Artificial Intelligence Readiness Scale (AIRS): Dissertation Defense

Extending UTAUT2 for Enterprise AI Adoption

Fabio Correa

Doctoral Candidate, Doctor of Business Administration

Touro University Worldwide

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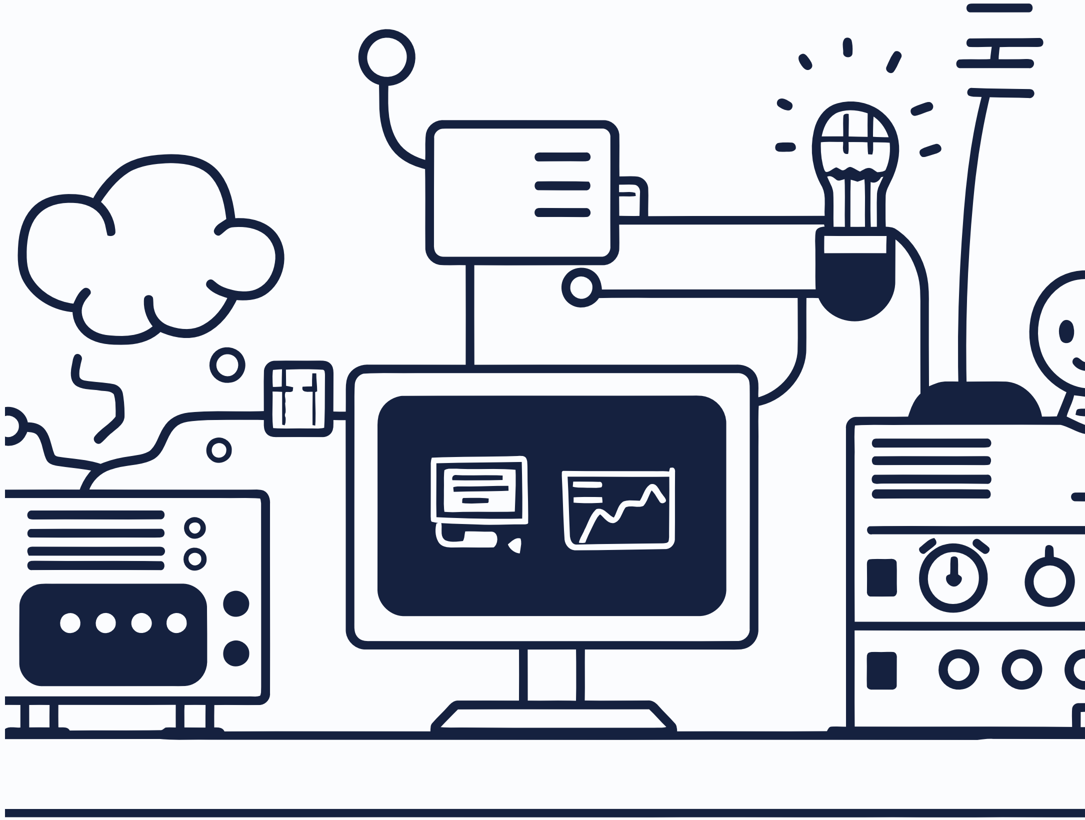

Slide 1: Title Slide

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Dissertation Committee:

- Dr. Karina Kasztelnik (Chair)
- Dr. Jerome Jones
- Dr. Donna Day

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The AI Adoption Paradox

Organizations are adopting AI at unprecedented rates—but struggling to capture value.

Metric	Value	Source
Enterprise AI Adoption (2024)	72%	McKinsey
Enterprise AI Adoption (2025)	88%	McKinsey
Companies achieving measurable ROI	5%	BCG
GenAI pilots that fail to scale	90-95%	MIT Media Lab

Research Questions:

1. Can we develop a psychometrically valid AI Readiness Scale extending UTAUT2?
2. What factors most strongly predict AI adoption intention?
3. Do traditional UTAUT predictors behave differently for AI?
4. How do professional experience and population type moderate adoption?

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Theoretical Foundation - UTAUT2

Building on 25+ years of technology acceptance research.

Construct	Definition	Meta-Analytic Effect (rc)
Performance Expectancy (PE)	Belief technology improves performance	.64 (strongest)
Effort Expectancy (EE)	Perceived ease of use	.51
Social Influence (SI)	Important others' opinions	.43
Facilitating Conditions (FC)	Organizational/technical support	.39
Hedonic Motivation (HM)	Enjoyment from use	.53
Price Value (PV)	Cost-benefit assessment	.52
Habit (HB)	Automaticity from repeated use	.66

Source: Blut et al. (2022) meta-analysis, Table 1: 737,112 users, 1,935 samples. rc = corrected correlation.

Proposed Extension: AI Trust (TR) as a new construct capturing trust in AI systems

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Research Design

A rigorous 10-phase psychometric validation approach.

