

A Systematic Study of Application of Cognitive Intelligence in Mphasis – a Case Study

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ABSTRACT

Introduction: *The modern definition of intelligence is machines' capacity to comprehend and adapt to surroundings employing innate skills and acquired knowledge. We have arguably reached a brand-new stage in the development of civilization. In recent years, the advancement of cognitive technology has accelerated rapidly. On many levels, their capabilities—both current and future—are very appealing. Their application in business is intended to save operating expenses while accelerating the rate of business development and improving the quality of services provided. Cognitive systems use logical human processes to interpret data in order to enable computers and robots to precisely mimic human actions, both in terms of repetitive, routine tasks and comprehensive procedures of completing a variety of tasks. Additionally, they carry out diagnostic and predicative tasks. They are used in the most recent technologies because they offer conclusions, shed light on processes, and offer automated actions based on data analysis and contextual human interactions. Since much of the labour done by employees is routine in nature, computers and algorithms may simply take over these activities. Information technology services and integrated solutions are offered by the Mphasis. It covers application services, infrastructure technology, and business process outsourcing. It adopts a customer-in view to transform organisations by utilising the sector-specific X2C2TM framework, which harnesses the power of cloud and cognitive to give hyper-personalized digital experiences to its customers.*

Background/Purpose: *Mphasis is in the industry of: Business Services, Custom Software & IT Services, Management Consulting - leading applied technology services, helping enterprises transform businesses globally by applying next-generation technology.*

Design/Methodology/Approach: *Referred websites and articles related to Mphasis development, services, cognitive applications.*

Findings: *With regard to sales, delivery, and development, Mphasis innovates to produce excellent customer service and successful results. In order to maintain its clients at the top of the heap in a market that is constantly changing, its goal is to be flexible, nimble, and customer-centric. There have been companies with significant AI-related infrastructure in India. IISc has organizations with driving organizations like Robert Bosch, Faurecia; IIT Bangalore is in association with Mphasis and focus Cognitive Computing; IIT Kharagpur has made AI inquire about focus with Capillary Technologies.*

Originality: *This paper tries to give an overview of how Mphasis focuses on cognitive intelligence applications and anticipates the future of applied technology and forecasts tomorrow's trends.*

Paper Type: *A Research Case study paper on the use of cognitive intelligence in Mphasis*

Keywords: *Mphasis, Cognitive Intelligence, Chatbot, Artificial Intelligence, Cognitive Guru, ABCD analysis*

1. INTRODUCTION :

The Mphasis Group is a multinational, multi-ethnic company. Its headquarters' is in Bengaluru. It offers a variety of infrastructure outsourcing services, business & knowledge process outsourcing solutions, and application development & maintenance services to clients worldwide.

Mphasis Limited was established on August 10th, 1992. It was created following the union of the Indian provider of IT services BFL Software Limited with the US-based IT consultancy firm Mphasis Corporation. The People's Republic of China, Australia, Belgium, Canada, France, Germany, Ireland, Mauritius, the Netherlands, Poland, Singapore, the United Kingdom, and the United States of America all have subsidiaries of the company. In 1993, additional workstations and infrastructure were put in place to grow the company [1].

2. RESEARCH RELATED WORK :

A Systematic search is conducted using the Google Scholar to get papers from 2017-2021, with the keywords "Chatbot", "Cognitive", and "Ecommerce". The papers reviewed are listed in the below table.

Table 1: Various works related to chatbots.

S. No	Area of Study	Focus	Reference
1.	Mental Health	Chatbot Design and Application using API.AI	Cameron et al, 2017. [3]
2.	E-Commerce	NLP and machine learning techniques	Lei Cui et al, 2017. [4]
3.	E-Business	Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis (LSA)	N T Thomas, 2016. [5]
4.	Evaluating Chatbots	Natural language generation techniques	Daniel Adiwardana et al, 2020. [6]
5.	Conversational Chatbots In Medicine	NLP techniques	Benilda Eleonor V. Comendador, et al, 2015. [7]
6.	Cognitive Computing	NLP and machine learning techniques	Daniel Carlander-Reuterfelt, 2020. [8]
7.	Conversational Chatbots	Displaying the conversational context and providing interactions with the context values	Mohit Jain, et al, 2018. [9]
8.	Chatbots Affordances	Preventing misinformation, symptom detection, lessening the mental health burden during pandemic	Adam S. Miner et al, 2020. [10]
9.	Conversational Chatbots Applications	Working principle, applications, benefits of chatbots	Darius Zumstein et al, 2017. [11]
10.	Chatbot Services	Influence of anthropomorphic design cues and the foot-in-the-door compliance tactic on chatbot feedback	Martin Adam et al, 2021. [12]

3. OBJECTIVES OF STUDY :

Various websites have been visited relating to the cognitive applications, strengths, weaknesses, opportunities, threats, and finance of Mphasis for this case study report.

The objectives of the report are

- (1) To review the offerings of data quality and different stages of development in data governance of Mphasis.
- (2) To understand cognitive intelligence and the bot.
- (3) To study the applied cognitive services in the company's financial, marketing sectors.
- (4) To know about the services of Cognitive Guru, the chatbot of Mphasis.
- (5) To study how intelligence used as business service frameworks, nextops, Front2Back.
- (6) To analyse the financial status of the company.
- (7) To know Mphasis contribution to business during the corona pandemic.
- (8) To portray Mphasis's recognition in various business and technology criteria.

4. METHODOLOGY :

The data collection for this paper is done by going through related published papers, Mphasis website, and other sites with the company details [2].

