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Dissecting the Generative AI Chatbot App Landscape: Distribution, Narratives, and Infrastructural Logics

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Abstract

This study explores the distribution, organization, and narrative structures of applications integrating generative AI-based chatbots. Using a semantic network analysis combined with a qualitative walkthrough, it investigates how chatbot apps are thematically and functionally positioned within the digital ecosystem. Based on a corpus of 2,018 applications published between 2023 and 2024 and collected from major AI tool aggregators, the study identifies 16 modular clusters reflecting different functional and semantic logics. Results highlight the emergence of socio-technical hubs, the central role of foundational models like ChatGPT, and the progressive formation of infrastructural ecosystems that function as or are consolidating into super-app constellations. The research offers insights into how chatbot apps structure user interactions, operational practices, and socio-technical assemblages.

Keywords: chatbot applications, generative AI, semantic network analysis, walkthrough method, super-app constellation, digital ecosystems.

1. Introduction

In recent years, the role of digital applications has become a central element in the organization of everyday life, redefining the ways in which individuals work, communicate, access information, and engage with technology (Corradini, 2020). Applications, understood both as mobile apps and web apps accessible via browsers, are no longer merely tools supporting human activities but have evolved into true socio-technical infrastructures (Dunaev et al., 2024). These infrastructures shape individual and collective behaviors, influence

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economic processes, and redefine modes of access to digital services and resources (Pantelides et al., 2023). This phenomenon is particularly evident in the integration of generative artificial intelligence (AI) within applications, a trend that is profoundly reshaping the digital landscape (Denić et al., 2024). In this context, chatbots offer a privileged case study for understanding the implications of this transformation. In parallel, recent work on AI–human collaboration stresses that conversational systems should be examined not only as tools but as co-agents shaping tasks, roles, and social practices through situated interaction and role-taking (Shanahan, McDonell, & Reynolds, 2023; Shanahan, 2024; Scott-Kennel, Zhang, & Scott, 2025). This perspective motivates our focus on how chatbot-based applications mediate user activity and how such mediation is framed and constrained by design choices and infrastructural logics.

The incorporation of generative AI-based chatbots into applications has given rise to a new generation of conversational interfaces, capable of dynamically adapting to users' needs, generating texts and responses in real-time, and simulating increasingly sophisticated interactions (Dunaev et al., 2024). On one hand, these technologies promise to enhance the accessibility and efficiency of numerous digital services (Elkefi et al., 2023); on the other, they raise critical questions about the economic and technical logics governing their diffusion, the consequences for communication automation, and the broader social and political implications (Corradini, 2020). Chatbots are not simply streamlining user interactions with digital platforms; they are actively reshaping the relationships between humans and automated systems, introducing new models of work, new forms of technological mediation, and new dynamics of consumption (Gaikwad et al., 2023).

This article aims to explore the world of applications integrating generative AI-based chatbots, with the objective of understanding how they are distributed within the platform economies and identifying the emergent patterns in their design and use. The analysis seeks to construct interpretative categories as analytical tools to map this continually evolving ecosystem, enabling an understanding not only of the variety of existing applications but also of the semantic and functional relationships between them, and how they articulate themselves within contemporary socio-technical environments (Earnshaw, 2017). Given the experimental nature of generative AI and the rapid emergence and dissolution of new sectors, an exploratory approach is necessary—one that moves beyond static snapshots to trace developmental trends, logics of evolution, and the structural characteristics of these technologies (Denić et al., 2024).

Observing chatbot apps thus requires an inquiry into how these applications potentially redefine the relationship between users and automated

systems, what economic models may support their diffusion, and which processes of adaptation and appropriation are suggested by their design and presentation (Schinle et al., 2021). While this study does not directly investigate user practices or economic infrastructures, its goal is to classify different types of chatbot apps and reflect on the broader significance of their integration into social, economic, and cultural life—particularly by analyzing how they are designed, narrated, and positioned within public-facing digital ecosystems (Sopić, 2024).

2. Theoretical Framework

The evolution of generative AI has opened new possibilities for the design and functionality of apps and web apps that embed large-language-model–based conversational interfaces, expanding how users interact within these specific contexts rather than transforming human–technology interaction at large (Malaga, 2025). The integration of advanced chatbots into apps and web apps represents not just an enhancement of automation capabilities but also the introduction of a new logic of interaction, wherein software acts as a conversational mediator capable of shaping user behavior and experience (Shrimali, 2024).

In the contemporary context, the very concept of "app" has undergone profound transformation. According to Goggin (2021), apps should be understood as mobile software designed for a variety of purposes, enabling users to access services, content, and digital networks through highly curated graphical interfaces. Initially conceived to perform specific tasks within closed environments, apps have increasingly assumed an infrastructural role, organizing everyday practices such as communication, consumption, work, and leisure (van der Vlist et al., 2024).

