Bots in GST Systems

Feb 23, 2024

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BACKGROUND

Chatbots have a rich history that spans several decades. They began as rudimentary text-based programs and have evolved into sophisticated AI-driven conversational agents. Here are some key milestones:

- **1960s-1970s**: The earliest chatbots, such as Eliza and Parry, were created as experiments in simulating human conversation. They used rule-based systems and limited responses.
- **1980s-1990s**: Chatbots like Racter and ALICE continued to develop, with ALICE gaining popularity for its wide range of conversational abilities.
- **Early 2000s**: The emergence of internet messaging platforms led to chatbots like SmarterChild, which provided information and casual conversation.
- **2010s**: Siri and Google Assistant marked a shift towards virtual assistants that could understand and respond to natural language commands. Companies began using chatbots for customer support, e-commerce, and automation, enhancing their customer service and operational efficiency.
- **2020'2**: OpenAI's GPT-3, introduced in 2020, represents a significant leap in chatbot technology, capable of generating human-like text and powering highly advanced virtual assistants.

INDIA GST

India could be at the forefront to lead the tech driver change, where chatbot automation will extend to the initiation of Show Cause Notices and the orchestration of hearings, facilitated by chatbot-driven mechanisms. This dynamic shift will catalyze the prompt resolution of disputes. It will culminate in the automated generation of system-driven orders, thereby streamlining the assessment procedure. Through this article let us try and delve into the impact of Bots on India's GST systems and preparedness for the same.

Goods and Services Tax Network[1] has implemented GST Interactive Technical Assistant (GITA), functioning as a Chatbot for Query Handling. In FY 2022-23 GITA has adeptly addressed a substantial 5.35 lakh queries, attaining an impressive accuracy rate of 92%, showcasing its efficacy in resolving user inquiries. GITA's capabilities have been augmented through the addition of new functional categories and sub-categories, complemented by the incorporation of the latest FAQs to ensure up-to-date and relevant assistance.