5. THE JOURNEY OF MPHASIS :

- It received the BVQ U.K. ISO 9001-1994 accreditation in 1995.
- To better serve its clients, it was reorganised in 1996 into six autonomous Business Units (IBUS). They are Y2K, Tandem Solution Applications Systems and Networking Products, and Compaq Development Center.
- It established a software development centre for the US-based Lanier Worldwide that specialised in medical documentation management and signed a long-term software development agreement with the US-based Compaq Corporation in 1997. It also formed a strategic alliance with two US-based businesses in an effort to break into the global market. In order to provide services with larger margins, it created a consulting firm in 1998 and established a subsidiary in the United States.
- In addition to launching its first healthcare product on the worldwide market that year, the company also entered into a partnership agreement to jointly develop and market netKIOS with Malaysia's Net Communications, a division of Netcard Corporation Berhard.
- Reorganized its operations and changed its name to Mphasis BFL Limited in 2000. Partnered with BEA System the same year to develop financial solutions on the BEA E-Commerce Transaction Platform with the goal of utilising both the Indian and international financial sectors. In June 2000, it purchased a 100% stake in Mphasis Corporation - USA.
- In 2002, a contract was made for the purchase of Navion (Shanghai) software Development Company Ltd. Msource Corporation, a division of Mphasis BFL, had formed a relationship to offer the US Women's Chamber of Commerce the full range of customer care services (USWCC).
- The BS-7799-2: 2002 accreditation was given to Msource Corporation, making it the first contact centre in the nation to receive it.
- In 2004 Mphasis achieved the SEI-CMMI Level 5 accreditation.
- Mphasis was listed on the Global Outsourcing 100 List in 2006 by the International Association of Outsourcing Professionals (IAOP). The organisation has been a subsidiary of Electronic Data Systems Corporation since June 2006 (EDS). The corporate name was changed to Mphasis Ltd. on November 24th, 2006. Enterprise applications integration to design and develop a single central data storage workflow and collaboration enabling technologies are Mphasis' primary focus areas beginning in 2006.
- Along with Idea, a BPO facility started in Indore in November 2007. For Idea users in Madhya Pradesh, it serves as a customer support centre. For the year 2007–2008, NASSCOM listed the business among the Top 20 IT Software and Service Exporters, the Top 15 BPO Rankings, and the Top 10 IT-BPO Employers.
- EDS was acquired by Hewlett Packard (HP) in 2008 and is now a Hewlett Packard subsidiary (HP).
- On August 12, 2009, a contract was acquired with American International Group Inc.'s AIG Systems Solutions Pvt. Ltd. (AIGSS). AIGSS is an Indian company that offers IT services and solutions to AIG organisations all around the world. Regulations and laws must be followed in the transaction. AIGSS, has offices in Chennai and Kolkata, employing more than 800 people and offers IT services to AIG and its member businesses. Applications development and maintenance, application installation testing, and product development and support are among the services provided by AIGSS.

- On November 24, 2009, the Board of Directors accepted the plan to merge Mphasis FinSolutionsPvt. Ltd., a wholly owned subsidiary of Mphasis Ltd. (formerly AIG System Solutions Pvt. Ltd.), with Mphasis Ltd. The plan is pending for the required approvals.
- On April 8, 2010, Mphasis obtained a contract from Fortify Infrastructure Services, a major supplier of remote IT operations and management (ROM) services based overseas. Privately owned Fortify Infrastructure Services has offices in both the US and India. The purchase will provide Mphasis access to prestigious clients, a seasoned management team, a talent pool of highly specialised employees, and a platform that has been successfully used to deliver ROM services. In an all-cash deal, Mphasis will acquire a 100 percent equity position in Fortify Infrastructure Services.
- At the University of Wollongong, Mphasis inaugurated its first near-shore integrated development and delivery centre on October 23, 2010. The Center will only serve customers in Australia and New Zealand and will provide a Center of Excellence for testing in addition to a specialised resource pool for the telecommunications sector. From the test lab that is being established in Wollongong, it intends to provide specialised automated testing services. For the first time, its' consolidated revenue for the fiscal year that concluded on October 31, 2010, totalled USD 1099.3 million.
- On August 1st, 2011, Mphasis won a contract from Wyde Corporation, a leading provider of software globally and the maker of Wynsure, a tool for managing insurance policies. Wyde employs nearly 200 people, many of whom have deep industry knowledge.
- A Memorandum of Understanding (MoU) was signed on March 2, 2012, to establish a near shore centre in Charlotte Town, Prince Edward Island (PEI), Canada, to serve the region of North America. Mphasis' PEI centre, which is an hour behind New York City but in the same time zone, will be crucial to the company's operations in the North American region.
- On December 2, 2012, Mphasis acquired an agreement from the Digital Risk LLC of Orlando, Florida, in the United States. One of the biggest independent suppliers of Risk Compliance and Transaction Management tools to the US mortgage market is Digital Risk. With an extra earn-out component, the acquisition represents an all-cash transaction valued at US\$ 175 million.
- On 11 February 2013 acquired Digital Risk LLC.
- On February 5, 2014, the company announced a new corporate brand, which included a vivid new logo, representing its successful evolution into a very distinctive, customer-centric organisation.
- On February 10, 2014, AppCrown, the top supplier of cloud-based financial systems for CRM, Banking, and Wealth Management, declared its intention to team up with Mphasis.
- On June 30, 2015, a contract was reached with Hinduja Global Solutions (HGS), a leader in business process management (BPM) who specialises in improving client experiences, to transfer a sizable chunk of its domestic operations, subject to regulatory permissions. On July 10, 2015, Mphasis stated that it had signed a legally binding agreement to transfer certain of its domestic operations to Karvy Data Management Services Limited (KDMSL), an Indian company that offers business and knowledge process services. This transfer is subject to regulatory approvals. Following signing with Hinduja Global Solutions (HGS) to transfer approximately 7000 personnel, or nearly two-thirds of the India Domestic Voice business, this is Mphasis' second legally binding deal. More than 2000 employees would be moved to KDMSL under the terms of the current arrangement.
- Hewlett Packard Enterprise's (60.5 percent) interest in Mphasis was acquired by Blackstone, the top private equity (PE) firm in the world, in 2016. It was Blackstone's largest acquisition in India to date. A Master Services Arrangement (MSA) for a duration of five years with an extra three automatic renewals of two years each has been agreed upon between Hewlett Packard Enterprise (HPE) and Blackstone as part of the agreement. HPE has promised a minimum revenue amount of \$990 million over the following five years under this MSA. Additionally,

Mphasis is a part of HPE's Preferred Provider Program, opening enormous expansion opportunities.