A key element of this transformation is the growing convergence between apps and platforms. As highlighted by both Jia et al. (2022) and Akpan et al. (2024), many contemporary apps have evolved into "digital hubs" that aggregate functionalities, integrate external services, and systematically collect user data. In this process, the traditional boundary between app and platform tends to dissolve, giving rise to hybrid forms that combine features of both models (Ramaul et al., 2024). Whereas apps are typically understood as self-contained software tools designed for specific tasks and individual use, platforms are infrastructural environments that enable interactions among multiple actors—users, developers, third-party services—often through standardized APIs and data exchange protocols. These hybrid forms merge the immediacy and task-orientation of apps with the integrative and multi-sided

logic of platforms, creating versatile environments that blur functional and economic boundaries.

Within this ecosystem, web apps play a significant role. These are applications accessible via browsers that offer experiences similar to native apps without requiring local installation: web apps leverage technologies like HTML5, CSS, and JavaScript to enable cross-device accessibility and agile service integration without burdening user infrastructures (Shah & Iyer, 2024). This distribution model further blurs the distinction between native applications and web-based environments, reinforcing the trend toward ubiquitous and continuous access to digital services.

Parallel to these developments, the phenomenon of super-appification—although more prominent in Asian contexts—provides an important lens for understanding the evolution of apps in Western markets as well. As emphasized by van der Vlist et al. (2024), super apps are distinguished by their ability to integrate a wide range of services within a single interface, consolidating diverse activities and delivering an all-encompassing digital experience (Sinha, 2023). While the super-app model originated in contexts such as China, analogous forms of functional aggregation are emerging globally, adapted to local market specificities (Gupta, 2025).

From a theoretical perspective, the transformation of the app concept can be seen as a response to the increasing complexity of the digital economy. Apps have shifted from mere access tools to full-fledged mediation environments where data production, engagement logics, loyalty strategies, and the construction of closed ecosystems intertwine (Srnicek, 2016). This complex picture resonates with the notion of "platform capitalism" articulated by Srnicek (2016), where economic value is increasingly generated through the centralized management of data, services, and social interactions.

In this scenario, chatbot apps occupy a particularly salient position. By integrating conversational chatbot, apps not only expand available interaction modes but also redefine the relationship between users and digital systems, introducing seemingly more natural and personalized forms of communication (Kodali et al., 2023; Pandey et al., 2024). As highlighted by van der Vlist et al. (2024), this evolution positions chatbots as strategic mediators of emotional, cognitive, and operational dimensions within the user experience.

In light of these transformations, the present study seeks to explore how applications integrating chatbots are distributed across the AI-tool aggregators, what logics guide their design and diffusion, and how they contribute to constructing new forms of mediation between individuals, technology, and society. The theoretical lenses outlined above inform how we read the empirical structures: (i) platform capitalism foregrounds branding/API centrality and data-intermediation logics; (ii) super-appification anticipates hub-and-orbit

formations; and (iii) apps as infrastructures suggests that design choices and tagging schemes shape mediation.

3. Methodology

The objective of this study is to map the semantic organization of apps that integrate generative-AI chatbots and to characterize their design and narrative logics. Consistent with the theoretical framework outlined above and the exploratory nature of the work, two main research questions were formulated:

• RQ1: How are applications integrating chatbots distributed within leading AI-tool aggregators, and what semantic structures emerge from their organization?

• RQ2: What narrative, design, and functional models characterize the different types of chatbot apps?

Our primary objectives are (i) to map the semantic organization of apps integrating generative-AI chatbots (RQ1) and (ii) to characterize their narrative, design, and functional models (RQ2). As a secondary objective, we use the theoretical frame (apps as socio-technical infrastructures, platform capitalism, and super-appification) to interpret the observed patterns. This secondary objective is interpretive rather than evaluative: we do not measure usage or impact, but read the clusters and cross-overs through those lenses to articulate plausible socio-technical implications

To answer the reserch questions, a comprehensive database was compiled, including all applications listed on the main AI tool aggregators: Toolify.ai, There's an AI For That, and FutureTools. These aggregators, which specialize in showcasing applications based on generative AI technologies, were selected ex ante for their catalogue size and update frequency in 2023–2024, the availability of standardized public profile pages (name, tags, description), and their programmatic accessibility that enables reproducible scraping. Initially conceived as simple directories to capture the rapid evolution of AI tools, they have progressively evolved into advertising-oriented environments where developers can pay for premium placement. While not directly connected to traditional app stores (e.g., Google Play, Apple App Store), they perform a similar discovery function by redirecting users to the producer's website or landing page.

