

AI-Based Chatbots in Customer Communication: A Comparative Study of Germany and China

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Abstract: This study analyzes the implementation, usage, and acceptance of AI-supported chatbots in customer communication in Germany and China. Based on a systematic literature review and seven expert interviews with representatives of international technology companies, the research investigates both technological and cultural contextual factors influencing chatbot adoption. The study highlights how varying regulatory frameworks, infrastructure readiness, and cultural attitudes shape the deployment and effectiveness of AI-driven communication tools in different markets. Findings indicate that in Germany, stringent data protection laws, regulatory complexity, and cultural hesitations around privacy and automation present major obstacles to chatbot integration. In contrast, China's innovation-friendly regulatory environment, extensive government support, and high technology affinity foster rapid deployment and wide user acceptance of AI-based solutions. Moreover, differences in organizational priorities emerge, with Chinese companies emphasizing speed, platform integration, and functionality, while German firms focus on data security, compliance, and personalized, trust-building customer interactions. The study further explores variations in user experience and communication design, underscoring the importance of culturally adapted interfaces and context-sensitive implementation strategies. Derived from these insights, the paper offers strategic recommendations for businesses to successfully implement AI chatbots in diverse regulatory and cultural landscapes. Additionally, it outlines directions for future research, particularly regarding the development of agentic AI, multimodal interaction capabilities, and sustainable deployment models that consider ethical, infrastructural, and environmental aspects.

Keywords: AI, Customer communication, Chatbot adoption, Germany, China, Cultural factors

1. Introduction

Advancing digitalisation and rapid developments in artificial intelligence (AI) have permanently transformed communication processes between companies and customers worldwide. AI-based chatbots, in particular, have emerged as a key tool in customer-oriented service and communication management. These systems offer significant potential in terms of automation, efficiency, and continuous availability of interaction channels (cf. Helmold, 2024).

Despite their growing presence and rising public acceptance, both technological and cultural challenges affect their successful implementation. Notably, there are clear differences between Germany and China regarding legal frameworks, corporate strategies, and social expectations surrounding digital customer services.

The global rise of AI technologies—especially the adoption of chatbots—raises critical questions concerning data protection, user acceptance, and innovation capacity. While China is marked by a high level of technological openness, strong governmental support, and regulatory flexibility, Germany tends to prioritise rights-based governance, data protection, and a culturally cautious approach to innovation. Results from both empirical studies and expert interviews reveal a complex reality of chatbot implementation in these two countries.

The aim of this paper is to examine the use, effectiveness, and determining factors of AI-based chatbots in customer communication in Germany and China. The central research question is:

- How do technological and cultural differences influence the adoption and effectiveness of chatbots in an international context?

In addition to a systematic literature review (2017–2024), the analysis draws primarily on qualitative data from seven expert interviews conducted in 2025.

2. Theoretical Foundations

2.1 Definition and Technological Basis

Chatbots are dialogue-oriented AI systems designed to process and interpret natural (written or spoken) language, responding intelligently using advanced Natural Language Processing (NLP) and Machine Learning

(ML) techniques (cf. Helmold, 2024; Mainzer, 2023). Their use in customer service enables substantial automation of routine queries, while also improving availability and personalisation.

Experts highlight that the underlying architecture—ranging from simple rule-based systems to neural Large Language Model (LLM)-based applications such as GPT and ERNIE—significantly affects chatbot performance and flexibility (cf. Sun et al., 2019; own interviews). The integration of Retrieval-Augmented Generation (RAG) is increasingly seen as a key innovation in enabling context-sensitive and individualised customer interaction.

Yet, existing studies highlight tensions between efficiency gains and trust-building functions. For example, Cornelius (2019) emphasizes automation and cost reduction as primary benefits, whereas Schuster & Wecke (2023) argue that customer trust and personalization remain decisive for sustainable adoption. This indicates that technical sophistication alone does not guarantee acceptance; instead, the embedding of chatbots into broader socio-technical systems is critical.