- At its meeting on January 31, 2017, the board of directors of Mphasis approved a proposal for the proportionate buyback of equity shares from all current shareholders of the company using the tender offer method, at a maximum price of Rs. 635 per equity share, for a total of not more than Rs. 1103 crore.
- The world's top independent end-to-end IT services provider, DXC Technology, and Mphasis declared a new Solution Partner partnership to modernise enterprise applications for public, private, and hybrid clouds on May 25, 2017.
- Blockchain-enabled digital products Wealthchain and Chainsure for the Banking, Financial Services, and Insurance vertical were introduced by Mphasis on January 8th, 2018.
- During 2019, completed the buyback of 7320555 fully paid-up equity shares (equity shares) with a face value of Rs 10 each. These equity shares constitute 3.79 percent of the Company's total paid-up equity share capital and were purchased for a total of Rs 9882.75 million.
- On November 19, 2020, purchased all the shares for cash and got control of Datalytx Limited and its subsidiaries. Providing next-generation data engineering, data operations, and master data management solutions on Snowflake and Talend environments is Datalytx.
- The cloud and cognitive services-focused IT solutions provider announced in May 2022 that it planned to hire 600 people in Mexico over the course of a year. It wanted to hire experts in application development, help desk and end-user support, and infrastructure management (including telecoms and networking).
- Mphasis plans to hire 300 individuals by the end of 2022 for its new delivery centre in Calgary, Alberta, Canada [63]. The leading provider of IT services, which also provides secure communications assistance and cloud services, wants to bring in 1,000 new IT jobs by 2024. It has a 37,000-strong global workforce and announced plans in 2021 to invest in Calgary and support the city's transformation into a technological hub in partnership with the local government and University of Calgary. It claims to have had operations in Costa Rica, Taiwan, New York, Mexico, and Bangalore and to have generated revenues of up to \$1.6 billion in FY2022.

Table 2: Company Information [19].

IND NAME:	COMPUTERS - SOFTWARE - MEDIUM / SMALL
HOUSE NAME:	MNC ASSOCIATE
REGISTERED OFFICE	Bagmane World Tech Center, Marathalli Ring Road Mahadevapura, Bengaluru, Karnataka-560048
PARENT	The Blackstone Group (84%)
SPECIALTIES	Application Services, BPO Solutions, Healthcare; Finance & Banking; High Tech; Applied Technology, Ci & R, Cloud, Cognitive, Digital, and IT Services and Solution [20]
STOCK SYMBOL	526299 [21]
WEBSITE	: http://www.mphasis.Com
E-MAIL	: investor.relations@mphasis.Com

6. MPHASIS APPROACHES :

Every organisation has unique goals, issues, and demands that must be fulfilled. The strength of NextOps' combined "Tech & Ops" is used to create solutions that meet specific needs, increase productivity, and enhance the customer experience [22]. The digital transformation levers improve end-customer experience and co-create value, whether it be integration and cooperation through business process automation, insights-driven decisions through analytics, or productivity advantages through cloud services.

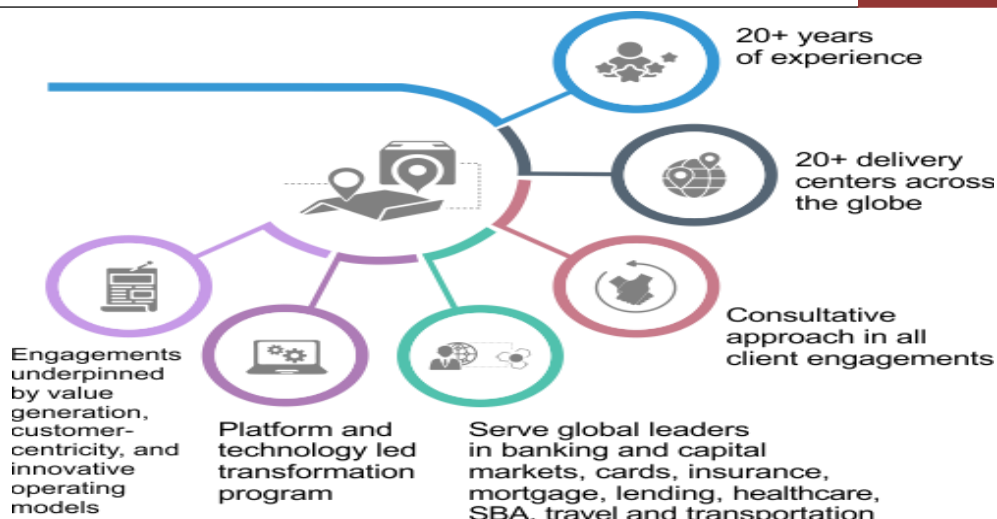


Fig. 1: Mphasis approaches [6].

7. COGNITIVE ANALYTICS SOLUTIONS :

Enterprise analytics teams are supported by cognitive computing, which facilitates access to the vast amounts of structured and unstructured data needed to support data-backed choices. Customers can also be the main emphasis for businesses [23]. Data and data sciences are used to make interactions at every contact point understandable. This forces businesses to improve their application, user, and solution offerings.

Table 3: Big Data Adoption Challenges and Mphasis Point of View (Source: Author).

Category	Challenges	Mphasis Approach	Customer Benefit
PEOPLE	<ul style="list-style-type: none"> • Big Data Developers • Data Scientists 	<ul style="list-style-type: none"> • Embed a data architect • Right people as leaders • Cross train and grow internally • Certifications 	<ul style="list-style-type: none"> • Overcome potential skill issues • Growth opportunities
PROCESSES	<ul style="list-style-type: none"> • Multiple data sources • Risk and governance (Security, Privacy, Quality) 	<ul style="list-style-type: none"> • Use agile and interactive approach • Use tools to automate • Engage governance, Security, Privacy, Quality teams early on 	<ul style="list-style-type: none"> • Data reveals business value early on • Subsequently enforce data governance before mass adoption
PRODUCTS	<ul style="list-style-type: none"> • Resource vs product • Build vs partner • On-premise vs cloud • Open-source vs commercial <ol style="list-style-type: none"> 1) Licensing 2) Quality 3) Support 	<ul style="list-style-type: none"> • Analytics from business perspective and not from it • Embrace open source • Partner before buying or building • Citizen analytics, data science • Start in the cloud 	<ul style="list-style-type: none"> • Build strong business case and maximize investment in big data • Embrace and plan your lab for multiple innovative ideas

8. FINANCIAL STATUS OVER THESE FIVE YEARS (2017 -2021) :

The rise of robotization and work on process automation have, among other things, changed the requirement for specific worker competencies. Table 4 depicts the last five years financial status of Mphasis.