Each app listed on these aggregators typically includes a profile page with a descriptive summary of functionality, a list of thematic tags, key selling points, user ratings or testimonials (where available), and promotional images or interface screenshots. For the construction of the dataset, only textual information was extracted and analyzed—specifically, the application name,

description, associated tags, stated features, and the producer's name—forming the basis for both the semantic network and the qualitative walkthrough.

Similar strategies combining data scraping and classification have been used to map technological ecosystems in chatbot studies (Zhang et al., 2022). Applications were included if they met the following criteria: (i) the primary interaction is a multi-turn conversational interface whose responses are generated conditionally on user turns (typically LLM-based); (ii) the product is an end-user app or web app (not a backend-only API); and (iii) the application was active and operational at the time of data collection. We excluded one-shot generators without dialogue (e.g., prompt-in/image-out tools), backend APIs lacking a user-facing interface, and static prompt libraries. In practice, the included set spans, for example, customer-service chat widgets embedded in websites, document-centric research assistants, project-support assistants for task triage, and mental-health or wellness companion chats, while tools without a conversational interface (e.g., standalone image upscalers or batch transcription utilities) were excluded. Additionally, only applications published between January 1, 2023 and December 31, 2024 were considered, ensuring a focus on the most recent wave of AI-driven app development. The collection process was automated using a Python script specifically designed to extract only the publicly visible information from the aggregators. The data collected for each app included: the app name, associated hashtags, a brief service description, and an activity status variable. Overall, the resulting database comprised 2,018 applications.

The first phase of analysis employed Social Network Analysis (SNA) to construct a bipartite semantic network, consisting of App nodes and Tag nodes (Lycarião & dos Santos, 2017). Links in the network connect apps to tags, with no connections between nodes of the same type.

The network was constructed using R Studio, treating tags as textual elements. To ensure clarity and semantic relevance, tags with fewer than ten occurrences were filtered out, retaining the 200 most frequent tags.

The network was then visualized using Gephi. To uncover the internal structure, the modularity detection algorithm by Blondel et al. (2008) was applied, a method well established for identifying clustered communities within large datasets and already used in media analysis contexts (Zhang et al., 2022). This algorithm identifies communities or clusters by maximizing modularity, revealing groups of nodes that are densely connected internally but sparsely connected externally.

Applying this algorithm led to the identification of 16 modularity groups. Two visualizations of the network were produced: The first, using the Noverlap layout, clearly delineates modularity groups through distinct coloring. The second, employing the Force Atlas 2 layout, reveals how nodes are spatially

distributed. Force Atlas 2 simulates physical attraction and repulsion between nodes, clustering closely connected nodes together while separating those with fewer connections, offering a spatial view of semantic densities and relationships.

This dual representation allowed for both a clear reading of modular communities and a dynamic relational perspective on the semantic field of chatbot apps.

The second phase involved conducting a walkthrough analysis of the applications to explore their narrative, functional, and design logics more deeply—as suggested by Light et al. (2018, p. 882), the walkthrough method involves "engaging directly with the app interface to examine its technological mechanisms and embedded cultural references, to understand how it guides and shapes user experience" (Duguay & Gold-Apel, 2023).

Given the large number of apps (2,018), a proportional sampling strategy was adopted: 10% of the apps in each modularity group were selected. This selection was carried out through simple random sampling without replacement, ensuring that each app had an equal chance of being selected and that no duplicates were included. Table 1 presents the total number of apps per group and the number sampled for qualitative analysis.

Table 1 Custom-Made Table of Applications per Group

Group	Total number of apps per group	Number of selected apps
0	249	25
1	66	7
2	33	4
3	104	11
4	77	8
5	112	12
6	106	11
7	134	14
8	70	7
9	106	11
10	78	8
11	438	44
12	81	9
13	81	9
14	231	24
15	52	6

We adopt an explanatory sequential design (QUAN → QUAL). First, the SNA organizes the domain (clusters, hubs, bridges) and provides the sampling frame (10% per modularity group). Second, the walkthrough examines interaction, narrative, and design logics within each sampled cluster. Integration occurs at two points: (1) selection and labeling, where SNA structures guide which apps are inspected and how clusters are provisionally named; and (2) interpretation, where walkthrough insights are fed back to refine cluster profiles, explain cross-overs, and identify constellations centred on references to foundational models. Discrepancies between tags and interfaces trigger targeted re-checks of tag co-occurrences in the network to keep descriptions aligned with observed UI/UX patterns.

This approach ensured internal representativeness across groups of different sizes while maintaining an efficient yet in-depth qualitative exploration.