Accuracy & Bugs
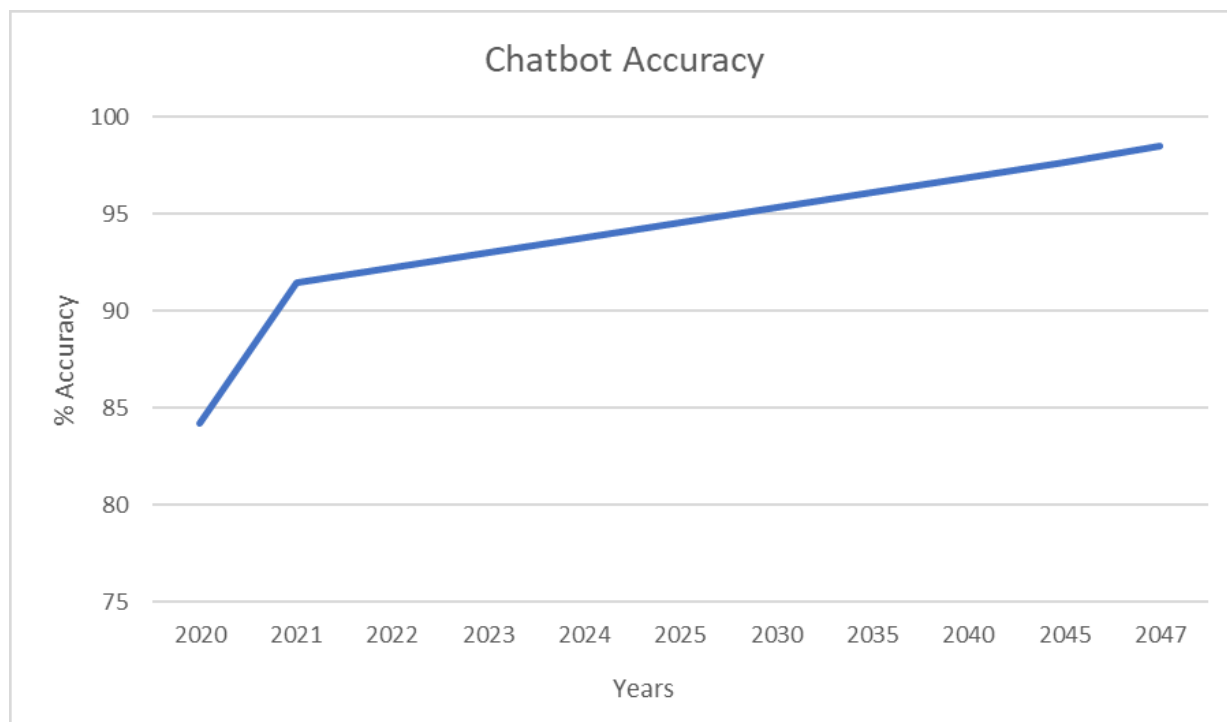
Chatbot Accuracy

Notes

1. The graph is a line graph with the y-axis representing chatbot accuracy, ranging from 75% to 100%, and the x-axis representing years from 2020 to 2047.
2. The line on the graph, shows the progression of chatbot accuracy over the years.
3. There is a significant increase in chatbot accuracy between the years 2020 and 2022.
4. Data from Year 2020 to 2022 is taken from EAC-PM Working Paper Series (EAC-PM /WP/16/2023), page no. 13, Figure 11.
5. From 2022 onwards, steady, linear increase in chatbot accuracy is expected, extending up to the year 2047. Average and percentage method was used to derive the future trend for the chatbot accuracy after year 2022.

This graph suggests that the accuracy of chatbots has been improving over time and is expected to continue to do so in the future. This could be due to advancements in AI technology, better training data, and more sophisticated algorithms. However, without additional context or data, it's difficult to make definitive conclusions. It's also important to note that while accuracy is an important metric, it's not the only factor to consider when evaluating the performance of chatbots. Other factors such as user satisfaction, response time, and the ability to handle complex queries are also crucial.