Table 4: Mphasis Financial status [20].

	2021	2020	2019	2018	2017
Net Sales	5561.25	4347.14	3434.02	3274.87	3018.55
Operating Profit	1648.36	1603.92	1017.76	967.50	855.13
Other Income	89.46	323.29	118.59	121.62	189.12

Gross Profit	1596.31	1540.88	1011.09	962.26	852.73
Net Profit	1110.36	1205.06	769.43	739.89	625.01

Financial Report (2017 - 2021)

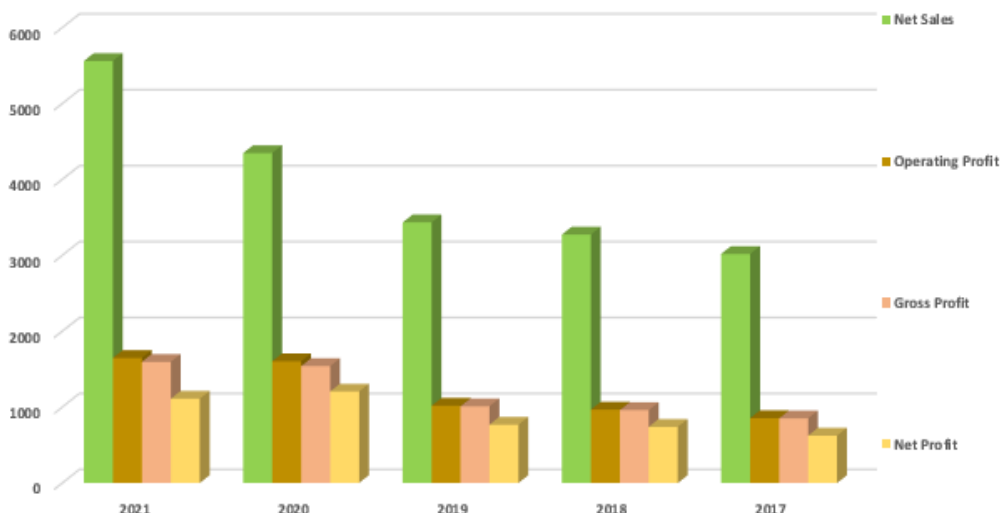


Fig 2: Mphasis Financial report (Source: Author).

9. MPHASIS COMPETITORS :

Mphasis competitors include Accenture (US), Microland, Wipro Limited, Infosys and Mindtree. Mphasis ranks 1st in Overall Culture Score vs its competitors [24-25].



Fig. 3: Mphasis Competitors [24].

9.1. Product Quality Score Comparison:

Mphasis is ranked second in terms of product quality. A 3.8/5 rating from 24 customers places Mphasis second among its rivals, just below Mindtree.

Table 5: Mphasis Competitors Product Quality Score (Source: Author).

Product Quality Score		
1st	Wipro Limited	3.8 / 5
2nd	Mindtree	3.8 / 5
2nd	Mphasis	3.8 / 5
4th	Accenture (US)	3.7 / 5
5th	Infosys	3.7 / 5

9.2. Customer Service Comparison:

Mphasis Has the Best Customer Support. 23 customers give Mphasis' customer service a rating of 4.2/5, placing it first among its rivals.

Table 6: Mphasis Competitors Customer Service Score (Source: Author).

Customer Service		
1st	Mphasis	4.2/ 5
2nd	Wipro Limited	3.9/ 5
3rd	Mindtree	3.8/ 5
4th	Accenture (US)	3.8/ 5
5th	Infosys	3.7/ 5

10. COGNITIVE INTELLIGENCE IN MPHASIS :

Also termed as general mental ability, general intelligence, and general cognitive ability [26]. When compared to emotional intelligence, cognitive intelligence refers to the capacity to learn, solve problems, and form wise decisions [27]. Analysis of financial, marketing, governmental, and healthcare data all depend on it. In service-oriented sectors like healthcare, manufacturing, and customer service, AI is crucial. Humans are capable of processing information to create intellect and meaning [28]. Cognitive intelligence makes use of previously acquired knowledge that develops via practise and new experiences. Cognitive intelligence refers to the fields and techniques in technology that enable programmes, websites, and chatbots to see, hear, talk, and comprehend the demands of people in natural language, enabling the machines to pick up on their users' dialects [29-36].

Cognitive services analyse vast amounts of data produced by the connected systems in an effort to mimic logical human thought processes. These contextual and human interaction-focused services include tools with diagnostic and prescriptive capabilities that can watch, learn, and provide insights, suggestions, and even automatic actions [37].

- The difficulty for experts in artificial intelligence is to modify the technology so that humans can engage with it in a normal, everyday manner. They want to develop applications that can mimic human learning, such as
- Those that can listen and speak and convert audio and text.
- Natural Language Processing (NLP) - in addition to reading the text, understanding grammatical structure and contextual relationships is necessary.
- Sentiment analysis - comprehend emotions and feelings in order to develop empathic systems that can recognise a person's emotional state and base decisions on it.
- Image recognition, which locates and recognises items in a series of still or moving pictures. a significant obstacle for machinery.

10.1. Front2Back™ (F2B):

A customer-in perspective method that transforms businesses by leveraging the power of cognitive technology and rich data that is already present in them. Utilizing the X2C2™ framework It is a technique for introducing innovative technologies to subtly alter established settings. In a world that is evolving, Mphasis' Service Transformation strategy has made it possible to keep up.

To give clients and their end customers a highly tailored digital experience, Front2Back™ leverages the exponential power of the cloud and cognitive technologies [38].