The walkthrough focused on the following dimensions:

- Interaction structure: types and modes of chatbot use (open, guided, mixed);
- Core functionalities: tasks offered, application domains;
- Interface aesthetics: graphic choices, visual languages, atmospheres created;
- Personalization capabilities: adaptability to user needs and preferences;
- User engagement strategies: techniques to maintain user involvement;
- Emotional narratives: ways the app frames the user relationship (empathy, support, infallibility);
- Integration model: availability of APIs, connection to broader ecosystems, "super-app-like" models.

Through this combined analytical strategy, the study sought to move beyond cataloging existing products, aiming instead to trace underlying trends, developmental logics, and structural characteristics shaping the evolving ecosystem of chatbot-integrated applications.

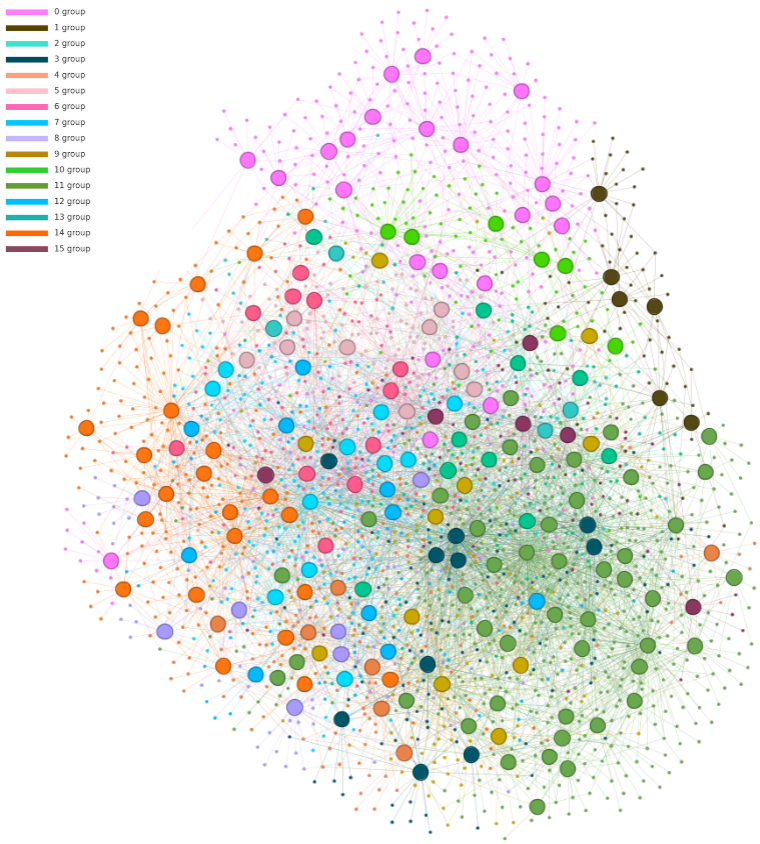
4. Results

We begin with a compact summary of core network indicators and then move to cluster-level narratives and design logics. The app–tag network comprises 2,218 nodes and 5,080 edges, forms a single connected component, and has low density (0.002). Modularity analysis yields 16 clusters ($Q = 0.494$), while the average path length (4.41) and diameter (8) indicate a segmented yet interconnected structure with small-world properties. Building on this structure,

we identify two macroscopic poles and several bridging areas; the next sections unpack their semantic profiles and the recurring interaction and design patterns.

To systematically analyze the landscape of applications integrating chatbots, a semantic network based on the connections between apps and their descriptive tags was constructed. In this bipartite network, each node represents either an application or a tag, and the edges indicate the association between an app and the concepts, functions, or domains to which it is connected. The objective was to explore the latent structure of the domain, highlighting semantic recurrences and emergent configurations that characterize the chatbot app ecosystem.

Figure 1 Custom-Made Semantic Network (Modularity View)



The resulting network, visible in Figure 1, consists of 2,218 nodes and 5,080 edges, forming an undirected graph that provides a dense yet readable representation of the interaction between applications and meanings. The entire network forms a single connected component, suggesting that despite thematic diversity, every app is at least indirectly connected to the broader semantic network, indicating a degree of internal coherence within the analyzed ecosystem. However, the network's density is very low (0.002), typical of large complex networks where only a small fraction of possible links are present. This reflects a structure characterized by low redundancy and rich specialization.

To investigate the network's internal structure, the modularity detection algorithm implemented in Gephi, based on Blondel et al. (2008), was applied. This algorithm allowed for the division of the network into 16 modularity groups, each gathering sets of apps and tags that tend to co-occur, reflecting functional, conceptual, or domain affinities. The modularity value obtained (0.494) confirms significant internal segmentation: connections are denser within clusters than between them, indicating the presence of distinct but interconnected semantic areas.