Module-wise Defects and Bugs Reported

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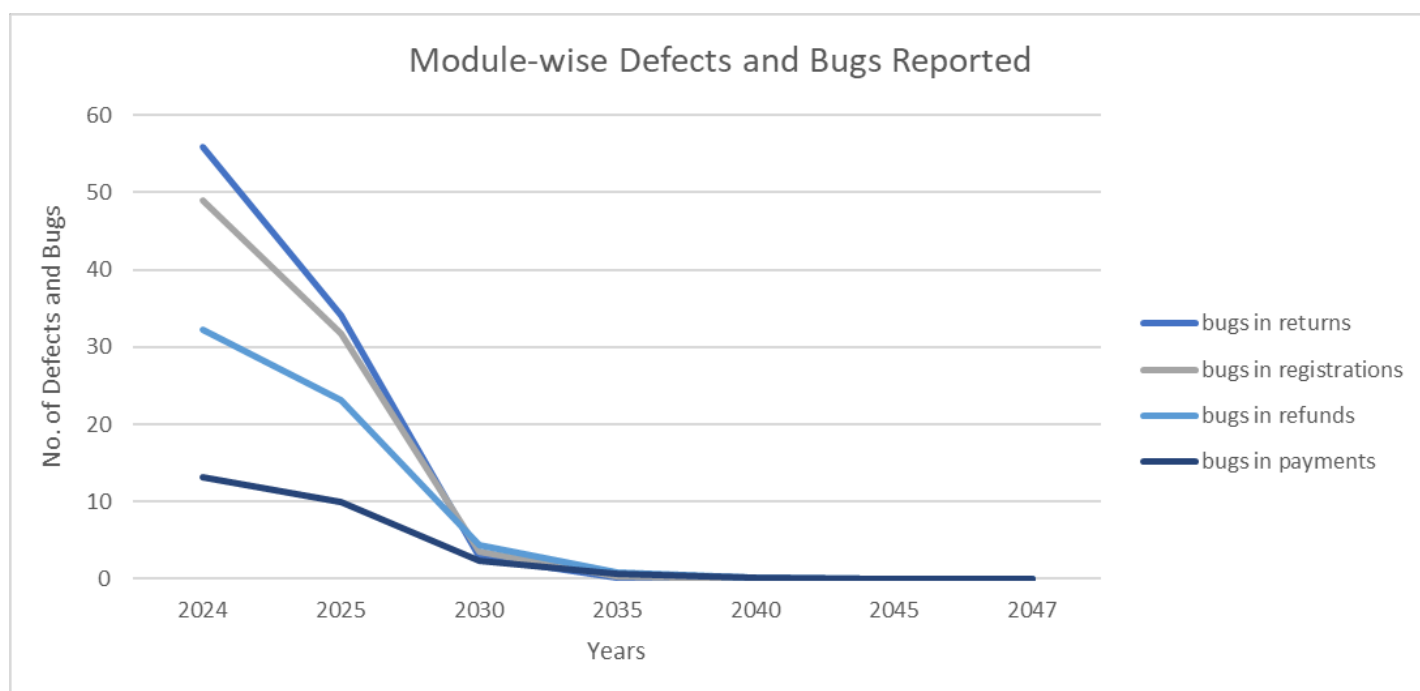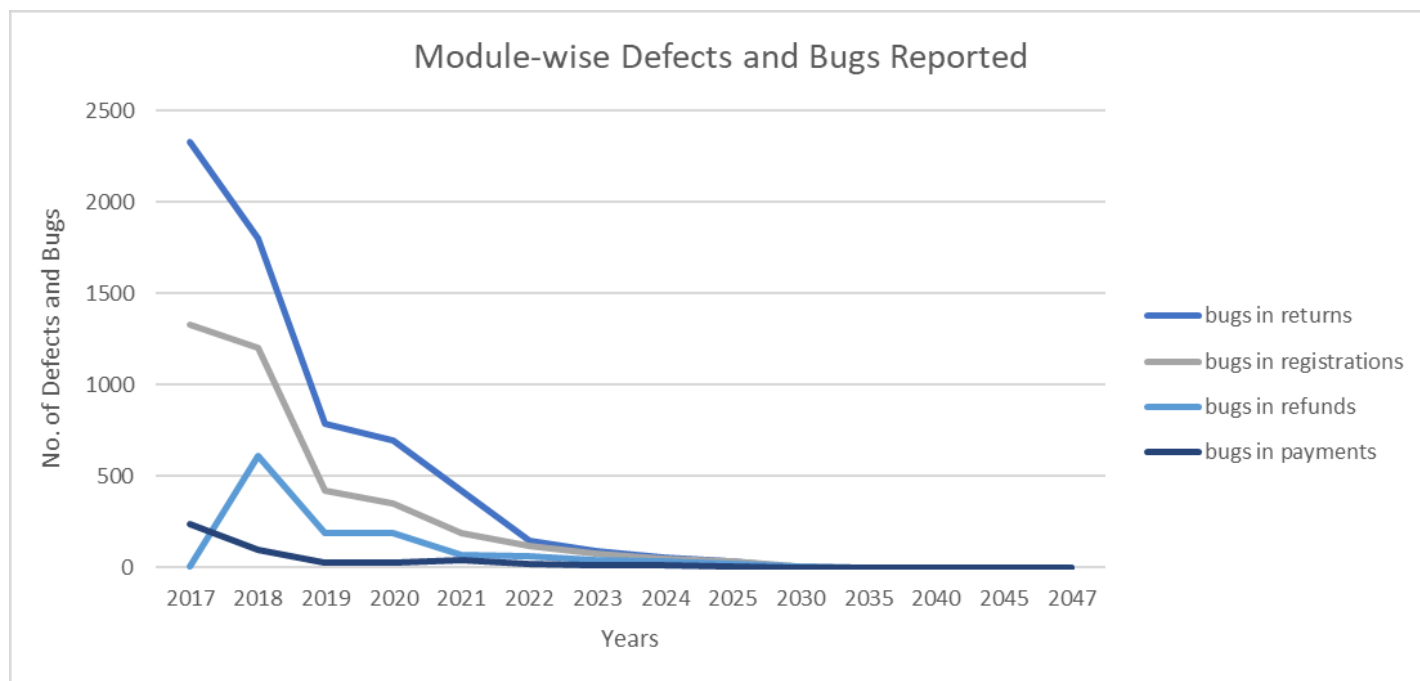
Notes:

1. The chart titled "Module-wise Defects and Bugs Reported" provides an overview of the bugs faced by taxpayers in different modules from 2017 to 2047. Here are the key points:

Bugs in Returns: This category saw a dramatic increase, peaking at over 2000 reports in 2019 before declining sharply.