10.1.1. Chatbot:

A chatbot is an automated programme that accepts voice commands, text messages, or both to start a human conversation [39-40]. They communicate with customers like real people and are generally inexpensive to use [41]. The chatbots are employed in a variety of fields, including retail, where they are used to pick and order goods, weather, where they provide day- and week-ahead weather forecasts, and just friendly, where they converse with those in need of a buddy [42]. As automated phone calls and messaging apps for customer care, their use in business is growing [43]. The use of chatbots by organisations yields a definite return on investment [44]. Additionally, they facilitate the online use of website popups and virtual assistants [45-51]. In addition to target-specific capabilities like opening

support tickets to provide feedback, distributing content for publishing sites, buying a hotel room, making a restaurant reservation, etc., several simpler and more domain-specific text-based chatbots are also available [52-60].

10.1.2 CognitiveGuru (CG):

Microsoft AI and well-known open-source technologies were used to create CognitiveGuru (CG), an AI-based chatbot development platform that makes it simple for businesses to create, setup, and deploy chatbots. The CG platform, an intuitive virtual assistant driven by cognitive "Talents," is incubating the future workforce. These NodeJS-written Talents are categorised by domain (banking, airlines, healthcare, insurance, government, and society) and function (sales & marketing, service desk, human resources, and goods) and carry out specialised tasks like resetting passwords or obtaining certain information [30].

By utilising NLP and NLU technology, Mphasis CognitiveGuru (CG) offers:

- Richer intent and entity identification in utterances
- Secured integration with any system inside the organisation via REST or SOAP APIs exposed by the existing systems
- Various engagement mediums, including Skype, Teams, and WhatsApp
- The ability to develop their own bots tailored to their needs within an organisation. Intelligent conversational experiences that reinvent how people interact with technology.

10.1.3. CognitiveGuru (CG) in various functions:

- **Service Desk:** Chatbots were incorporated into service desk operations early on to speed up the handling of urgent situations. Through characteristics like easy connection with core systems on a secured architecture, CG as an interface creates the option of end-to-end or zero-touch automation from request to fulfilment. Service desk leaders, service desk operations managers, service desk support managers, and service desk support analysts all gain from CG bots in addition to end users. It presently manages more than 50 different service desk use cases for 28,000+ people, resulting in a 50% reduction in call wait times, a 30% cost savings, a 30% boost in productivity, and a 40% reduction in call volume [61].
- **Human Resource:** The greatest way for HR professionals to respond to questions from employees in real time and accurately is without a doubt with a virtual assistant. Within a company, CG bots streamline and individualise the experience for various labour segments. It is a virtual manual for staff members that guides them through data spread across many systems. Along with the workforce, CG benefits HR leaders, HR business partners, and areas like learning & development, employee engagement, and compensation & benefits. It is frequently used for hiring, onboarding new employees, policy questions, leave management, and employee gratitude, among other things. It helps to improve SLA (Service Level Administration) by 50%, turnaround time by 40%, customer satisfaction score by 60%, and call/ticket traffic by 50%.
- **Sales and Marketing:** Bots have a tremendous potential to increase user engagement, which will subsequently increase conversion and sales. The conversational experience for the end-user is hyper-personalized by CG bots, taking the relationship between the services/products and users to a new level. CG helps lead management, promotional campaigns, customer engagement, target marketing, and customer care teams in generating income and growth, even though the organisations as a whole stand to gain. It contributes to a 50% increase of request closures, a 30% increase in targeted marketing, a 50% increase in customer interaction, and 24-hour assistance availability.
- **Product Engineering:** Product managers may easily offer hyper-personalized self-services thanks to the conversational experience that CG bots bring along with cognitive insights. By integrating with enterprise product recommendation engines, the bots give product managers the authority to extend hyper-personalized service based on client profiles. Benefits include a 70% reduction in the number of clicks needed to complete tasks, a 50% increase in training efforts, a 30% reduction in support desk contact volume, and a 50% increase in customer satisfaction scores. It also benefits product administrators, analysts, engineers, and managers.

10.2. Deploying the Workforce of the Future:

By combining Mphasis Digital solutions with accelerators and products from NEXTLabs and NextAngles, Mphasis is helping businesses to leverage the potential of data. Businesses are becoming more and more interested in bot platforms as a result of how easily they can make conversational, intelligent bots using these platforms. These platforms facilitate standardisation, facilitate use, accelerate time-to-market, and save costs while streamlining development.

11. DIFFERENTIATORS :

- Built with opensource, making it developer friendly & flexible and enabling standardisation;
- License to control the complete source code of the platform;
- Completely customizable platform that can interact with any system that exposes APIs;
- Common actions are handled by libraries, facilitating action reuse across jobs;
- Powered by well-known NLP technologies from Microsoft (LUIS, Bot framework);
- Open innovation practises like crowdsourcing, intellectual property licencing, and academic collaborations;
- Services innovation such as proactive maintenance and intelligent infrastructure services, automated workflows, personnel, incident management, and testing, process mining, and improvements [62].
- Mphasis is dedicated to the "hybrid first" strategy in Mexico, and encourages people to work remotely rather than in the office. While this flexibility is an important distinction when attracting new employees, it also guarantees that workers are provided with a flexible work environment where they are happy and productive.