The communities detected were visualized using distinct color codes in the network shown in Figure 1, where each color represents a different modularity class. Node size, proportional to the number of connections (degree), easily identifies the most central apps or tags—those serving as crucial semantic hubs. Some communities appear more compact and central, indicating strong thematic coherence, while others branch out toward the peripheries, suggesting more niche or specialized domains.

Additional structural indicators help understand not only the complexity of the network but also the nature of the relationships traversing it. The average path length, 4.407, suggests that an application is on average less than five steps away from any tag. This value, combined with the network diameter (8), indicates a high degree of interconnectedness: even with relatively few direct links, any node remains accessible from any other with a limited number of steps. In other words, the network exhibits "small-world" properties, where the short distance between concepts fosters the circulation of meanings, semantic cross-contamination, and potential functional synergies between seemingly distant areas.

This "connective" property of the network is further supported by the observation of the groups identified by modularity analysis. Although divided into 16 thematic communities, each aggregating apps sharing recurrent semantic and functional traits, the groups do not appear as isolated compartments. As evidenced in Table 2, listing the main hashtags associated with each modularity group, numerous points of contact exist among the clusters, both conceptually and technologically. Recurring tags such as automation, integration,

personalization, or assistant traverse multiple groups, highlighting a shared semantic fabric linking the various application areas.

Table 2. Custom-made overview of thematic groups and hashtags

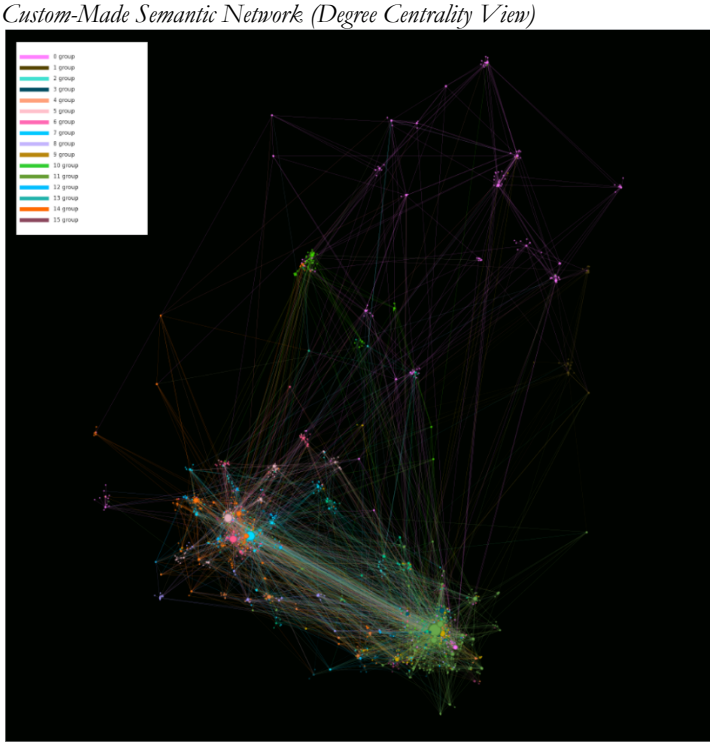
Group/Label	Hashtag	Description
Group 0 - Conversational Companions & Narrative Interactions	AI Characters, AI Companion, AI Girlfriend, Anime, Character Creation, Characters, Conversations, Customization, Emotional Support, Entertainment, Fantasy, Gaming, Interactive, Interactive Storytelling, Monetization, NSFW, Open-Source, Personalized Experience, Roleplay, User-Friendly,	This group encompasses chatbot applications designed for emotional support, immersive storytelling, and personalized interactions, including AI friends, role-playing scenarios, and character-based conversations.
Group 1 - Mental Health & Well-being Support	24/7 Availability, AI Therapy, Mental Health, Mental Health Support, Personal Growth, Real-Time Insights	Focused on applications that provide mental health assistance, therapeutic conversations, and tools for emotional well-being, such as AI therapists and mindfulness chatbots.
Group 2 - Creative Media & Content Generation	Art, Pricing, Website, YouTube	Includes applications that assist in generating creative content across various media, such as art creation, video editing, and social media content planning.
Group 3 - Customer Service Automation & Multilingual Support	AI agents, AI integration, Automation, Customer service, Data analytics, Data security, Integration, Language translation, Live chat	Comprises chatbots aimed at automating customer service tasks, providing multilingual support, and enhancing user engagement through AI-driven interactions.
Group 4 - Conversational Backend Technologies	API, API integration, Chat interface, Data analysis, Data integration, No-code platform, Website chatbot	Encompasses tools and platforms that facilitate the development and deployment of chatbot functionalities, including APIs, SDKs, and no-code solutions.
Group 5 - General-Purpose & Open-Source Chatbots	Accessibility, Browser extension, ChatGPT, Community, Free, GPT, GPT-4, OpenAI, PDF	Features versatile chatbot applications that are often open-source, browser-based, or available as extensions, catering to a broad range of general tasks.
Group 6 - Productivity & Educational Tools	Collaboration, Creativity, Learning, PDF interaction, Personal development, Privacy, Productivity, Security, Templates, Transcription, Writing	Includes applications designed to enhance productivity and learning, such as AI writing assistants, educational tutors, and collaborative tools.
Group 7 - Personal Assistants & Task Management	AI assistant, Chrome extension, Communication, Email automation, Messaging, Personal assistant, Productivity tool, Scheduling, Slack integration, Task management, Time-saving	Focuses on AI-driven personal assistants that help manage daily tasks, schedule appointments, and streamline personal workflows.
Group 8 - Knowledge Management & Documentation	Document analysis, Documentation, Knowledge management, Note-taking, Project management, Team collaboration, Workflow automation	Comprises tools that assist in organizing, analyzing, and managing information, including document summarization and knowledge base creation.

