



Applying TAM to E-Commerce: Do Consumer Characteristics Matter?

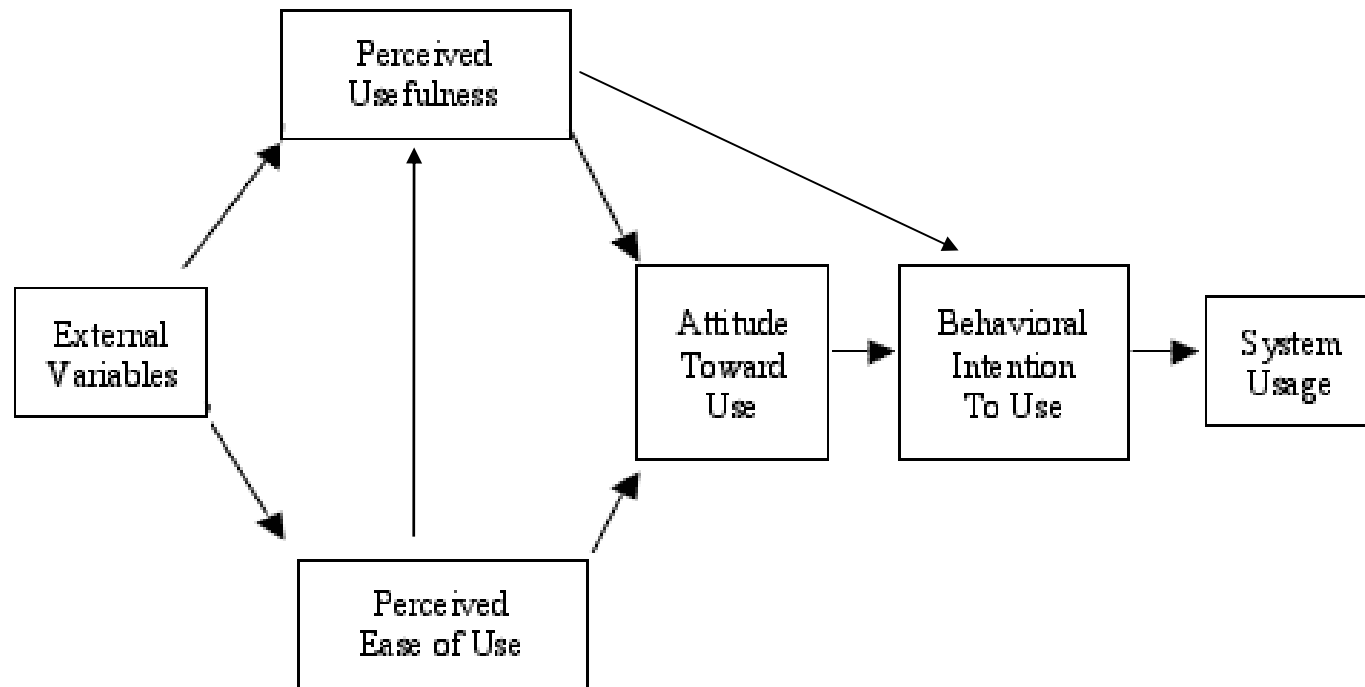
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Technology Acceptance Model (TAM)

Davis (1989), Davis, Bagozzi and Warshaw (1989)



Very often cited



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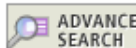
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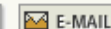
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Adapted and Extended

- Not only *extrinsic* motivations, but also *intrinsic* motivations (Childers et al. 2001; Davis et al. 1992):
 - ➔ Enjoyment / Playfulness
- From work environments to technology-driven E-Commerce environments:
 - Adaptation of scales:
 - More than just interaction with the website (customer service, merchandise, price)
 - Inclusion of E-Commerce-related constructs:
 - E.g., trust, risk

Context-dependency & TAM



- TAM viable for examining acceptance and use of new technologies (i.e. internet), but necessary to investigate contextual effects (Monsumé et al. 2004).
- Situational/contextual factors impact the *importance* of factors: context-specific effects vs general behaviors (Olson & Olson, 2003)

Examples of context-variables:

- **Information systems:** voluntary vs. mandatory settings, browsing vs. buying, preadoption vs. postadoption, socio-demographics, self-efficacy
- **Self-service technologies:** prior level of experience
- **Marketing:** utilitarian vs. hedonic products
- **E-Commerce:** prior level of online shopping experience, socio-demographics, privacy awareness