Bugs in Registrations: This category also peaked in 2019 but at a lower number, around 1500, and decreased significantly afterwards.

Bugs in Refunds and Payments: These categories have remained relatively low throughout the years, with a slight increase around 2019.

2. Average and percentage method was used to find out the future trend after the year 2022.

3. Data from Year 2017 to 2022 is taken from EAC-PM Working Paper Series (EAC-PM /WP/16/2023), page no. 10, Figure 8.

4. We have taken the trend for "Bugs in Refunds" from year 2019 as the data for prior years were abrupt and was not helpful.

Overall, the chart indicates that the most significant issues faced by taxpayers were in the returns and registrations modules, particularly around the year 2019. The bugs in refunds and payments modules were comparatively fewer. The chart shows a positive trend of decreasing bugs in all modules after 2019.

GLOBAL GST

Let's see how other developed nations are doing on this aspect:

1. **United States:**

The Internal Revenue Service in the United States has implemented chatbots to assist taxpayers in finding information, answering common questions, and guiding them through the tax filing process.

2. **United Kingdom:**

HM Revenue & Customs in the UK has explored the use of chatbots to provide assistance and information to taxpayers. These chatbots aim to simplify the tax process and help users find relevant information.

3. **Australia:**

The Australian Taxation Office has utilized chatbots to offer support and guidance to taxpayers. These chatbots are designed to answer general queries, assist with navigating the ATO website, and provide information on various tax-related topics.

4. **Canada:**

The Canada Revenue Agency has also adopted chatbots to assist individuals and businesses with tax-related inquiries. These chatbots can provide information on tax credits, deadlines, and other relevant topics.

5. **Singapore:**

Singapore's Inland Revenue Authority (IRAS) has implemented a virtual assistant named Ask Jamie to help users find information related to taxation and government services.

Thereby implementation of chatbots in Tax administration is limited to Information Retrieval and compliance support. But in the next decade the progress would be astronomical.

ECONOMIC IMPLICATIONS

The integration of chatbots in tax systems throughout India and Asia is poised to bring about significant economic changes. These AI-driven technologies are expected to transform the landscape of tax administration in several ways:

1. Efficiency and Cost Reduction: Chatbots' ability to handle a high volume of queries around the clock could greatly increase the efficiency of tax administrations. This could lead to a reduced need for large staff numbers, thereby cutting operational costs significantly. However, this efficiency gain might be offset by potential job displacement in traditional tax-related roles, as professionals might struggle to find opportunities in these evolving fields.

2. Job Displacement and Skill Transition: While the efficiency of chatbots is a boon, it brings with it the challenge of job displacement. Tax professionals accustomed to traditional roles may find it increasingly difficult to secure jobs, necessitating a shift towards more tech-centric skills and roles within the tax

sector.

3. Advanced Data Collection and Analysis: The use of chatbots enables unparalleled data collection and analysis capabilities. This can empower tax authorities to issue tax notices with greater precision and frequency than ever before. For the Micro, Small, and Medium Enterprises segment, however, this could translate into stricter oversight and potentially overwhelming regulatory demands.

4. Digital Economy Growth and Challenges for Smaller Businesses: The deployment of chatbots is likely to encourage the digitalization of businesses, fostering a more tech-savvy culture. While this is a step forward for the digital economy, smaller businesses might face significant challenges in terms of financial resources and implementation capabilities required for such technological adaptations.

In summary, the move towards integrating chatbots in tax systems in India and Asia offers prospects for improved economic efficiency, compliance enhancement, and a push towards digital transformation. However, this shift also brings forth challenges related to employment, the need for skills adaptation, data privacy, and ensuring fair implementation across varied economic sectors.

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[1] GSTN is a non-profit, non-government organization that manages the entire IT system of the GST portal in India. This portal is used for a range of services related to the Goods and Services Tax, including registration, tax return filing, application for refunds, and response to notices.