Group 9 - Personalized Conversational Experiences	Conversation, Conversational AI, Customer experience, Customizable, Language model, NLP, Open source, Personalized interactions, Retail, Virtual assistant, Voice AI	Encompasses chatbots that offer tailored interactions, adapting to user preferences and providing customized conversational experiences.
Group 10 - Interactive Learning & Language Education	AI tutor, Interactive learning, Language learning, Language practice, Language support, Personalized learning	Features applications that facilitate interactive learning experiences, language education, and personalized tutoring through conversational AI.
Group 11 - Business Solutions & Marketing Automation	24/7 support, AI automation, AI bots, AI solutions, AI-powered chatbot, Analytics, Appointment scheduling, Automated responses, Business automation, Business efficiency, Business growth, Chat history, Chatbot builder, Conversion optimization, CRM, CRM integration, Customer engagement, Customer service automation, Customer support, Customer support automation, Digital marketing, Ecommerce, Engagement, Insights, Knowledge sharing, Lead generation, Lead qualification, Marketing, Marketing automation, Multi-language support, No-code, Personalization, Personalized recommendations, Personalized support, Sales, Sales automation, SEO, Training, User-friendly interface, Web3, Website engagement, Website integration, WhatsApp automation	Includes AI tools designed for business applications, such as customer relationship management, sales automation, and marketing campaign optimization.
Group 12 - Information Retrieval & Intelligent Q&A	Customer satisfaction, Efficiency, Instant answers, Market research, Multilingual, Question answering, Research, Sentiment analysis, Summarization, Translation	Comprises chatbots that specialize in retrieving information, answering queries, and providing concise summaries from various data sources.
Group 13 - Industry-Specific SaaS & Digital Services	Business, Data privacy, E-commerce, Education, Finance, Healthcare, Imagination, SaaS, Technology, User experience	Focuses on software-as-a-service applications tailored to specific industries, offering specialized digital solutions and services.
Group 14 - Multimedia Content Creation & SEO Optimization	AI art, AI assistance, AI image generator, AI writer, Code generation, Content creation, Content generation, Copywriting, Creative writing, Email marketing, Image creation, Image generation, Productivity tools, SEO optimization, Social media, Speech recognition, Speech-to-text, Storytelling, Task automation, Text summarization, Text-to-speech, Video editing, Video generation	Encompasses tools that assist in creating multimedia content, such as images and videos, and optimizing content for search engines.
Group 15 -Visual Interaction & Multichannel Support	Customer interaction, Image recognition, Support, Telegram, User engagement, WhatsApp	Includes applications that integrate visual recognition capabilities and offer support across multiple communication channels, enhancing user interaction.

However, the visual structure of the network in Figure 1, while effective for illustrating modular segmentation, does not capture the internal dynamics of centrality or thematic transversality. To address this, a second network visualization was produced (Figure 2), where node size was determined by degree centrality. Degree centrality measures the number of direct connections a node has, thus indicating the immediate relational importance of apps or tags within the semantic space.

The choice to use degree centrality—as opposed to other measures such as betweenness centrality (which emphasizes nodes acting as bridges) or closeness centrality (which considers the average distance from a node to all others)—is motivated by the specific nature of this network. Since the semantic network was constructed based on direct associations between apps and tags, degree centrality is the most meaningful measure for identifying the nodes that play a structurally connective role. It allows for the immediate identification of nodes that anchor multiple semantic fields simultaneously, without introducing interpretive layers related to indirect paths or intermediary functions less pertinent to the goal of mapping direct thematic relationships.

