



Investigating the Determinants of **Business Performance**: The Interplay of **AI Integrated CRM**, **Strategic AI Investments**, and **Organizational Capabilities**

Dissertation Committee

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Agenda

- The problem: the AI investment paradox
- Theoretical framework: six integrated lenses
- Conceptual model & hypotheses
- Method: $N = 307$, CB-SEM
- Findings: direct, mediation, moderation
- Contributions, limitations, and next steps

The problem: the AI investment paradox

- Firms are investing heavily in AI-integrated CRM
- Returns on that spend are uneven — often disappointing
- Same tools, sharply different performance outcomes
- Thesis: AI investment alone does not improve performance —
organizational capabilities convert it into value

Research gap & significance

- Prior work studies AI tools in isolation — not their interplay
- The mechanism linking investment → performance is assumed, never tested
- Industry-type contingencies under-examined
- The relevant theories are rarely integrated
- Significance: shifts the question from "how much to spend" to "what to build"

Research questions & objectives

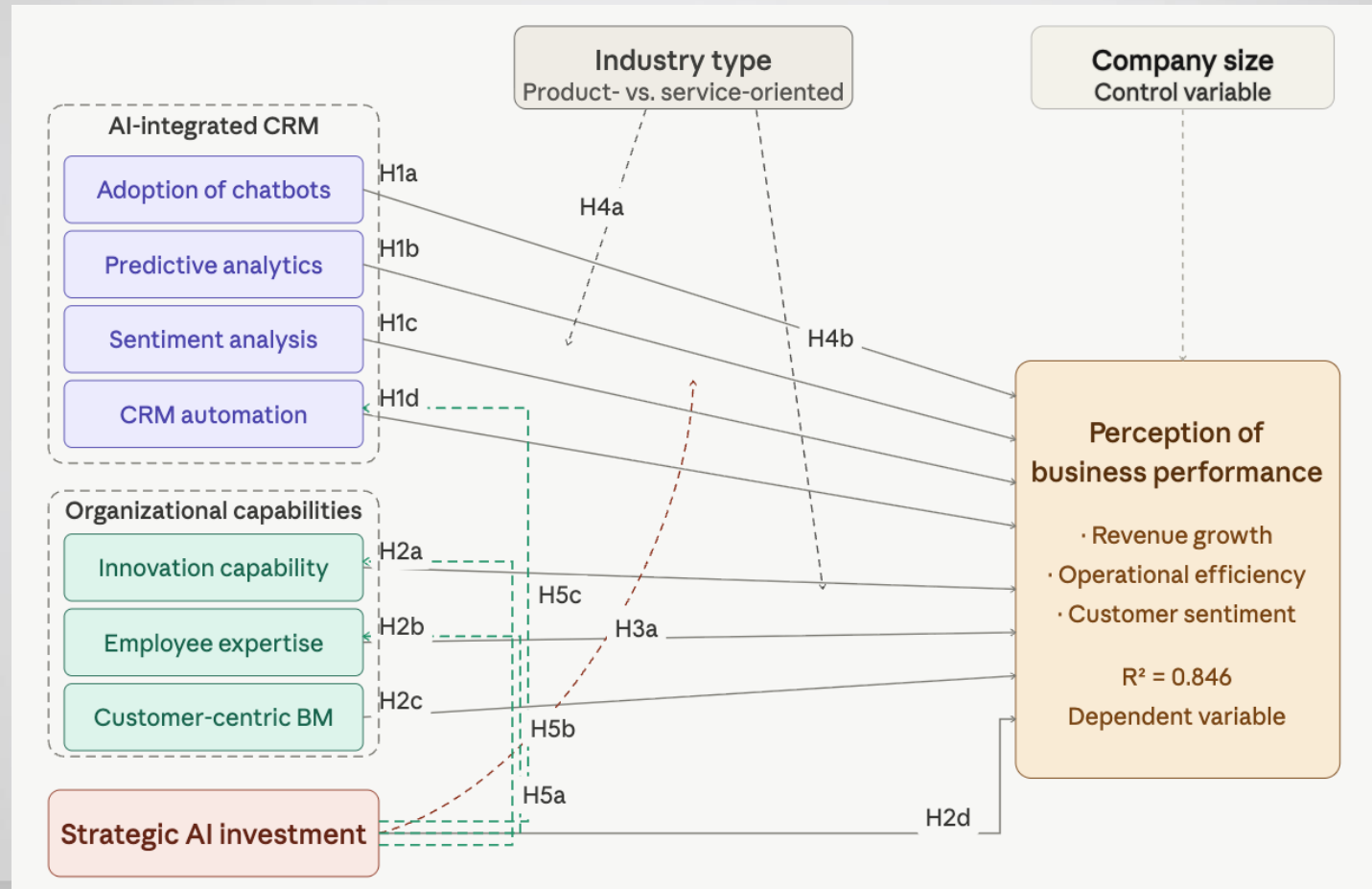
- **Overarching:** How do AI-CRM, strategic AI investment, and organizational capabilities affect performance — and how do industry type and investment moderate these relationships?
- RQ1 — Direct effects of AI-CRM tools
- RQ2 — Direct effects of organizational capabilities
- RQ3 — Investment: direct effect and as a moderator
- RQ4 — Industry-type moderation
- RQ5 — Mediation: through what mechanisms does investment reach performance?