Examples of Context Effects



- Ease of Use:
 - More important for potential adopters than adopters: need for ‘learning’ and ‘overcoming learning hurdles’
 - More important in browsing settings than buying settings.
- Usefulness:
 - More important when outcome of process is relevant.
- Males vs Females:
 - Men: outcome (Usefulness) vs women: process (Ease of Use)
- High income, well-educated consumers:
 - Usefulness more important than Ease of Use
- Privacy concerns: need to be compensated for
 - Relationships of TAM-predictors should be stronger

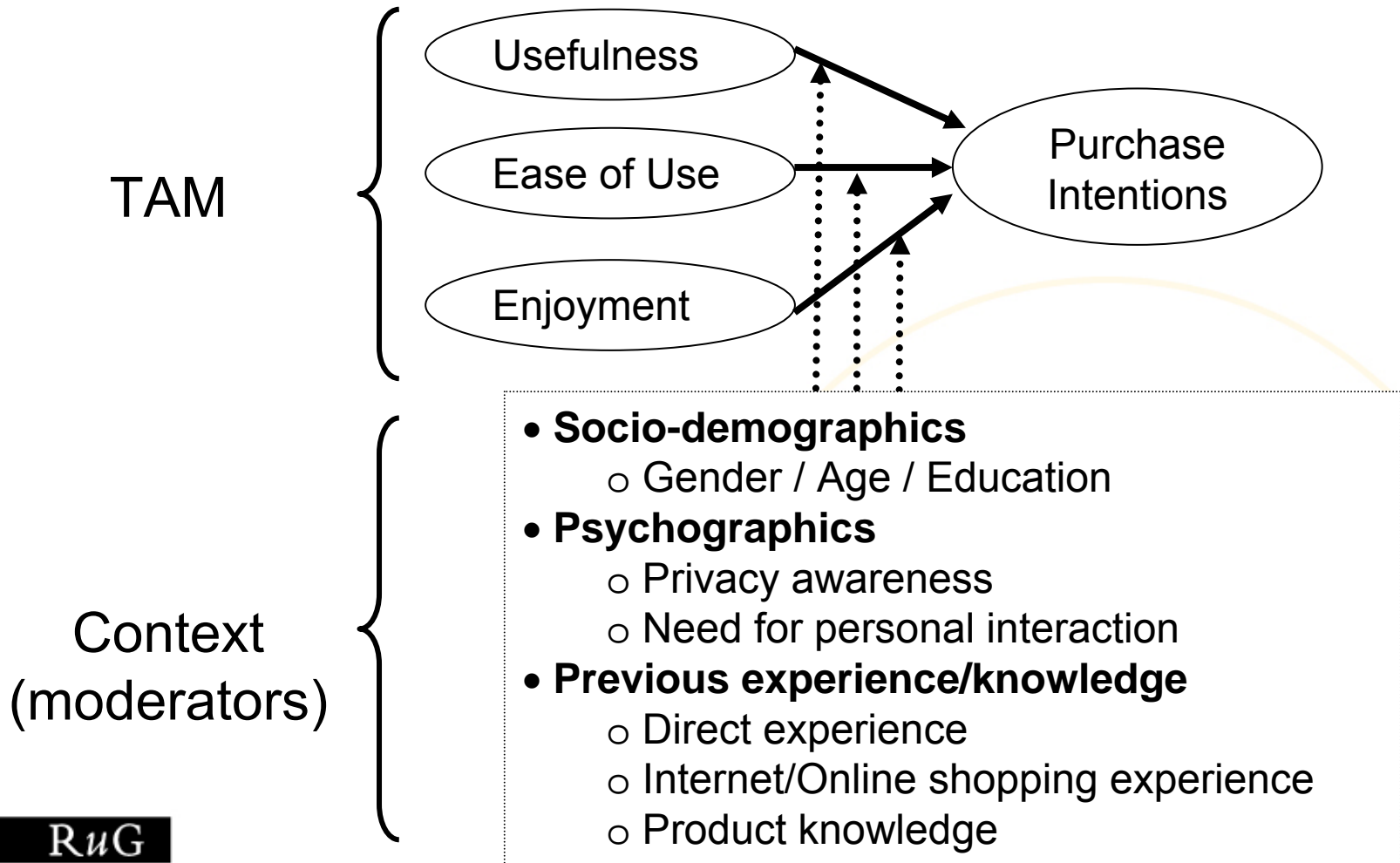
Research Objective



TAM in E-commerce: Universally applicable or Context-dependent?