Figure 2 Custom-Made Semantic Network (Degree Centrality View)



Using the Force Atlas 2 layout, this second network emphasized the gravitational pull of highly connected nodes, allowing clearer identification of central hubs and cross-cluster connectors. The second visualization reveals two large, distinct semantic poles, with additional areas bridging between them. We interpret these structures using the lenses specified in the theoretical framework—platform capitalism, super-appification, and apps-as-infrastructures—to account for vendor-anchored hubs, niche fragmentation, and transitional zones.

The left-hand pole primarily aggregates apps from modularity groups 6, 7, 14, 5, and 12. A qualitative exploration of these applications shows that, despite thematic differences, they share a remarkably coherent narrative structure: they present virtual assistants designed to facilitate complex or cognitively demanding tasks in daily and professional activities. Unlike cold, mechanistic automation, these applications emphasize interaction styles that replicate empathy, creativity, and conversational fluency. Most apps in this area prioritize ease of use, light and accessible interfaces, and seamless integration into everyday workflows. A central role is played by information retrieval capabilities—searching across documents, the web, or user datasets—positioning these apps as partial substitutes for traditional search engines.

A crucial element across these groups is the reference to ChatGPT. In the qualitative walkthrough sample (10% drawn from each modularity group), we identified 27 applications that explicitly mention OpenAI/ChatGPT in their public descriptions or tags (e.g., "powered by ChatGPT," API/plugin integration). This count is not a population estimate but a useful indicator for interpretation: explicit vendor signaling is particularly visible on the consumer-facing side of the network, where brand leverage and API disclosure operate as trust and capability cues. Some apps are specialized national variants of ChatGPT, adapted for specific languages or markets. This configuration mirrors the "super-app constellation" logic (van der Vlist et al., 2024), with ChatGPT functioning as a recognizable infrastructural hub around which third-party services orbit.

On the right-hand side of the network lies the second main semantic cluster, composed mainly of modularity groups 11, 3, 9, and 13. These apps are more specialized, addressing clearly defined professional tasks such as customer service automation, data analysis, and knowledge management. Their interfaces tend to be more complex and customizable, featuring technical aesthetics (often dark-themed) aligned with professional environments. Here, the target users are businesses, developers, and specialists rather than individual end-users.

A key distinction in this cluster is the prominence of APIs: many applications offer their services as modular components for integration into existing digital ecosystems. This highlights a different model of generative AI

deployment—not as standalone apps but as infrastructural tools enhancing business workflows and digital processes. The narrative around chatbots in this domain stresses their 24/7 availability, infallibility, and ability to overcome human cognitive and physiological limitations, presenting the chatbot not merely as an assistant but as a guarantee of performance, scalability, and efficiency.

Between the two poles, a series of modularity groups (4, 8, 15) occupy a more transversal position. These apps bridge characteristics from both main clusters: they offer automation, communication facilitation, and creative content production, blending ease of use with technical depth. They speak to both individual freelancers and structured organizational teams, embodying a hybrid model where agility meets strategic performance. This interstitial area of the network highlights the adaptability of chatbot apps, showing how they traverse and connect otherwise distinct application domains.

At the upper part of the network, two groups (0 and 1) stand apart from the main clusters. These groups explore a more intimate and emotional dimension of chatbot use, focusing respectively on companionship and mental health support. Group 0 encompasses apps simulating relational, emotional, or even erotic interactions, often drawing from popular cultural references like anime, fantasy novels, or digital avatars. These apps frame the chatbot not just as a service provider but as a personalized companion, offering support, encouragement, and ongoing emotional engagement.

Unlike many functional apps, these companionship applications construct immersive, emotionally charged spaces where users can engage with personalized digital chatbot that mimic friends, partners, or family figures. Their aim is not merely entertainment but the creation of symbolic, semi-therapeutic relationships that serve as emotional anchors in users' daily lives. Users are invited to project their needs, insecurities, aspirations, and even fantasies onto these AI companions, effectively building emotionally complex interactions with digital proxies.

Group 1, in contrast, concentrates on mental health and emotional regulation. Here, apps present themselves explicitly as therapeutic aids—offering techniques to reduce anxiety, improve focus, and provide motivational support. The interfaces are minimalistic and soothing, often using white backgrounds, soft greens, and floral imagery to create a calming visual environment. Narratively, these apps promise continuous, non-judgmental support where human availability is limited, positioning the chatbot as a steady, reliable partner in self-improvement and emotional management.

While all chatbot apps aim to foster user loyalty, groups 0 and 1 apply particularly sophisticated engagement strategies. They identify and tap into users' emotional vulnerabilities, crafting a form of symbolic companionship that

embeds the chatbot deeply into the user's everyday life. These applications no longer position themselves simply as tools but as partners—emotional chatbot designed to accompany, guide, and support users across both mundane and critical moments.