12. MPHASIS SOLUTIONS :

1. **Cognitive Microservices:** Accelerating Application Delivery: It is essential to develop solutions at scale and on demand since machine learning and data science are increasingly in demand and being applied across sectors. The Cognitive Microservices framework from Mphasis is a self-sufficient cloud-based library of containerized microservices that gives users access to a variety of machine learning (ML) and deep learning (DL) based industrial use cases and algorithms. Decentralized modules that are structured around particular business capabilities contain a variety of functionalities. It enables developers to concentrate on feature upgrades rather than algorithm creation, which cuts down on the time, money, effort, and complexity required to transform raw data into actionable insights. The user may immediately provide data, execute the ML algorithms, and receive immediate results thanks to a clearly defined, user-friendly interface that makes these techniques accessible. As a result, the production cycle times are dramatically shortened, acting as a crucial delivery accelerator.
2. **Cognitive Twin:** An agent powered by artificial intelligence (AI), called Cognitive Twin, engages with business technology teams. It is a customised application for IT users that may connect to company-specific knowledge bases and create a collaborative environment where users can share updates, criticisms of the answers, and suggestions for code snippets. They benefit from its assistance in a variety of situations, including difficult code analysis, code insights, domain support, effort estimation, risk analytics and testing. Additionally, it offers pertinent responses, recommendations, historical examples, and trade-offs for a variety of questions, including technical, architectural, infrastructure, standards, functional, and non-functional ones.
3. **Optimize.AI:** Based on information about how users and systems interact, Optimize.AI executes difficult cognitive process mining tasks. This AI-centered methodology analyses workflow event logs to comprehend AS-IS user behaviour and uses it to develop new processes and predict future behaviour. It is an analysis engine that:
 - Remove event data from processes
 - Performs on-ground process discovery from path, time, and resource perspective
 - Identifies common user journey, performs critical path analysis, and compliance analysis

- Identifies improvement, re-engineering & redesign scenarios
 - Predicts user journey & workflows
4. **Mphasis Responsible AI:** Through a distinctive user experience and design thinking interaction, it is an end-to-end platform that helps businesses to develop and deploy robust, interpretable, explainable, bias-free, auditable, and privacy respecting AI. This increases system credibility, which enhances customer satisfaction, lowers liability risk, and ensures regulatory compliance. The generic and modular design of the Responsible AI components improves scalability and repeatability across many use scenarios. Examples include the bias identification and mitigation module, which ensures model fairness, the global and local explanation module, which safeguards privacy, and the PII redaction module, which explains internal logic and model constraints. Auditability and examination of the explanation-accuracy trade-off are made possible by the ability to log experiments and model iterations. For simple deployment, Mphasis' patented MLOps architecture PACE-ML is fully linked with the company's Responsible AI framework.

Benefits of Mphasis Responsible AI are:

1. Enhances model fairness by enabling developers to determine whether AI predictions are biased towards a certain class. Fair outcomes are produced as a result, helping to reduce bias.
2. Ensures regulatory compliance: Improves AI model transparency and aids in deciphering the causes of unfavourable results.
3. Increases trust in crucial business decisions: Helpful when AI models make crucial choices that affect an organization's obligations.
4. Simplifies model governance: Throughout the model's lifecycle, various stages of model creation are open to review. These covers decommissioned or even post-deployment models.
5. Builds user happiness and trust: Produces human-centered intuitive explanations that are more trustworthy.
6. Facilitates deployment: Makes use of pre-built components that enable rapid deployment and customization to accommodate various business scenarios and requirements.
7. Hybrid and cloud-agnostic: Can be used on-premises and in any private or public cloud.
8. Flexible integration: Stand-alone deployment for in-production explanation of AI models or integration with other technologies.

Responsible AI listings are:

1. Explainable AI: Tree Based Explainer
2. Explainable AI - NLP Models
3. Explainable AI for Text Classification
4. Explainable AI: Structured Data Models
5. Personally Identifiable Info Anonymizer
6. Data Drift Detector for Time Series
7. Drift Detection & Incremental Learning
8. Drift Detection in Categorical Features

13. HEALTHY ACCESSIBLE TO DATA :

In order to put data at the forefront of every design process, firms now have chief data officers appointed as members of their core management teams. It is difficult for any business to manage enormous amounts of data. To ensure that data can be correctly evaluated and used as a basis for action, it is essential to validate and guarantee its quality. To address data problems, Mphasis incorporates data governance at the beginning of any design process. One of the fundamental elements supporting effective Front2Back™ transformation is this.

13.1. Offerings on Data Quality by Mphasis:

1. **Quality and Governance** - Through an internal architecture and an ecosystem that includes top solutions like Collibra, data trust is developed and maintained [65].

2. **Data Master Data Management** - The business architecture-driven methodology and the use of semantic web modelling enable early agreement on the definitions of business terms and the successful implementation of master data management solutions that produce the "golden record" reference for important entities like customers and products.
3. **Dashboarding/Analytics** - Using an agile, early value, delivery approach and a domain-led, crawl-walk-run methodology, we swiftly uncover the most crucial key performance indicators (KPIs).

14. BEYOND BUSINESS AS USUAL IN UNPRECEDENTED TIMES :

Business and people were severely threatened and unsettled by the exceptional COVID19 crisis [10]. The goal of Mphasis Company Process Services was to restore confidence in business operations. As firms prepared to restart and go forward, we were there to help them do so [22]. The proof is in the success tales that follow.

1. **Baseline costs were cut by 45% as a result of an operations transformation driven by contact centre modernisation and automation.**
 1. offshoring and transforming high cost and distributed operations
 2. Achieved year-on-year savings through proactively and consistently delivered process efficiency projects such as Lean, Macros
 3. Complaints reduced by 20%
 4. NPS improved by 10bps
 5. Business continuity and improved client satisfaction score during pandemic
2. **By using a sustainable transformation operating model, costs were reduced by 40–50%.**
 1. Cost optimization in the region, of 60% compared to baseline spend
 2. Commitment to set-up delivery infrastructure in client geographies
 3. Cultural alignment and knowledge management – an essential catalyst to support growing business, through various programs
3. **Managed end-to-end contact centre operations while handling a sudden increase in business volume during the pandemic.**
 1. Baseline cost reduction of 65% by consolidating, 600 Contact Center FTEs growth (net) in 4 months, in the backdrop of wage increase
 2. Exceeded all parameters and SLAs of implementation as well as current BAU
 3. Ramped up to more than 1600 employees in 60 days
 4. Achieved more than 98% of SLAs on all KPIs
 5. Cultural alignment and knowledge management, which is an essential catalyst to support growing business through various programs.

15. RECOGNITIONS AND REWARDS :

At the PeopleFirst HR Excellence Awards 2022, Mphasis won the "Leading Practices in Talent Acquisition" award in recognition of their innovative programmes that support and empower employees [66]. Mphasis is featured as a major contender in Everest group's banking operations services peak matrix assessment 2022 [67].

