PAPER ID 119 - REVIEWER 12345

AI-POWERED CHATBOTS IN E-COMMERCE: IMPROVING CUSTOMER SATISFACTION

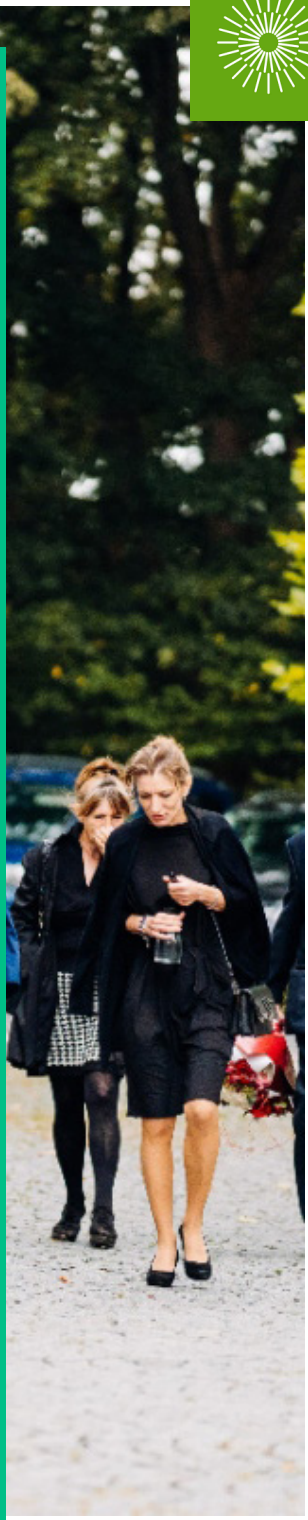
The paper explores the use of AI chatbots for customer support in e-commerce. The authors claim that chatbot adoption leads to increased customer satisfaction and reduced response times. They use a dataset of 1,200 customer service interactions from a single online retailer in 2022, comparing satisfaction ratings before and after chatbot implementation.

Strengths

- The topic is timely and relevant, as conversational AI is increasingly used in online retail.
- The paper raises an important practical issue: balancing automation with customer experience.
- The writing is generally clear, with a logical flow from introduction to conclusion.