2.2 State of Development: Germany versus China

China's technological leadership in AI is driven by innovation-friendly policies, substantial government investment, and a highly adaptable population (cf. Sun et al., 2019). Chatbots are rapidly becoming embedded in daily life, aided by their integration into dominant platforms like WeChat, Taobao, and JD.com, and supported by cloud infrastructure provided by companies such as Alibaba and Tencent (cf. own interviews; Cornelius, 2019).

In contrast, the pace of implementation in Germany remains cautious. Here, data protection, legal certainty, and regulatory compliance—particularly due to the General Data Protection Regulation (GDPR)—take priority (cf. Mainzer, 2023; IT-P GmbH, 2024). Companies tend to rely on local providers or private cloud environments for hosting and data management, and frequently invest in complex compliance processes, resulting in longer implementation timelines (cf. own interviews). However, it would be misleading to frame Germany merely as “lagging behind.” Haefner & Sternberg (2020) emphasize that German firms actively invest in **privacy-preserving architectures**, which may yield long-term competitive advantages in trust-sensitive industries. Thus, rather than a simple “fast vs. slow” dichotomy, the contrast reflects **different innovation logics**: speed and market dominance in China versus compliance-driven, risk-averse innovation in Germany.

2.3 Cultural Differences in Customer Communication

Qualitative interviews suggest that culture plays a pivotal role in shaping user expectations with respect to communication style, trust-building, and functionality. Generally, German customers are inclined to favour interactions that are formal, privacy-conscious, and reliable. Conversely, Chinese users tend to prioritise efficiency, speed, and continuous innovation. Chinese enterprises often consider technological openness and the adoption of state-of-the-art features—such as multimodal dialogue systems or integrated AI tools—as decisive competitive differentiators (see own interviews; Schuster & Wecke, 2023). These culturally embedded preferences are directly reflected in the design, tone, and functionality of chatbot systems tailored to each market.

While the influence of culture on chatbot design is widely acknowledged in the literature, it is frequently addressed only at a superficial level. Certain studies contend that German users exhibit a preference for formality and sensitivity toward data privacy, whereas Chinese users place greater value on efficiency and the adoption of novel features (Kero et al., 2023; Schuster & Wecke, 2023). Nonetheless, such generalisations risk perpetuating stereotypes. Recent cross-cultural research on artificial intelligence (Raval et al., 2024) cautions against oversimplified categorizations and underscores the dynamic and context-dependent nature of user expectations.

Moreover, Zeng (2020) demonstrates that technology adoption in China is intricately linked to state-driven narratives of progress and modernity, while in Germany, public scepticism is closely associated with wider debates surrounding ethics and surveillance. These findings indicate that cultural attitudes should not be reduced to static “traits”, but rather examined within the broader context of political discourse, historical experience, and institutional trust.

2.4 Research gap

Although the literature provides valuable insights into technological, regulatory, and cultural aspects of chatbot adoption, two key gaps remain:

- Lack of integrative cross-country analyses. Most studies treat Germany and China separately, without systematically comparing how regulatory and cultural contexts interact.
- Limited empirical grounding. Many accounts rely on secondary data or policy analysis, but only few integrate primary qualitative insights from industry practitioners.

This study addresses these gaps by combining a structured literature review with expert interviews to provide a more nuanced, empirically grounded comparison of chatbot adoption in Germany and China.

3. Methodology

A qualitative, exploratory research design was applied to investigate the implementation and perception of AI-based chatbots in Germany and China. The primary data source consisted of seven semi-structured expert interviews with representatives of international technology companies. Anonymity, transparency, and traceability were ensured throughout the research process.

Experts were selected using purposive sampling to ensure diversity in perspectives. The selection criteria included: (1) at least three years of professional experience in AI-supported communication systems, (2) active involvement in the deployment of chatbots in either the German or Chinese market, and (3) representation from different organizational roles (e.g., product managers, AI developers, digital transformation leads). This approach ensured that participants provided both strategic and technical perspectives. Interviews were conducted between January and March 2025, each lasting between 45 and 75 minutes. After the seventh interview, thematic saturation was reached, as no new relevant categories emerged.

The interview guide was developed in accordance with international research standards and focused on technical, organisational, and cultural aspects of chatbot deployment. The data was analysed inductively using qualitative content analysis following Mayring (2015), ensuring thematic clarity and interpretive depth. The coding process combined inductive category development (emerging from the data) with deductive elements derived from the literature review.