The report lists Mphasis' strengths as follows [68]:

1. The adoption of numerous brands following COVID-19 reinforced a strong foundation in North American financing, notably in client onboarding and due diligence.
2. Mphasis places a high priority on working with FinTechs, particularly in industries that offer buy now, pay later services and are seeing rapid economic growth.
3. The Mphasis transformation framework, which includes NextOps and Front2Back, is strengthened by reliable partner tools, such as Camunda's business process automation services.
4. By establishing facilities in Dallas and India, Mphasis expanded its onshore and offshore delivery capabilities. LoanFx, a point of sale for loan origination, Optimize.AI, a process mining solution for mortgage servicing, and Deepinsights, a cognitive intelligence system fusing ML and NLP, are examples of AI-based point solutions.
5. Mphasis is expanding its software and service capabilities with recent acquisitions like Datalytx, a DataOps specialist, and relationships with companies like Esgyn Corp for big data management.

Mphasis' superb FCC Operations portfolio includes solutions for financial crime, financial risk, and governance. The award emphasises the skills of the banking and financial sector with a sub-industry focus on sectors including mortgage, payments and cards, wealth management, corporate and investment banking, consumer banking including cards, lending, GRC, AML, fraud management, and digital marketing space [69].

15.1 Recognitions:

The Mphasis recognitions can be listed as follows:

1. Ranked #1 among Top 10 India-based IT Services Companies for 2022 by Net (net) Inc.
2. HFS OneOffice™ award Finalist in the Innovation Ecosystem category for differentiated ecosystem offering leveraging innovation.
3. Mphasis recognized as a Leader U.S. in ISG Provider Lens™ Public Cloud - Services and Solutions - Consulting and Transformation Services for Midmarket 2021 report.
4. Mphasis recognized as a Rising Star U.S. in ISG Provider Lens™ Public Cloud - Services and Solutions - Managed Public Cloud Services for Midmarket 2021 report.
5. Mphasis Ranked 2nd among Top 10 Formidable Challengers In HFS Market Analysis Of Application Modernization Services.
6. Mphasis positioned as a Leader in ISG Provider Lens™ Mainframes - Services and Solutions 2022 U.S. Report.
7. Mphasis recognized as a Major Contender in Everest Group's Digital Experience Platforms (DXP) in Insurance Industry Products PEAK Matrix® Assessment 2022.
8. Mphasis featured as a Major Contender in Everest Group's Insurance Platform IT Services PEAK Matrix® Assessment 2022.
9. Mphasis recognized as “Major Contender” and “Star Performer” in Everest Group's Capital Markets Operations – Services PEAK Matrix® Assessment 2021.
10. Mphasis Recognized as Major Contender and Star Performer in Everest Application and Digital Services in Global Banking Service Providers PEAK Matrix.
11. Mphasis is Ranked 2nd in HFS Market Analysis - Banking and Financial Services Formidable Challengers.
12. Mphasis recognized as a Star Performer and Major Contender in Everest Group's Peak Matrix® Financial Crime and Compliance (FCC) Operations Service Providers, 2022.
13. Mphasis recognized as Major Contender in Everest Group IT Managed Security Services Providers 2021 report.
14. Mphasis Positioned As Leader In ISG Provider Lens™ Mainframe Services And Solutions 2021.
15. Mphasis Recognized as the Leader in AWS Ecosystems Partners by ISG Provider Lens 2020.
16. Mphasis Ranked 32 in the IDC Financial Insights' 2020 IDC FinTech Rankings Top 100 2020.
17. Mphasis recognized in ISG Provider Lens Next-Gen Private/Hybrid Cloud - Data Center Services & Solutions 2020.
18. Mphasis Recognized as Major Contender in Everest Group PEAK Matrix® for Mortgage Operations Service Providers 2020 - Focus on Mphasis - Digital Risk.
19. Mphasis recognized in ISG's Briefing Note “Mphasis' innovative self-funding transformation model quickens client ROI” in 2020.
20. Mphasis Digital Risk recognized in NelsonHall's “Transforming Mortgage and Loan Services Report 2020”.
21. Mphasis ranked as Major Contender and Star Performer in Everest Group PEAK® Matrix for Banking BPS Services 2020.
22. Mphasis ranked as Major Contender Everest Group PEAK Matrix® for Wealth Management Operations Service Providers 2020.
23. Mphasis positioned as Major Contender in Everest's Network Transformation and Managed Services PEAK Matrix™ Assessment 2020 report.
24. Mphasis positioned as Major Contender in Everest Group Peak Matrix™ for FCC Operations Service Providers 2020.
25. Mphasis named Major Contender in Everest Intelligent Automation in Business Processes (IABP) – Solution Provider Landscape with Solutions PEAK Matrix® Assessment 2020.

26. Mphasis Named Major Contender in the Everest Life & Annuities (L&A) Insurance Application and Digital Services PEAK Matrix™ 2020 report.
27. Mphasis Ranked Number 6 in “HFS Top 10 Banking and Financial Services (BFS) Sector service Providers 2019” Report.
28. Mphasis (Javelina) has been included in Gartner’s 2019 Market Guide for U.S. Healthcare Payers’ Core Administrative Processing Solutions as a Representative Vendor.
29. Mphasis Named Major Contender in the Everest Group 2019 PEAK Matrix™ Report for Banking BPS Service Providers.
30. Everest Group Recognizes Mphasis as a ‘Major Contender’ in its 2019 PEAK Matrix™ Report for Banking BPO Digital Capability Platform (DCP) Solutions.
31. Mphasis Included as a ‘Contender’ in Midsize Agile Software Development Service Providers’ Evaluation 2019 Report.
32. Everest Group Recognizes Mphasis as a Major Contender and Star Performer in its 2019 PEAK Matrix™ Report for Banking Application Services.
33. Mphasis Ranked Number 6 in “HFS Top 10 Banking and Financial Services (BFS) Sector service Providers” 2019 Report.

15.2. Rewards:

1. Mphasis' DeepInsights™ Named a Winner under the 'Artificial Intelligence' category [64].
2. Mphasis' DeepInsights™ Wins AIConics Best Application of AI in Financial Services [64].
3. Mphasis NEXT Labs, wins the 'Imagination' Category at the 2017 ISG Paragon Awards [64].