Theoretical framework: six layered lenses

- Six frameworks applied as **layers, not alternatives**
- Individual adoption → **TAM, UTAUT** (why employees accept AI tools)
- Diffusion → **DOI** (why adoption varies across industries)
- Firm resources & capabilities → **RBV + Dynamic Capabilities** (why capabilities, not tools, create advantage)
- Context → **Contingency Theory** (why the same strategy differs by industry)
- Convergence: **capability conversion is the mechanism**

Conceptual model & hypotheses

- Figure 1 — capability-mediated path model



Conceptual model & hypotheses

- H1a–d: AI-CRM tools (chatbot, predictive, sentiment, automation) → performance
- H2a–d: capabilities + investment (innovation, expertise, customer-centric model, strategic investment) → performance
- H3a: strategic investment moderates technology → performance
- H4a–b: industry type moderates the technology and capability paths
- H5a–c: investment → {innovation, expertise, automation} → performance (mediation) Control: company size
- 14 hypotheses total

Research design

- Quantitative, **explanatory, deductive** design
- **Positivist** paradigm — a priori hypotheses, objective measurement, replicability
- **Cross-sectional** survey
- Unit of analysis: **the organization** (middle/senior managers as informants)
- Why SEM: tests latent constructs + direct, mediated, and moderated paths in one model

Sample & data collection

- N = 307 complete responses · Oct–Nov 2025
- 109 product-oriented (35.5%) · 198 service-oriented (64.5%)
- Middle/senior managers — CRM, digital transformation, marketing, IT leadership
- Stratified purposive sampling (industry type × company size)
- Screening: only firms currently using AI in CRM
- Size strata: small 1–499 · medium 500–999 · large 1,000–4,999+

Measurement instrument & validation

- **9 constructs · 30 items · 5-point Likert** (1 = strongly disagree → 5 = strongly agree)
- Items **adapted from validated scales**
- Three-phase validation:
 - Expert review (n = 10 domain experts)
 - Informed pilot (n = 8)
 - Blind pilot (n = 51) → EFA: **8 factors, ~86% variance**
- Refinements: removed jargon, split a double-barreled item, added the screening gate

Analytical strategy

- **CB-SEM in R / lavaan (v0.6-19)**
- **MLR estimator** — chosen for confirmed non-normality (Shapiro-Wilk $p < .001$; skew $> |1.0|$)
- **Bootstrap mediation:** 5,000 resamples, **BCa 95% CIs** (Hayes, 2022)
- **Multi-method triangulation:** latent SEM + composite regression + interaction tests
- **CMB:** CFA model comparison + Harman's + 5 procedural remedies (detail next section)

Measurement model I: reliability & convergent validity

- All 9 constructs, all 30 items **retained**
- Cronbach's α **.916–.962** (mean .938)
- Composite Reliability **CR .925–.963** (mean .940)
- Average Variance Extracted **AVE .756–.896** (mean .825)
- Every standardized loading $\lambda > .80$

Measurement model II : discriminant validity

- **Fornell-Larcker met:** $\sqrt{\text{AVE}}$ (.870–.946) > all inter-construct correlations
- **HTMT** < .90 for all 36 construct pairs (liberal threshold)
- 3 pairs near the .85 strict threshold — each theoretically expected (PRED–SENT .874; AUTO–EXP .854; EXP–PERF .869)
- VIF screening: no multicollinearity concerns

Model fit

- **CFA fit:** CFI = .913 · RMSEA = .068 [.063, .073] · SRMR = .045 · χ^2/df = 2.42
- **TLI = .897** — marginally below .90 (model complexity: 9 factors, 30 items, 96 parameters)
- **No post-hoc modifications** — model kept theoretically clean for replicability
- **9-factor $\gg$ alternatives:** vs 1-factor $\Delta\chi^2 = 1,795.92$ · vs 4-factor $\Delta\chi^2 = 976.05$ (both $p < .001$)
- SEM fit comparable: CFI = .911 · χ^2/df = 2.45

Common method bias

- **Single-source design** → CMB assessed, three complementary ways
- **Harman's single factor** = 62.7% — above 50%, reported honestly, not as a pass
- **Decisive evidence** — CFA model comparison: a 1-factor model fits poorly (CFI .618, RMSEA .136); 9-factor is vastly better ($\Delta\chi^2 = 1,795.92$, $\Delta\text{CFI} = .295$, $p < .001$)
- **5 procedural remedies** built in by design (anonymity · separated IV/DV pages · varied framing · 3 pilot rounds · consistent anchors)
- Acknowledged as a limitation; multi-source data is the future fix