To strengthen the robustness of the findings, the empirical insights were triangulated with results from a structured literature review covering studies published between 2017 and 2024. This methodological approach allowed for a comprehensive synthesis of theory and practice in the context of AI-based customer communication. By combining theoretical and empirical evidence, the methodology supports a nuanced understanding of how contextual factors shape AI-based customer communication, while avoiding oversimplified cultural generalizations.

4. Results and Analysis

4.1 Use and Perception of AI Chatbots

Business practices in both Germany and China show that chatbots are primarily used to automate standard enquiries, reduce pressure on support hotlines, and improve service quality. However, the extent of implementation differs significantly between the two countries.

In China, integration is occurring rapidly, with advanced features such as multimodal capabilities and image-based use cases becoming increasingly common. In Germany, by contrast, companies typically adopt a more cautious, step-by-step approach. According to the interviews, employee acceptance increases notably when chatbot deployment is accompanied by internal communication, training, and the integration of user feedback.

Most organisations implement chatbots to automate frequently asked questions, technical support, and ensure 24/7 availability. Some companies have introduced more advanced functions, including proprietary interfaces, AI-based image recognition, and integration with HR systems.

The success of chatbot initiatives largely depends on a combination of technical innovation and strategic change management. Effective strategies include employee training, simplified interfaces, and the use of advanced AI models such as RAG. Communication campaigns, internal briefings, and the demonstration of quick, practical benefits are especially important for acceptance.

In China, linking chatbots to popular platforms such as Doubao has proven highly effective in promoting user engagement—an approach that has not yet gained traction in Western markets.

4.2 Challenges and Success Factors

In Germany, the main challenges in implementing AI chatbots are strict data protection regulations (particularly the GDPR), widespread scepticism towards AI, and—at times—limited digital skills among users. As a result, technical localisation plays a crucial role. Key measures include GDPR-compliant hosting (preferably within Germany), adaptation of training data to regional contexts, and linguistic fine-tuning to meet user expectations.

From a strategic perspective, effective change management and clearly communicated benefits are essential to overcome acceptance barriers. Internal campaigns, early stakeholder involvement, and transparency in the use of AI technologies can contribute to higher levels of trust and usability.

In contrast, China benefits from a regulatory environment that is less restrictive and more innovation-oriented. Positive societal narratives around AI and widespread digital adoption enable quicker integration and broader acceptance. Interview participants highlighted that the high level of digitisation and seamless integration of chatbots into everyday apps and services have normalised their use among consumers and employees alike (cf. Sun et al., 2019; own interviews).

Success in both countries hinges on aligning technological deployment with local user expectations, compliance requirements, and organisational readiness.

4.3 Influence of Cultural Differences and Adaptation Strategies

The interview data clearly indicate that cultural differences have a direct impact on how chatbots should be designed, formulated, and implemented. Companies that tailor their systems to regional expectations—such as linguistic nuance, communication style, and interaction preferences—can significantly increase user acceptance.

Key adaptation strategies include:

- Technical localisation, such as data hosting in compliance with local regulations (e.g., GDPR-compliant infrastructure in Germany).
- Linguistic and communicative adjustments, including tone of voice, politeness conventions, and terminology tailored to the respective market.
- Customised training data, based on culturally specific behavioural patterns and communication norms.

In East Asia, for instance, chatbots often rely on highly polite and formal expressions, while in Germany, a more neutral but privacy-sensitive tone is preferred. These nuances are not merely stylistic, but central to building trust and perceived relevance.

Overall, the effectiveness of chatbot deployment increases when systems are aligned with local communication cultures, legal standards, and user expectations.

4.4 Synopsis and Country Comparison

A compilation of key differences in a comparative matrix highlights the considerable divergences in terms of data protection, pace of innovation, regulatory complexity, and willingness to accept change (see Table 1).