16. FCC OPERATIONS PORTFOLIO :

The FCC suite of services in Mphasis includes KYC; EDD / Sanctions; AML; Monitoring / Surveillance; AML Reporting; Fraud Management and Chargeback.

Mphasis FCC Operations Portfolio includes solutions such as:

1. **DeepInsights™**: With the help of this cognitive intelligence platform, businesses can access insights from data more quickly and effectively. For example, broker claim submission analysis using DeepInsights™ resulted in a 90% reduction in processing time per document and 90% accuracy in deal conversion prediction.
2. **SmartAlerts**: A R and Python-based algorithm, eliminates notifications about penalties, PEP, and negative media, which enhances data quality and minimises rework.
3. **NextSTEP™**: is a platform for service delivery that uses "shrinking-the-core" to deliver solutions and accelerators more quickly, at a lower cost of change, and with zero touch.
4. **NextAngles™**: For AML Alert Investigation, UBO hierarchy determination, Negative News Alert detection, and Data Completion from Public Sources, Government Registries/Portals, and Other Paid Sources, this is a KYC and AML processing solution.

17. MPHASIS ABCD ANALYSIS :

ABCD analysis framework was introduced as business analysis framework during 2015 to analyse the different systems in business. It helps to determine the business concepts in terms of its advantages, benefits, constraints, and disadvantages. It also helps to analyse any technology, information, or human resource in terms of how it is beneficial to the betterment of social issues [13-18]. When examining the company value, the ABCD framework is utilised to assess the individual potentials, system features, efficacy of a concept or idea, and effectiveness of a plan [64-73].

In Mphasis ABCD Analysis, the advantages and disadvantages are the internal factors whereas benefits and constraints are the external factors.

ABCD Analysis enables a brand like Mphasis to benchmark its business & performance as compared to the competitors.

17.1. Advantages:

The advantages of Mphasis as follows:

1. Rising Net Cash Flow and Cash from Operating activity
2. Growth in Net Profit with increasing Profit Margin (QoQ)
3. Employment strength of 38000 with presence in 14 countries

4. Stocks where Mutual Funds Increased Holdings in Past Month
5. Consistent Highest Return Stocks over Five Years - Nifty500
6. Company with high TTM EPS Growth
7. High Piotroski Score with High Return on Equity (ROE) and EPS Growth
8. Good quarterly growth in the recent results
9. Company with Low Debt
10. Increasing Revenue every Quarter for the past 4 Quarters
11. Strong cash generating ability from core business - Improving Cash Flow from operation for last 2 years
12. Annual Net Profits improving for last 2 years
13. Book Value per share Improving for last 2 years
14. Company with Zero Promoter Pledge
15. FII / FPI or Institutions increasing their shareholding
16. MFs increased their shareholding last quarter
17. Cognitive Twin helps Easy Learnability and Adaptability Based on Domain and Technology Knowledge
18. Enhanced Problem-solving Capability by Cognitive Twin
19. Significant Reduction in Time, Cost, and Effort in Arriving at Solutions using Cognitive Twin
20. Collaboration and Incorporation of User Feedback in Search Results by Cognitive Twin

17.2. Benefits:

The benefits of Mphasis as follows:

1. Brokers upgraded recommendation or target price in the past three months
2. Positive Breakout First Resistance (LTP > R1)
3. Highest Recovery from 52 Week Low
4. Rising Delivery Percentage Compared to Prev Day
5. Street Favourite: High Analyst Rating with at least 20% upside
6. Cognitive Microservices Allows Users to Focus on Feature Enhancements and Not Algorithm Development
7. Cognitive Microservices Reduces Time, Cost, Effort, and Complexity to Transform Data to Insights
8. OPTIMIZE.AI reduces operational cost and throughput time
9. Data-driven, faster, cheaper, and more accurate business process discovery using OPTIMIZE.AI
10. OPTIMIZE.AI helps in Identification of deviations and compliance issues
11. Prediction of user and process journeys to better manage the system design and flow using OPTIMIZE.AI
12. Continuous monitoring for compliance and performance support by OPTIMIZE.AI

17.3. Constraints:

The constraints of Mphasis as follows:

1. Increasing Trend in Non-Core Income
2. A slowdown in US economy as major client base is from US
3. Attrition and Employee loyalty
4. Stocks with Expensive Valuations according to the Trendlyne Valuation Score
5. Increasing Trend in Non-Core Income

17.4. Disadvantages:

The disadvantages of Mphasis as follows:

1. Expensive Underperformers (DVM)
2. Bearish Stocks - Stocks with Medium to Low Trendlyne Momentum Score
3. Lowest Momentum Scores (Technical Scores)
4. Promoter decreasing their shareholding
5. Declining Net Cash Flow: Companies unable to generate net cash
6. Weak Momentum: Price below Short, Medium a Trendlyne Momentum Score

7. Promoter decreasing their shareholding
8. Expensive Underperformers (DVM)
9. Sell Zone: Stocks that are undervalued based on days of trading at the current PE and P/BV.

18. FINDINGS AND SUGGESTIONS :

- (1) Mphasis offers opti-channel engagement to users through wearables, touchscreens, and conversational interfaces with the help of chatbot to seamlessly engage with employees.
- (2) Real-time data on the use of Talents by authorised users.
- (3) Users require no training, as chatbot is enabled with natural language processing (NLP) and is conversational.

19. CONCLUSION :

The characteristics of their algorithm determine the capabilities of intelligence machines. These intelligent computers' cognitive abilities aid in the autonomous analysis of massive volumes of data, as well as in helping to improve business decisions and significantly lower the likelihood of human error. The use of chatbots is now widespread across many industries. In India, it has brought about significant improvements in customer service and human-computer interactions. It has simplified task execution and improved the ease with which queries are resolved. Using digital technologies in legacy environments, Mphasis' various service models have helped the organisation "reduce the core" and become more sustainable. Building successful partnerships with high-profile clients requires Mphasis' fundamental reference architectures and tools, speed, and innovation with domain understanding and specialisation.

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