- Context: in terms of consumer characteristics.
- Research question:
 - **Do TAM relationships vary across various groups of customers?**
 - ‘TAM relationships’ = Impact of TAM-predictors on online purchase intentions.
 - ‘Vary’ = Magnitude of impact context-dependent?
 - ‘Groups of customers’ = Based on sociodemographics, psychographics, and experience.

Conceptual model: TAM and moderators



Comparison Website for Car Insurance



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Gezondheidszorg

- Independer Huisartsenpraktijken
- Vind ziekenhuizen & klinieken
- Vind een huisarts in de buurt
- Vind medische websites
- Veel voorkomende aandoeningen

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ACTUEEL:

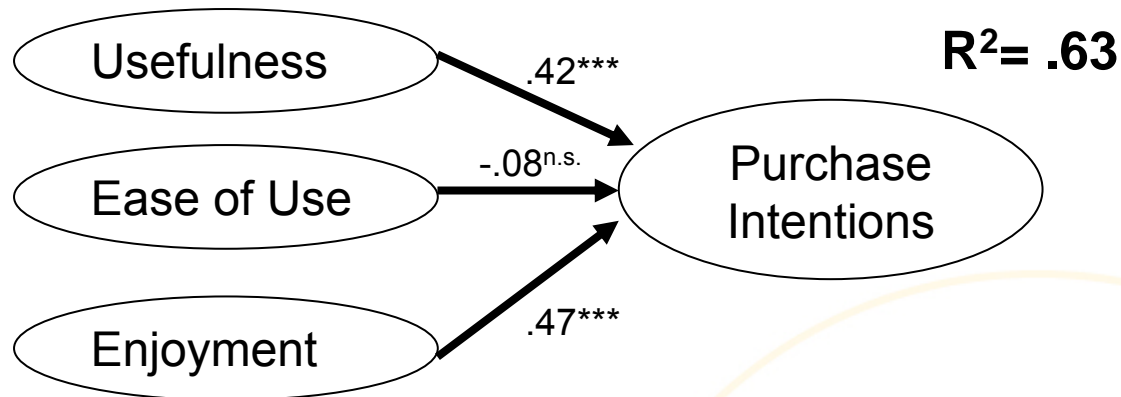
- Serviceniveau grote zorgverzekeraars blijft achter bij kleine verzekeraars
- Unieke actie: Gratis Wegenwacht tot 1 januari 2008 bij autoverzekering
- Werken bij een dynamische organisatie? Independer heeft interessante vacatures!

Data collection



- **Research instrument:**
 - Usefulness (6): Childers et al. (2001), Berry et al. (2002)
 - Ease of Use (3): Parasuraman et al. (2005)
 - Enjoyment (3): Childers et al. (2001)
 - Purchase Intention (3): Parasuraman et al. (2005)
 - Likert scales: 7 point
- **Sampling frame:**
 - Site visitors with request for proposal within last six months
- **Online survey:**
 - Email with link to survey website
 - 2,100 visitors (1,000 Buyers & 1,100 Browsers)
- **Sample**
 - N = 386 (after listwise deletion)
 - Net response rate 18.4%

Results General Model (N=386)



*** $p < .01$, n.s. $p > .05$

- Fit indices indicate reasonable fit:
 $\chi^2/df = 4.09$, GFI=.90, CFI=.95, NNFI=.94,
RFI=.93, SRMR=.058, RMSEA=.091
- Ease of Use: *not* significant.



Testing for Moderating Effects

- Split sample approach:
 - Both categories or median split (for continuous variables)
- Test for Measurement model:
 - All lambda's are significant for all moderator splits
 - Not all lambda's identical: few cases partial metric invariance
- Test for Relation in Structural model:
 - All parameters free for both moderator groups
 - For one group:
 - Fix parameter of interest = parameter other group.
 - Worsening Chi-square (1df) significant?
- Software: AMOS

Moderating Consumer Traits: 1. Socio-Demographics



TAM-Predictor	Gender			Age			Education		
	Male	Female	$\Delta\chi^2$	<40	>=40	$\Delta\chi^2$	Low	High	$\Delta\chi^2$
Usefulness	.31	.64	4.48**	.69	.15	13.43***	.02	.66	17.00***
Ease of Use	-.11	.07	2.51	-.04	-.14	0.80	-.10	-.14	0.16
Enjoyment	.58	.21	5.44**	.26	.72	7.72***	.82	.41	5.39**