Table 1: Results table Germany vs. China

aspect	Germany	China
Data protection	High requirements due to GDPR, data logs, only certified providers allowed	Lower requirements, less restrictive data storage
Regulation	Complex, difficult implementation	Fast registration and market launch possible
Technical integration	Limited use (e.g., no ChatGPT), restricted to local providers	Own LLMs such as DeepSeek, e.g. Alibaba solutions
Cultural attitude	Skepticism, reluctance among customers	Openness, technology as a matter of course
Infrastructure	Local cloud providers (e.g., Open Telekom Cloud) preferred	Major providers such as AWS China, Huawei models
Project dynamics	Long-term preparation necessary	Faster implementation

5. Discussion

The findings of this study confirm that the adoption of AI-based chatbots is shaped by a complex interplay of technological infrastructures, regulatory frameworks, and cultural narratives. However, the comparative perspective on Germany and China allows for several deeper insights that go beyond existing accounts.

First, the results corroborate prior research that highlights China's rapid adoption of AI tools, supported by state investment and integration into dominant platforms (Sun et al., 2019; Hussain et al., 2024). Yet, the interviews nuance this picture by showing that speed is not only a product of favorable regulation but also of organizational priorities—Chinese firms frequently emphasize first-mover advantages and competitive functionality. This aligns with Zeng's (2020) observation that technological openness in China is intertwined with broader political narratives of progress.

In contrast, German adoption is often framed in the literature as "slow" or "reluctant" (Mainzer, 2023; IT-P GmbH, 2024). Our findings challenge this oversimplification. While strict GDPR requirements and cultural skepticism indeed slow implementation, interviews reveal that German companies leverage this cautiousness as a strategic asset, focusing on trust, data protection, and long-term compliance. This resonates with Haefner & Sternberg's (2020) argument that digitalization in Germany is less about speed than about resilience and credibility. Thus, rather than lagging behind, German firms appear to be cultivating a distinct compliance-driven innovation model.

Second, cultural differences in customer communication must be treated with greater nuance. Previous studies often reduce German communication preferences to "formality" and Chinese ones to "efficiency" (Kero et al., 2023). Our empirical data suggests that such dichotomies are too narrow. For example, German users value reliability and privacy not only as cultural "traits" but as responses to historically rooted concerns over surveillance and data misuse. Similarly, Chinese users' openness is not simply cultural enthusiasm but reflects institutional trust in digital platforms and strong alignment between corporate innovation and state-led modernization strategies (Raval et al., 2024). This supports the call to move beyond cultural stereotypes and analyze how institutional and historical contexts shape communication norms.

Third, the comparative perspective highlights that technological barriers are less decisive than regulatory and cultural ones. Both Germany and China have access to advanced AI models, whether locally developed (QWEN, ERNIE) or internationally inspired (ChatGPT). What differentiates the two contexts is the degree of regulatory permissiveness and the framing of AI in public discourse. While China promotes AI as a driver of collective progress, Germany emphasizes rights protection and ethical oversight. These divergent framings significantly influence user acceptance, corporate strategies, and design choices.

Finally, the results have implications for theory and practice. Theoretically, the study advances the literature by positioning chatbot adoption not merely as a technological diffusion process, but as a context-dependent negotiation between compliance, innovation, and user trust. Practically, the findings suggest that multinational companies must adopt differentiated implementation strategies: in Germany, emphasizing transparency, data security, and user trust; in China, leveraging speed, platform integration, and technological novelty.

Overall, this discussion reframes the Germany–China contrast not as a binary of "fast vs. slow," but as two distinct innovation pathways shaped by regulatory logics, cultural narratives, and strategic priorities.

6. Limitations and Implications for Further

Despite the insightful results, this study is subject to several limitations. First, the analysis is based on only seven interviews, which means that the results cannot be considered representative of all international companies. Second, the responses largely reflect a specific industry perspective, limiting their generalisability. Third, linguistic misunderstandings or cultural nuances in the interviewees' statements may have influenced the interpretation.

In addition, the interviews were evaluated qualitatively and inductively, which allows room for interpretation. Despite careful analysis, a certain degree of subjectivity in coding and topic formation cannot be ruled out. Country-specific differences were described from the perspective of individual companies and were not triangulated by independent sources. Future studies could arrive at more robust conclusions by using larger samples, standardised survey instruments, or supplementary quantitative data. Future research should aim to conduct quantitative investigations and expanded, industry-specific comparative studies to ensure the

transferability of findings. Of particular interest are future developments in the field of agentic AI, the expansion to include multimodal interfaces, and the integration of energetic and ethical sustainability criteria.

