the association with "paper and pencil" will make them reluctant to use the technology, and they would find it less useful and less easy to use. Higher experience would also be associated with higher case. Thus,

H14: CWE is negatively related to PU.
H15: CWE is negatively related to PEU.
H16: CWE is positively related to CL.

CONSTRUCT DEFINITIONS:

Construct		Definition	Source
IMG	Image	The end-user's belief that using the technology will enhance his or her social status in the organization.	Moore et al. (1991)
SN	Subjective Norm	The perception that important people believe the end-user should use the system.	Venkatesh et al. (2000)
JR	Job Relevance	The perception that a technology is important to the performance of tasks involved in one's job.	Venkatesh et al. (2000)
PU	Perceived Usefulness	The degree to which a person believes that using a technology would enhance the user's job performance.	Davis (1989)
PEOU	Perceived Ease of Use	The degree to which a person believes that using a technology would be free of effort.	
ATT	Attitude	The degree to which a person has a favorable or unfavorable evaluation of the behavior pertaining to usage of the technology.	Ajzen (1991) Koh et al. (2010)
CL	Case Load	Number of cases assigned to an individual social worker at any time.	(Child Welfare Information Gateway 2010)
CWE	Caseworker experience	Number of years an individual has worked in child welfare.	Self-made

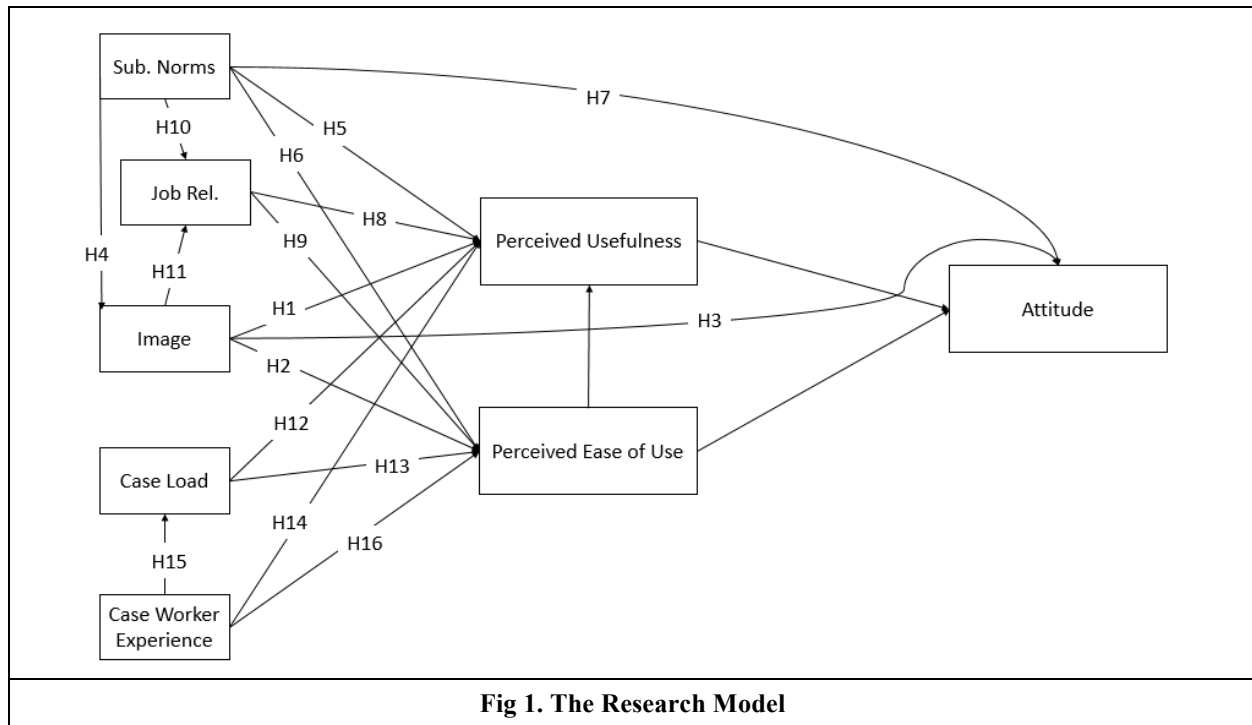**Table 1. Construct Definitions**

Fig 1. The Research Model

RESEARCH METHOD

The research was conducted using a quantitative survey design based on the TAM 3 instrument, attitude question and demographic question. The sample was all of the public child-welfare professionals in Wisconsin that use eWiSACWIS. Of the 72 county agencies, eight declined to participate, another eight did not respond, and 56 agreed to participate. The directors were given a choice of how they would like their employees to receive the survey. The researcher sent the survey 1,391 emails and 12 were sent it out through agency representatives, therefore it is unknown how many child welfare professionals were invited to participate. There were 313 responses, 38 males and 269 females. Average age was 39.77 years

