CONSUMER TRUST IN ARTIFICIAL INTELLIGENCE SERVICES

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Abstract

Advances in robotics and artificial intelligence improve almost every aspect of consumer services. Yet, despite the enormous potential, artificial intelligence services face psychological barriers, such as the concern that artificial intelligence is less able to account for people's unique characteristics and personal circumstances or simply threatens to take capabilities from humans in the value chain. This research investigates how consumer trust and willingness to depend on artificial intelligence services change as a function of the stakes of decision, type of recommendation and service agent for three typical service domains (health, legal, and retail). The results show a robust negative effect of artificial intelligence relative to human service agents in consumers trust and willingness to depend on the recommendations. This effect is linked to the stakes of the decision and is highest in the health domain respectively. These results contribute to the human psychology of artificial intelligence by extending its scope to the combination of human and artificial intelligence agents. Practical implications for the trustworthy design of artificial intelligence services are discussed.

Introduction

Artificial intelligence has the potential to deliver tremendous **benefits** to humans in **health, legal and retail services**

Psychological barriers hinder the adoption and use of artificial intelligence in the everyday life scenarios

Theoretical background

Humans are subject to **decision-making biases**, and tend to show **risk aversion** (as well as **algorithm aversion**) in **high stakes decisions** (due to uncertainty)

Human advice is preferred over that of computer agents, as is the decision to take action (**action-taking bias**)

Methodology

Study design
» **service agent** (AI vs. Human vs. AI + Human; between)
» **stakes of decision** (High vs. Low; between)
» **type of recommendation** (Action vs. No action; between)
» **service domain** (Health and Legal and Retail; within)

Sample characteristics
» N = 1,891; U.S. residents, fluent in English, age > 18 years
» M_{age} = 38.55, SD = 11.84; 52.0% females, 0.4% others

Measures
» **willingness to depend** (4-item scale, CR_{Health} = .95, CR_{Legal} = .94, CR_{Retail} = .95)
» **perceived trust** (9-item scale; CR_{Health} = .96, CR_{Legal} = .95, CR_{Retail} = .95)
» **perceived risk** (10-item scale; CR_{Health} = .94, CR_{Legal} = .93, CR_{Retail} = .93)

Results

Mixed model analysis

Table 1. Estimates of willingness to depend (WTD), perceived trust (TRUST) and perceived risk (RISK)

Independent variable	WTD B (SE)	WTD 95% CI	TRUST B (SE)	TRUST 95% CI	RISK B (SE)	RISK 95% CI
Main effects						
Agent 1 (AI vs. Human)	-1.17 (.11)	-1.40--.95	-.83 (.09)	-1.01--.64	.83 (.10)	.64-1.03
Agent 2 (Human+AI vs. Human)	-.81 (.12)	-1.03--.58	-.50 (.09)	-.68--.31	.61 (10)	.42-.81
Stakes (High vs. Low)	-.40 (.11)	-.62--.19	-.23 (.09)	-.41--.06	.46 (.10)	.27-.65
Action (Yes vs. No)	.62 (.11)	.38-.86	.35 (.10)	.16-.55	-.66 (.11)	-.87--.44
Domain 1 (Legal vs. Health)	-.39 (.12)	-.62--.16	-.58 (.09)	-.77--.40	.22 (.10)	.02-.41
Domain 2 (Retail vs. Health)	-.78 (.11)	-1.00--.57	-.81 (.09)	-.99--.64	.65 (.10)	.46-.83
Model summary						
Intercept	3.14 (.14)	2.86-3.41	3.17 (.13)	2.92-3.41	3.01 (.13)	2.75-3.27

Note. The model was computed based on a full-factorial design; non-significant effects are not shown.