The future of AI-supported customer communication will be strongly influenced by agentic AI, hyper-personalisation, and the embodiment of AI. Interview participants increasingly see chatbots not only as communication tools, but as autonomous actors that can take on individual tasks and make decisions. The transition to multifunctional, intelligent chatbot teams and integration into new platforms and legally relevant interfaces marks the next evolutionary step. Particularly noteworthy is the trend towards emotional and behaviour-based customer engagement, with high potential in markets such as China and innovative sectors such as fashion and e-commerce.

The interviewees' candid comments make it clear that, in addition to functional and strategic issues, technological fundamentals and system infrastructure are also important in AI communication. Particular emphasis is placed on the trend towards multimodality (text, image, video) and the associated need to better understand data sources, processing, and models such as visual language models (VLMs). Another aspect is technological feasibility: the high energy requirements of AI systems could become a bottleneck—especially if energy supply or the legal framework cannot keep pace. This view of systemic framework conditions shows that successful AI implementation is not just a software problem, but also encompasses infrastructure, ethics, and resource issues.

7. Conclusion and Recommendations for Action

This study has examined the adoption of AI-based chatbots in Germany and China through a systematic literature review and seven expert interviews. The comparative analysis highlights that chatbot implementation cannot be explained solely by technological availability. Instead, it is decisively shaped by regulatory regimes, organizational priorities, and cultural narratives that determine how users and companies perceive the value of automation.

Theoretically, the study contributes to the literature by reframing Germany–China differences not as a simple binary of “fast vs. slow adoption,” but as two distinct innovation pathways. In China, chatbot integration is accelerated by state-driven digital strategies, consumer openness, and platform-based ecosystems. In Germany, adoption follows a compliance-driven logic, emphasizing trust, security, and ethical legitimacy. This comparative lens helps explain why technological capabilities are insufficient to predict adoption without considering their institutional embedding.

Practically, the findings underscore the importance of context-sensitive implementation strategies. Multinational companies that attempt to deploy chatbots with a one-size-fits-all approach risk cultural misalignment and regulatory conflict. Instead, the study recommends differentiated strategies:

- Germany: Build trust through GDPR-compliant infrastructures, transparent data use, and participatory change management involving employees and works councils.
- China: Leverage openness to innovation by emphasizing speed, integration with dominant platforms, and experimentation with multimodal functionalities.
- Cross-market: Continuously monitor emerging developments such as agentic AI and multimodal systems, while aligning them with local regulatory requirements and ethical expectations.

Looking ahead, the evolution of agentic AI, hyper-personalization, and multimodal communication will likely transform chatbots from support tools into autonomous actors within customer interaction. However, their deployment must address not only technical feasibility but also ethical, infrastructural, and sustainability concerns. Future research should therefore adopt a broader comparative scope, integrating quantitative studies, industry-specific analyses, and cross-cultural perspectives to deepen understanding of chatbot adoption in global contexts.

In conclusion, AI-based chatbots represent more than a technological innovation: they embody competing visions of digital transformation. For companies, success will depend on recognizing these contextual differences and developing strategies that balance efficiency, compliance, and user trust.

Ethics declaration: This study involved qualitative research based on expert interviews with representatives of international technology companies. All participants were fully informed about the purpose of the study, the voluntary nature of their participation, and the confidentiality of their responses. Informed consent was obtained from all interviewees. No sensitive personal data were collected, and data were anonymized to

ensure privacy and compliance with applicable data protection regulations, including the General Data Protection Regulation (GDPR).

As the study did not involve sensitive personal data or vulnerable groups, no formal ethical clearance from an ethics committee was required. The research was conducted in accordance with accepted ethical standards for academic research involving human participants.

AI declaration: This paper was prepared with the assistance of an AI language model. The AI tool was used to support language refinement and to help structure sections of the manuscript. All content, analysis, and conclusions presented in this paper are the original work of the authors. The material generated by the AI was carefully reviewed, edited, and integrated by the authors to ensure accuracy, coherence, and compliance with academic standards.

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