Phase	Analysis	Sample
1	Sample Split	N=523 → 261/262
2	Exploratory Factor Analysis (EFA)	Development (n=261)
3	Confirmatory Factor Analysis (CFA)	Holdout (n=262)
4	Measurement Invariance	Student vs Professional
5	Structural Equation Modeling (SEM)	Full sample
6-7	Moderation Analysis	Experience, Population
8-9	Behavioral & Qualitative Validation	Tool usage, Feedback
10	Final Synthesis	Integration

Sample

523 U.S. adults spanning the career development spectrum

Population	n	%
Students	216	41.3%
Professionals	184	35.2%
Leaders	123	23.5%

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Instrument Validation Results

Excellent psychometric properties across all indices.

Model Fit Indices:

Index	Value	Threshold	Result
CFI	.975	≥ .95	✅ Excellent
TLI	.960	≥ .95	✅ Excellent
RMSEA	.065	≤ .08	✅ Good
SRMR	.046	≤ .08	✅ Excellent
χ^2/df	2.10	< 3.0	✅ Excellent

Reliability (Cronbach's α):

Construct	α
Performance Expectancy	.803
Effort Expectancy	.859
Social Influence	.752
Facilitating Conditions	.743
Hedonic Motivation	.864
Price Value	.883
Habit	.909
AI Trust	.891

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Constructs Excluded

Four AI-specific constructs failed to demonstrate adequate reliability.

Construct	Cronbach's α	Reason for Exclusion
Voluntariness (VO)	.406	Items measured choice vs. freedom—distinct dimensions
Explainability (EX)	.582	Items measured understanding vs. preference—distinct facets
Ethical Risk (ER)	.546	Items measured job displacement vs. privacy—distinct risk types
AI Anxiety (AX)	.301	Items measured avoidance vs. approach anxiety—distinct motivations

Implication: These constructs require 3-4 items per dimension for future operationalization. The theoretical importance remains; only the measurement proved insufficient.

KEY FINDING

Hypothesis Testing Results

Price Value, not Performance Expectancy, drives AI adoption.

Hypothesis	Path	β	p	Result
H1f	PV → BI	**.505**	<.001	✅ **STRONGEST**
H1e	HM → BI	**.217**	.014	✅ Supported
H1c	SI → BI	**.136**	.024	✅ Supported
H2	TR → BI	.106	.064	⚠️ Marginal
H1d	FC → BI	.059	.338	❌ Not Supported
H1g	HB → BI	.023	.631	❌ Not Supported
H1b	EE → BI	-.008	.875	❌ Not Supported
H1a	PE → BI	-.028	.791	❌ Not Supported

Model R^2 = .861 (86.1% of variance explained)

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Traditional Predictors Don't Work for AI

Performance Expectancy and Effort Expectancy—typically the strongest predictors—are non-significant for AI.

Construct	Meta-Analytic rc (Traditional)	AIRS β (AI)	Change
Performance Expectancy	.64	-.028	⬇️ Collapsed
Effort Expectancy	.51	-.008	⬇️ Collapsed
Price Value	.52	**.505**	⬆️ Dominant
Hedonic Motivation	.53	.217	Similar
Social Influence	.43	.136	⬇️ Reduced

Interpretation: For AI, utility is assumed or uncertain; users evaluate through a value lens ("Is it worth it?") rather than a utility lens ("Will it help me?").

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What Drives AI Adoption?

Three factors significantly predict AI adoption intention.

1. Price Value

$\beta = .505$, $p < .001$

"Is the value worth the cost/effort?"

- The cognitive trade-off between benefits received and resources invested
- Includes time, learning curve, workflow disruption—not just money

2. Hedonic Motivation

$\beta = .217$, $p = .014$

"Is it engaging and enjoyable?"

- Intrinsic satisfaction from using AI tools
- Curiosity and stimulation drive continued engagement

3. Social Influence

$\beta = .136$, $p = .024$

"Do important others support AI use?"

- Peer influence and organizational norms
- AI champions and visible leadership matter

Near-Significant:

- **AI Trust** ($\beta = .106$, $p = .064$): Approaching significance—larger samples may confirm

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Moderation Effects

Experience and population moderate AI adoption pathways.

Experience Moderation:

Interaction	β	p	Result
HM × Experience	**.136**	**.009**	✅ Significant
PE × Experience	.112	.055	⚠️ Marginal

Population Moderation (Student vs Professional):

Path	Student β	Professional β	Δβ	p
HM → BI	**+0.449**	-0.301	-0.750	**.041**
PV → BI	+0.638	+0.808	+0.170	ns

Key Insight:

- **Students:** "Make it fun and I'll use it"
- **Professionals:** "Show me the value and I'll use it"

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Four User Segments Identified

Cluster analysis reveals distinct adoption readiness profiles.