In sum, the analysis reveals a complex, multi-layered ecosystem where chatbot applications articulate diverse, sometimes intersecting, trajectories. Far from constituting a homogeneous phenomenon, chatbot apps display varied structural, narrative, and functional logics, reflecting the evolving role of AI in mediating everyday interactions, professional workflows, and emotional experiences.

5. Conclusions

This study explored how applications integrating generative AI-based chatbots are distributed across the contemporary AI-tool aggregators, analyzing their semantic structures, narrative logics, and design strategies.

Answering the first research question (RQ1), the network analysis revealed that chatbot apps are not organized into isolated compartments. Instead, they distribute themselves across modular configurations featuring thematic differentiation, transitional zones, and functional overlaps. The network's small-world structure and the presence of shared semantic fields demonstrate that the chatbot app ecosystem is both segmented and interconnected, allowing meanings and functionalities to circulate fluidly.

Addressing the second research question (RQ2), the qualitative analysis showed that different types of chatbot apps vary according to their interaction models, narrative structures, and technical integration strategies. Two main tendencies emerged: on one hand, applications designed for personal support—emphasizing simplicity, empathy, and daily utility; on the other, specialized tools aimed at professional environments—characterized by complexity, customization, and infrastructural integration.

A particularly significant element emerged regarding the influence of ChatGPT. This phenomenon was especially pronounced in the left-hand cluster of the network, populated by applications targeting individual users. Here, references to ChatGPT—through direct API use, brand association, or competitive differentiation—became a structuring narrative element (Aydın & Karaarslan, 2023). Although traces of this influence are also observable in other groups, it is within personal, educational, and creative support apps that ChatGPT's presence is most central (Lancaster, 2025).

This dynamic can be interpreted through the lens of the "super-app constellation" model proposed by van der Vlist et al. (2024): OpenAI, through

the extension of its APIs and integration strategies, is turning ChatGPT into a central infrastructural hub around which third-party services orbit. This transformation suggests that LLM-based platforms are not merely technological tools but catalysts for the formation of socio-technical ecosystems, defining standards, practices, and cultural references for entire sectors of app development.

Beyond model-centric dynamics, discovery is mediated by the visibility and categorization logics of AI-tool aggregators themselves. Paid placements, "trending" lists, and tag taxonomies do not simply index what exists; they performatively shape what is seen, amplifying some products and muting others. This helps to account for the coexistence, within the same semantic map, of many small, niche clusters alongside a few gravitational hubs—often anchored to foundational-model brands and widely reused tags. In practical terms, cluster boundaries partly reflect the curatorial schemas of host platforms. Future work should track how changes in aggregator taxonomies and promotional mechanics shift perceived boundaries over time and triangulate with alternative sampling frames (e.g., app stores, enterprise marketplaces) to assess robustness.

Taken together, the picture of modular configurations that are segmented yet interconnected—with a few central clusters alongside many small, specialized groups and transitional zones—aligns with our theoretical lenses. Platform-capitalist dynamics are visible in brand/API signalling and discovery intermediation; super-appification helps explain hub-and-orbit arrangements centred on references to foundational models; and conceiving apps as socio-technical infrastructures clarifies how curation and design mediate what is visible and how it is used. In this sense, the empirical map does not claim causal proof but provides a structured basis for theorizing how mediation is organized across contemporary chatbot applications.

While the results are robust, some limitations must be acknowledged. The dataset was drawn from public aggregators, potentially biasing the sample towards more visible or market-oriented applications. Additionally, the 10% sampling for the qualitative walkthrough, despite being based on a sound methodological rationale, necessarily leaves out nuances present in unexamined applications. Methodologically, focusing on a bipartite app-tag network and a narrative-functional walkthrough privileged certain analytical dimensions (semantic proximity, user engagement strategies) while leaving others (such as technical model analysis) for future investigation.

These limitations also point to promising directions for further research. Future studies could monitor the evolution of super-app constellation dynamics, explore economic and data governance models underlying chatbot

apps, and examine how different LLM providers foster distinct socio-technical assemblages.

This study has adopted an exploratory approach, aiming not to produce definitive typologies but to uncover emerging patterns, narrative dynamics, and infrastructural tendencies within a rapidly evolving ecosystem. This perspective allowed to capture a rich and layered snapshot of the current chatbot application landscape—offering a foundation for more theory-driven inquiries in future research.

In conclusion, the foundational models adopted by each app—whether OpenAI, Google, Anthropic, or others—will increasingly shape not only operational capabilities (speed, accuracy, creativity) but also the emergence of identifiable socio-technical groups made up of users, developers, services, and cultural expectations. The chatbot app thus becomes a nodal point where generative models and human practices meet, forming evolving infrastructures that continuously reshape the digital experience.

Maintaining an exploratory, open-ended analytical perspective remains essential for grasping the future trajectories of conversational applications and the broader digital ecosystems they inhabit.

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