Direct effects: the paradox surfaces

- Strategic AI investment $\rightarrow$ performance: $\beta = -.020$, ns
- The three tools — chatbots $.021$ · predictive $.092$ · sentiment $-.144$ — all ns
- Automation $\beta = .431^{***}$ — the strongest path in the model
- Customer-centric business model $\beta = .266^*$
- Innovation capability $\beta = .290^\dagger$ ($p = .064$, marginal)
- Employee expertise $\beta = .080$, ns

Mediation: resolving the paradox (centerpiece)

- Investment's total effect $c = .661^{***}$ — large and significant
- Investment's direct effect $c' = -.015$, ns $\rightarrow$ fully mediated
- Total indirect = .675, through three capability pathways:
- $INV \rightarrow Innovation \rightarrow PERF = .288 [.119, .464] \cdot 43.6\% \cdot$ full mediation
- $INV \rightarrow Expertise \rightarrow PERF = .216 [.093, .352] \cdot 32.7\%$
- $INV \rightarrow Automation \rightarrow PERF = .171 [.093, .260] \cdot 25.9\%$
- All BCa 95% CIs exclude zero (5,000 resamples)

Moderation by industry type

- **Four interactions significant** — all stronger in product-oriented firms:
 - Automation .297*** · Predictive .299** · Expertise .201** · Chatbot .189*
- Sentiment marginal (.173, $p = .051$)
- **Automation simple slopes:** product $\beta = .937$ vs service $\beta = .658$ — a 27.3-point gap
- **Not moderated:** innovation, customer-centric model, investment → *capabilities generalize across industries*

Variance explained & hypothesis scorecard

- $R^2 = .846$ — the model explains 84.6% of performance variance
- 14 hypotheses: 5 fully supported · 2 marginal/partial · 7 not supported
- 50% support for direct effects · 100% support for mediation
- Control — company size: $\beta = .020$, ns (effects are not a scale artifact)

Discussion: what the findings mean

- AI is an input to capability, not a direct driver of performance
- Resolves the literature's mixed results — the IT productivity paradox, revisited
- Why automation is the lone direct tool: it's both a technology and a process capability
- The mechanism is conversion, not acquisition

Theoretical contributions

- **RBV extended:** value comes from capability conversion, not resource possession — commodity AI fails VRIN
- **Dynamic Capabilities validated:** innovation is the central sensing—seizing—reconfiguring capability
- **Human Capital Theory extended:** expertise creates value by enabling processes, not directly
- **TOE quantified:** organizational coefficients dominate technology coefficients
- **The named contribution:** the **Capability Mediation Model**

Practical implications

- Shift the executive question: from "how much to spend" → "which capabilities to build"
- **24-month phased sequence:** Foundation (expertise/data) → Optimization (automation) → Innovation (infrastructure) → Technology (tools last)
- **Industry-specific:** product firms accelerate automation & predictive; service firms weight customer-centric model & innovation
- **For vendors:** reposition from tool providers → capability-enablement partners

Limitations & robustness

- **Cross-sectional** → associational, not causal; ordering rests on theory + temporal logic
- **Single-source self-report** → CMB mitigated (model comparison + 5 remedies), not eliminated
- **Perceived** performance, not objective metrics; ceiling effects in construct means
- **Sample skew:** 64.5% service; product subgroup $n = 109$ limits moderation precision
- **$R^2 = .846$ is likely an upper bound** — restriction of range (AI-adopters only), high reliability, single source
- Construct caveats noted (INNO outcome items; PERF2 names automation)

Future research

- **Longitudinal (24–36 mo)** — highest priority: establish temporal precedence
- **Objective performance** metrics — revenue, NPS, churn
- **Multi-source** data designs
- **Refined scales** (innovation capability; performance items)
- **Moderated mediation** + rival/second-order model comparison
- **Cross-national extension** — incl. ageing-economy contexts

Conclusion

- **Organizational capabilities and process automation** — not AI adoption per se — are the primary determinants of performance
- AI success is an *organizational* challenge, not a procurement one
- **Invest in the conversion, not the tool**

Thank you

Committee: Dr. Subramanian

· Dr. Marakas · Dr. Castillo ·

Dr. Kadian

Questions & discussion

add some images in slide 3 about investments.
If possible add some citations...
create boxes for theories and add it...

Hemang Subramanian to Everyone (Jun 24, 2026,
9:44 AM)
six layers vs. five layers.

Hemang Subramanian to Everyone (Jun 24, 2026,
9:51 AM)
Mediation and moderation put in a diagram
but speak thorough it.