* $p < .10$; ** $p < .05$; *** $p < .01$

Moderating Consumer Traits: 2. Psychographics



TAM-Predictor	Privacy Concerns			Need for Personal Interaction		
	Low	High	$\Delta\chi^2$	Low	High	$\Delta\chi^2$
Usefulness	.33	.54	1.24	.57	.28	2.09
Ease of Use	-.11	-.04	0.45	-.10	-.10	0.00
Enjoyment	.52	.33	0.81	.25	.66	3.22*

* $p < .10$; ** $p < .05$; *** $p < .01$

Moderating Consumer Traits: 3. Experience



TAM-Predictor	Direct experience			Online Shopping Experience			Product Knowledge		
	Browser	Buyer	$\Delta\chi^2$	Low	High	$\Delta\chi^2$	Low	High	$\Delta\chi^2$
Usefulness	.32	.57	2.55	.46	.32	0.69	.60	.21	4.93**
Ease of Use	-.14	.03	2.69	-.05	-.11	0.39	-.02	-.15	1.25
Enjoyment	.55	.12	7.32***	.45	.54	0.25	32	.78	5.82**

* $p < .10$; ** $p < .05$; *** $p < .01$



Moderating Consumer Traits:

1. Socio-Demographics

Gender:

- MEN ARE MORE CONCERNED WITH ENJOYMENT;
- WOMEN ARE MORE CONCERNED WITH PU!

Possible explanation: women use website only seriously, men see it as tool to have fun

Age:

- OLDER PEOPLE ARE MORE CONCERNED WITH ENJOYMENT;
YOUNGER ARE MORE CONCERNED WITH PU!

Possible explanation: Older people currently do not find it enjoyable, when enjoyment increases it has a strong impact on intentions

Education:

- LOWER EDUCATED ARE MORE CONCERNED WITH ENJOYMENT;
HIGHER EDUCATED ARE MORE CONCERNED WITH PU.

Possible explanation: Lower educated more process-oriented, whereas higher-educated are more outcome-oriented (also found in literature)



Moderating Consumer Traits: 2. Psychographics

Privacy awareness:

NO SIGNIFICANT DIFFERENCES ($P > .10$) BETWEEN THE TWO GROUPS IN THE RELATIVE IMPORTANCE OF THE TAM-PREDICTORS

Need for personal interaction

NO SIGNIFICANT DIFFERENCES. BETWEEN “PU→Intentions” JUST OUTSIDE SIGNIFICANCE LEVEL ($p = .073$). RESULTS INDICATE THAT PEOPLE WITH STRONG NEED ARE MORE PROCESS-ORIENTED; THEY DO NOT PERCEIVE ENOUGH ENJOYMENT, AND HENCE, ENJOYMENT HAS STRONG IMPACT ON INTENTIONS

EXPERIENCE/KNOWLEDGE



- Direct experience (browsers vs. buyers)
 - Buyers are less concerned with enjoyment, but equally concerned with PU compared to browsers
- Internet/online experience (novice vs. expert in online shopping)
 - No differences! Possible explanation: everyone has enough experience/knowledge to know to how to purchase a car insurance through the internet. Low product risk (same as through telephone)
- Product knowledge (novice vs. experts in car insurances)
 - Knowledgeable people are more concerned with enjoyment; Less knowledgeable are more concerned with PU. Explanation: for not knowledgeable people the website acts as an expert. When they perceive the website to improve the outcome, then they form strong intentions. For knowledgeable people, the website is particularly used only when it increases the level of enjoyment.

Conclusions



GENERAL TAM

- PEOU has little (sometimes negative) effect on future purchase intentions:
 - When task at hand is purchasing rather than browsing, PEOU seems to become less important
 - Consumers have gained sufficient experience with comparison websites
 - The ease of getting cheapest car insurance, does not lead to loyalty intentions towards Independer.nl
 - Standards in websites: no further improvements are possible to making it easier (only by making it more enjoyable or more useful)
- Enjoyment is important: even for a functional product in utilitarian online shopping context.

MODERATING VARIABLES

- TAM is a viable tool, but consumer characteristics matter
- Especially socio-demographics (gender, age, education) play a strong role in affecting the importance of the predictors



Practical and research implications

Practical implications

- Web designers need to improve their websites in terms of enjoyment and usefulness
- Web designers need to take into account type of customers' characteristics
 - e.g., old customer base (life insurance) focus on improving level of enjoyment by means of positive reinforcement and/or risk reduction

Research implications/opportunities

- Explain inconsistent findings by means of incorporating moderator variables
- Extend the level of context-specific factors to increase our understanding