Figure 1. Mean of perceived trust by service agent, stakes of decision, type of recommendation and service domain
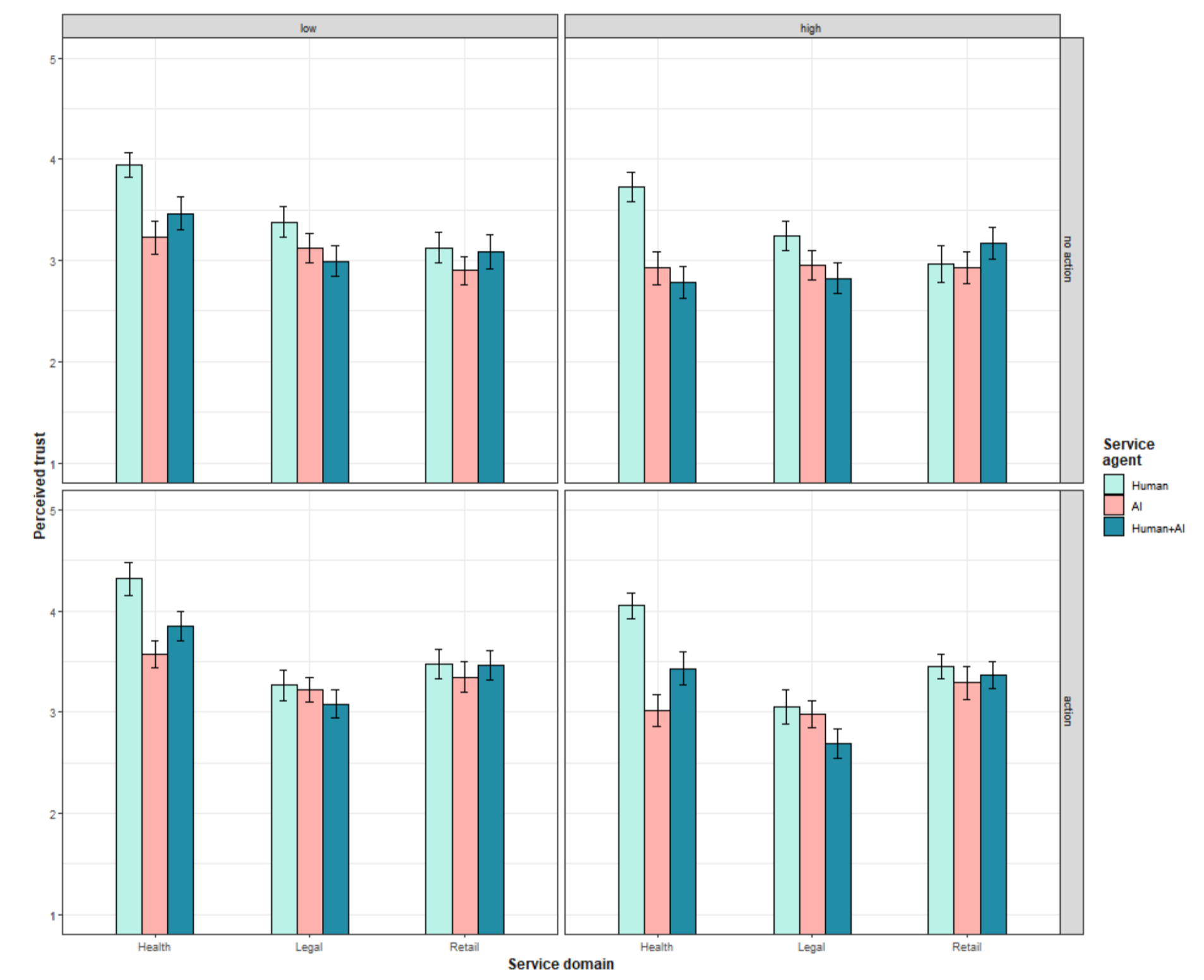
Discussion

Recommendations from **human agents** always **outperform** those from **artificial intelligence** agents, especially in high-stakes decisions

The **combination** of human-artificial intelligence agents only **meets consumer's needs half-way** (relative to human agents)

The implementation of artificial intelligence agents is going to be **most feasible in retail and legal** services

References

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HEY *SIRI*, CAN I TRUST YOU WITH MY LIFE?