(std dev 10.86 years). Average CL was 16.48 (std deviation: 17.31) and the average CWE was 12.33 years (std dev: 9.29 years).

DATA ANALYSIS

We used maximum likelihood estimation model with robust standard errors in Mplus 7.2 for analysis. The algorithm is robust to any non-normality in the data ([Muthén et al. 1998-2012](#)). We examined reliability and validity of the constructs and found no issues. We also performed confirmatory factor analysis by estimating the measurement model. The fits indices of the measurement and the estimation models are reported in Table 2. The fit indices indicate a satisfactory fit for the measurement model.

	Measurement Model	**Estimation Model**
Chi-square / df	241.644/106=2.280	212.018/102 = 2.079
CFI	.947	.957
TLI	.932	.942
SRMR	.076	.060
RMSEA	.066	.061
Table 2. Fit Indices		

RESULTS

The model explains 60.1% of the variance in attitude toward the mandatory eWiSACWIS software. The R^2 values of PU and PEU are 59.2% and 19.0% respectively. These results show a high explanatory power for the dependent constructs in the model. Most of the hypothesis were supported. We found that 12 out of 16 hypothesized paths were statistically significant. All statistically significant paths had the signs as hypothesized (except for H16). Both PEOU and PU positively impacted attitude, and PEOU was also found to be positively associated with PU – thus supporting core TAM relationships.

As hypothesized in H1~H3 and H11 image is positively related to PU, PEOU, attitude and JR respectively. Results show that JR positively impacts PU (H8) and PEOU (H9). We found that SN impacts attitude indirectly via three different routes: first via JR and PU, second through JR and PEOU, and third through image. The direct effect hypothesis between SN and attitude (H7), SN and PU (H5), and SN and PEOU (H6) were not supported. CL positively impacts PU (H12), but not PEOU (H13). CWE impacts PU indirectly via CL (H14), and PEOU (H16), but not directly (H14).