Weaknesses / Limitations

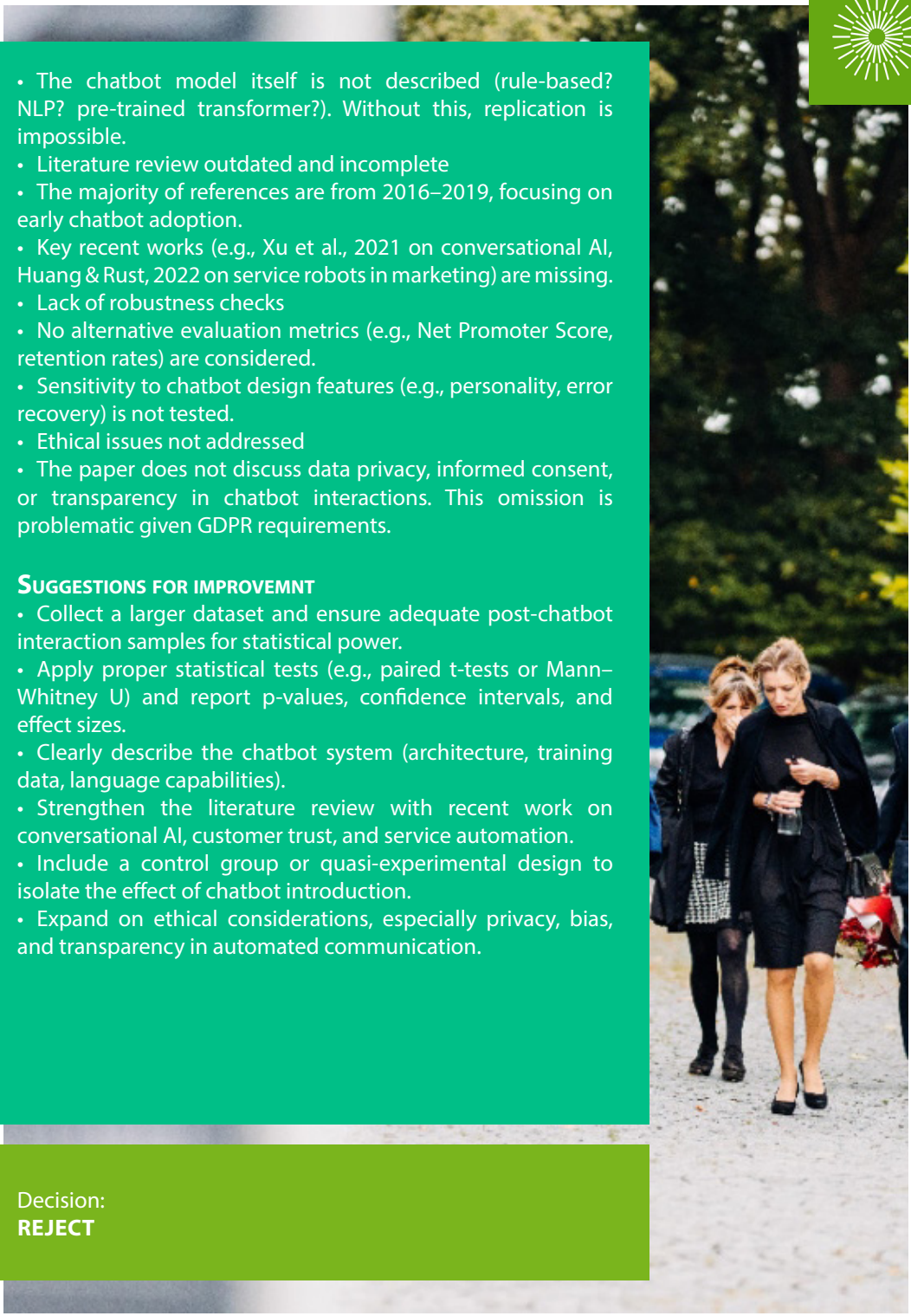
- Dataset too limited
- The dataset is very small (n = 1,200 interactions), and only 300 are post-chatbot. This severely limits statistical power.
- There is no demographic or behavioral breakdown of customers, making it impossible to assess whether results generalize beyond this single retailer.
- Inadequate statistical analysis
- Results are reported descriptively (average satisfaction rising from 3.8 to 4.1 on a 5-point scale) without significance testing. A paired t-test, Mann–Whitney U test, or ANOVA would be required to establish whether differences are meaningful.
- No confidence intervals or effect sizes are provided, which makes interpretation weak.
- Response time reduction is reported as "~25% faster" (p. 7), but without variance measures or statistical tests.
- The paper does not specify how satisfaction scores were collected (survey design, scale reliability, response rate).
- No control group is included; seasonal effects or external factors could explain the observed differences.



- The chatbot model itself is not described (rule-based? NLP? pre-trained transformer?). Without this, replication is impossible.
- Literature review outdated and incomplete
- The majority of references are from 2016–2019, focusing on early chatbot adoption.
- Key recent works (e.g., Xu et al., 2021 on conversational AI, Huang & Rust, 2022 on service robots in marketing) are missing.
- Lack of robustness checks
- No alternative evaluation metrics (e.g., Net Promoter Score, retention rates) are considered.
- Sensitivity to chatbot design features (e.g., personality, error recovery) is not tested.
- Ethical issues not addressed
- The paper does not discuss data privacy, informed consent, or transparency in chatbot interactions. This omission is problematic given GDPR requirements.

Suggestions for improvemnt

- Collect a larger dataset and ensure adequate post-chatbot interaction samples for statistical power.
- Apply proper statistical tests (e.g., paired t-tests or Mann–Whitney U) and report p-values, confidence intervals, and effect sizes.
- Clearly describe the chatbot system (architecture, training data, language capabilities).
- Strengthen the literature review with recent work on conversational AI, customer trust, and service automation.
- Include a control group or quasi-experimental design to isolate the effect of chatbot introduction.
- Expand on ethical considerations, especially privacy, bias, and transparency in automated communication.



Decision:
REJECT