Segment	n	%	Profile	Organizational Role
AI Enthusiasts	84	16%	High trust, high intention, low anxiety	Champions
Cautious Adopters	157	30%	High adoption but also high anxiety	Need reassurance
Moderate Users	191	37%	Neutral stance, average engagement	Can be influenced
Anxious Avoiders	91	17%	Low adoption, high anxiety	Need intervention

Cluster Centroids (Standardized):

Segment	PE (z)	Trust (z)	Anxiety (z)	Intention (z)
AI Enthusiasts	+1.42	+1.37	-0.86	+1.32
Cautious Adopters	+1.16	+0.86	+0.84	+0.88
Moderate Users	+0.26	+0.01	+0.42	-0.07
Anxious Avoiders	-1.16	-1.49	+0.76	-1.53

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Behavioral Validation

Intentions strongly predict actual AI tool usage.

.69

BI-Usage Correlation

$\rho = .69, p < .001$

Strong positive relationship

Tool Usage by Role (Effect Sizes):

Comparison	Cohen's d	Interpretation
Leaders vs. Others	0.74-1.14	Large to Very Large

Key Insight: Organizational leaders demonstrate substantially higher AI tool usage, suggesting leadership engagement may be critical for organizational AI adoption.

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Theoretical Contributions

Four primary contributions to technology acceptance theory.

01

UTAUT2 Extension for AI

- Demonstrated that traditional frameworks require modification for AI contexts
- AI Trust approaches significance, warranting further investigation

02

Price Value Dominance

- First empirical evidence that PV > PE for AI adoption
- Challenges 25+ years of UTAUT findings where PE consistently dominates

03

Career Development Integration

- Experience moderates HM effect ($p = .009$)
- Connects technology acceptance to vocational psychology

04

User Typology Framework

- Four-segment model for adoption heterogeneity
- Foundation for future intervention research

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Practical Implications

Evidence-informed recommendations for organizations.

For AI Implementation:

Finding	Implication	Strategy
PV dominance (β=.505)	Lead with value, not features	Clear ROI demonstrations
HM significance (β=.217)	Design for engagement	Gamification, curiosity
SI significance (β=.136)	Leverage social proof	Champions, peer communities
PE non-significance	Don't assume utility sells	Focus on value proposition

For Different Populations:

Population	Priority	Approach
Students	Hedonic Motivation	Make it engaging and fun
Professionals	Price Value	Demonstrate clear ROI
Leaders	Already high adopters	Leverage as champions

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Study Limitations

Important boundaries for interpretation.

1. Cross-Sectional Design

- Cannot establish causality; longitudinal research needed
- Temporal dynamics of adoption not captured

2. Self-Report Measures

- Common method variance possible despite procedural controls
- Behavioral validation helps mitigate but doesn't eliminate

3. Sample Characteristics

- U.S. adults only; cultural generalization requires replication
- Convenience sampling through audience panel

4. Excluded Constructs

- Voluntariness, Explainability, Ethical Risk, AI Anxiety require revised operationalization
- Two-item scales insufficient for multidimensional constructs

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Future Research Directions

Building on this foundation.

Longitudinal Studies

- Track adoption trajectories over time
- Examine how predictors change with experience

Construct Development

- Multi-item scales for excluded constructs (3-4 items per dimension)
- Validate AI Anxiety, Ethical Risk with expanded operationalization

Population Replication

- Cross-cultural validation
- Industry-specific applications (healthcare, finance, education)

Intervention Research

- Test segment-specific interventions
- Experimental validation of practical recommendations

Conclusion

Key Takeaways

1. **The AIRS instrument is psychometrically sound**
   (CFI = .975, α = .74-.91)

2. **Price Value dominates AI adoption**
   (β = .505), not Performance Expectancy

3. **Traditional UTAUT predictors (PE, EE) collapse**
   for AI technology

4. **Enjoyment matters**
   (HM β = .217), especially for students

5. **Four distinct user segments**
   exist with different intervention needs

6. **Experience moderates adoption pathways**
   (HM×Exp p = .009)

Bottom Line: AI adoption requires a fundamentally different approach than traditional technology—lead with value and engagement, not utility.

Questions & Discussion

Thank you for your attention.

I welcome your questions and feedback.

Contact Information:

Email: fabio.correa@tuw.edu

Resources:

GitHub Repository: https://github.com/fabioc-aloha/AIRS_Data_Analysis

Full dissertation available upon request

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Appendix A - Ethics & Data Retention

IRB Approval and Data Protection

Item	Detail
IRB Protocol Number	T00571337
Application Date	October 29, 2025
Status	Approved - Exempt (45 CFR 46.104(d)(2))
Data Retention	Until January 2028 (per 45 CFR 46)
Repository	GitHub (public, de-identified)