Fig 2. Results
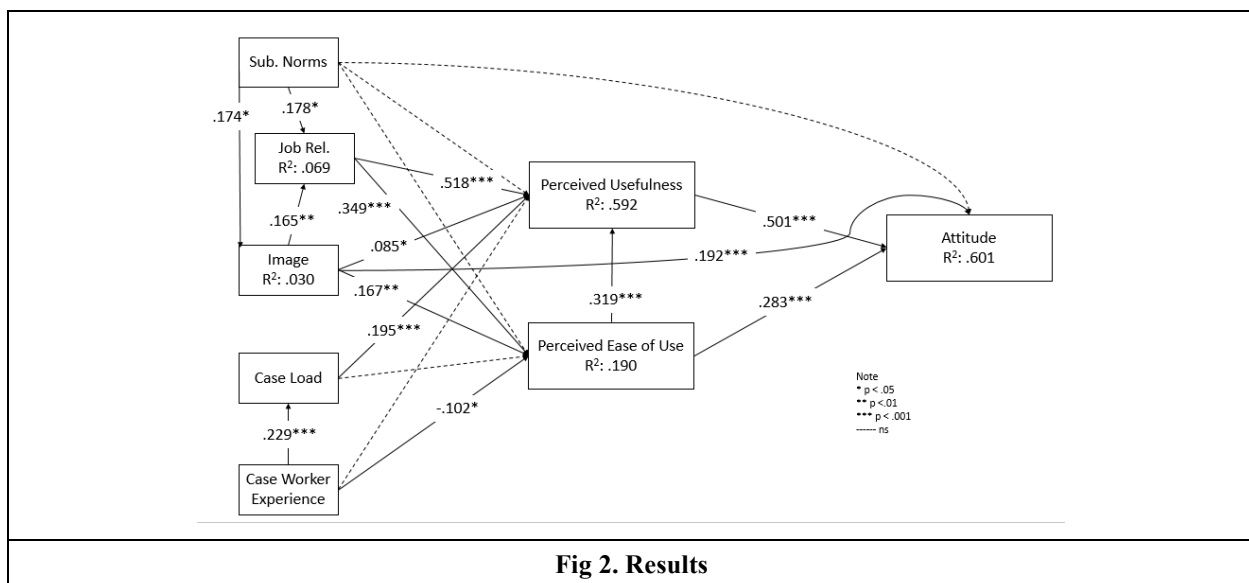
DISCUSSION

Eleven of the 16 hypothesis were supported and the relationship between PEOU and PU was reaffirmed. Venkatesh et al. (2000) found that PEOU influenced PU at R^2=0.30 and this research found R^2=0.32. There were five key findings in this research. The first was that JR impacted PEOU. This relationship had not been established in previous research. In previous research JR was only shown to impact PU, not PEOU. Venkatesh et al. (2000) first introduced the relationship between JR and PU with the establishment of the TAM2. In this same model they introduced SN and Image as determinates of PU. Venkatesh et al. (2000) found that SN impacted both image and PU and image independently impacted PU. The second key finding of this research was that SN impacted PU through JR and Image, but did not impact PU directly as found in Venkatesh et al. (2000). The third key finding was that JR is shaped by both image and SN. Image and SN work together to influence the end-users belief that the technology is relevant to their job.

The last two key findings are about the demographic variables; CWE and CL. In general, it was found that as CWE increases so does their CL. The fourth key finding of this research is that CWE lowers PEOU but has no effect on PU. This is supported by the qualitative research of Smith et al. (2014). The longer a worker has been connected to the community of practice the more disruptive it is to their sense of belonging, leading to resistance against what they see as thing disrupting their sense of community, in this case, eWiSACWIS. The final key finding was that CL positively impacts PU but has no effect on PEOU.

LIMITATIONS AND FUTURE RESEARCH

One of the limitations of this study is the choice of technology under investigation. EWiSACWIS has been in use already, so child-welfare professionals might have become acclimated to it. This technology nonetheless was chosen because there are limited systematic studies that had been done to examine attitude towards existing mandated-technology in a government IT use setting. Another limitation of this study is its limited generalizability. Third limitation of this study is the self-reporting nature of the TAM instrument, however CMV tests suggests that common method bias was not a concern in this study.

Future research can look at other mandated technology in different industries using the same modified TAM 3 instrument. Very little research has been performed on the acceptance of mandated technology, this study specifically looked at eWiSACWIS in the social-services industry, but it could prove valuable to examine other kinds of technology in other industries.

CONCLUSION

The purpose of this study was to examine the effect of JR on the acceptance of a mandated technology by child welfare professionals in Wisconsin and to fill in two gaps in the literature. The gaps are a lack of studies using the TAM 3 instrument and a lack of studies looking at how the determinates of PU relate to PEOU. This was done by surveying child welfare professionals in Wisconsin that are mandated to use eWiSACWIS. The survey consisted of the questions from the TAM 3 instrument, attitude questions from Koh et al. (2010), and demographic questions. Eleven of the 16 hypothesis were supported and there were five key findings. The first was that JR impacted PEU, second SN impacts PU through JR and image, third JR is shaped by both image and SN, fourth CWE lowers PEU, and finally CL positively impacts PU. Organizations are increasingly implementing mandated technology. The better they understand how end-users accept that technology, the smoother its implementation and the easier the entire process for all concerned. Further research could provide the insight needed to make mandated technology easier to accept.

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