Customer Interaction Analytics: Concepts, Applications and Scope

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Abstract: Analytical Capability is the key factor for innovation and sustainable business growth. The large amount of data generate ongoing challenges to firms, owing to the increasing cost of operation, complexity of technology, global competition, accelerating business change, competing technical canons, and increased customer experience.

Speech Analytics solutions combine data from different sources with predictive analytics mechanism to present composite and valuable insights to decision makers. The objective is to advance the timeline and quality of participations to the decision making capabilities of the business executives. Business Intelligence and Analytics Solutions are used to apprehend the capabilities with the help of information available within the organization; the state of the art, technology trends, and future vision of the industry, the competitors, and the supervisory environment in which the firm vies; and the actions of opponents and the effects of these actions.

This paper describes the inception, usability and application of Customer Interaction Analytics solutions. Although business intelligence solutions are widely used in industry, research about the usability of speech analytics solutions are very limited. This paper express about the usability and significance of speech solution in different industry.

Keywords: business intelligence, analytics solutions, Interaction analytics, speech analytics

INTRODUCTION

During the last decade, information technology has transformed both in the sense of advancement of technology and the aspect of designing application architecture and platform. There is a need of a framework to analyze the inputs from different operational divisions of the organization.

Every day, we create 2.5 quintillion bytes of data — so much that 90% of the data in the world today has been created in the last two years alone. (Mukherjee & Shaw, 2016).

This data comes from different sources for example sensors used to gather weather information, posts to social media portals, digital pictures and videos, purchase transaction records, and mobile phone's GPS signals etc.

Such massive amount of data that is being created continuously has originated the need of analytics. Since a huge amount of data is involved in data analytics it also termed as big data analytics. Big Data interprets previously untouched data to derive new business insights which get integrated into business operations. However, as the quantity of data increases exponentially, the existing techniques are found as obsolete. Big data analytics requires comprehensive coding skills, domain awareness and statistics.

The opportunities associated with data and analysis in different organizations have helped generate significant interest in business intelligence and analytics solutions, which is often referred to as the techniques, technologies, systems, practices, methodologies, and applications that analyze critical business data to help an enterprise better understand its business and market and make timely business decisions. In addition to the underlying data processing and analytical technologies, BI&A includes business-centric practices and methodologies that can be applied to various high-impact applications such as e-commerce, market intelligence, e-government, healthcare, and security. (Chen, Chiang, & Storey, Business Intelligence and Analytics: From Big Data to Big Impact, 2012).

Big data can also create a world where maintaining control over the revelation of our personal information is challenged constantly. Present analytical techniques don't work well at large scales and end up producing false positives that their efficacy is undermined and enterprises move to cloud architectures and gather much more data, the problem is becoming worse. Big data analytics is an effective solution for processing of large scale information as security is major concern in enterprises. (Kalra & Sabia, 2014).

SPEEH SOLUTION

Customers interact with the service providers with the multiple ways like voice call, email, social media, instant messaging, and much more. Customers interact with almost 6 different media channels with their service providers on an average. Since last decade emerging technologies are fashioning even more interaction alternatives.

In spite of the fact that there are multiple ways to interact with the service providers, customer prefers to call support center to short out any query or grievances. When a customer call to the customer contact centers they generate a wealth of information and opportunities there.

Speech Analytics is a key component of interaction analytics solution. It is the key to unlock the hidden acumens for improved customer satisfaction and reliability, greater functional efficiency, and better agent performance. It combines the best-of-breed technologies to analyze real time discussions and historical (post-call) assessment, to quickly categorize and examine 100% of the voice interactions.

- **Phonetic Indexing** - By converting the entire conversation into a string of phonemes, the basic units of speech, our indexing technology can promptly recognize a predefined list of words or allow free text searches. This approach is perfect for evaluating the calls as they happen and eliciting next-best-action agent management or supervisor alerts

- **Speech-to-Text Transcription (STT)** - This approach exchanges entire audio into standard text, smoothing deeper data mining. By independently pattern recognition, across different recordings and channels, STT technology benefits you to find root causes and trending issues in customer interactions

- By applying these two technologies together, speech solutions creates a powerful speech recognition system that takes advantage of the best of both processes: the quick Phonetics Indexing to analyze and classify the large number of calls in less time, with the ability of the root-cause analysis and Transcription to 'explore what you don't know'

THE CUTTING EDGE OF SPEECH ANALYTICS

- **Speaker Identification**- Speech solution helps to identify the phrases and what has been said during the calls however it is not enough to identify what said; organization needs to identify who said it. Speech Analytics Solution speaker separation technology uses sophisticated acoustic algorithms to isolate two speakers on a single audio channel into separate virtual channels, allowing their speech to be analyzed discretely.

- **Emotion Detection** – Identification of the emotional state of the customers by scrutinizing their voices for illuminating variations in pitch or tone.

- **Talk-Over Scrutiny** - Highlight those instants when the customer and contact center agent are talking at the same time, an indicator of customer dissatisfaction. When neither of them are in conversation, though, it's time to understand the agent knowledge gaps.

- **Hot Phrases/Trends** – Speech analytics solution uncovers and defines the most frequent topics stated by customers, categorizing trending customer satisfaction issues.

- **Root Cause Analysis** - For subterranean analysis, the speech analytics engine drills down into most frequently used customer reactions and hot topics for most precise underlying drivers.

- **Visual Context Analysis** - Text analytics solution also correlates identified root-cause phrases with other appropriate phrases used during the same customer interactions.

- **Call Part Analysis** - Using state-of-the-art technology, organization can separate discrete parts of transcribed calls in order to isolate specific interaction weak points and take curative action.

TRADITIONAL QUALITY MANAGEMENT CHALLENGES

Traditional approaches of analyzing customer interactions to drive business results are manual and time taking exercise, so organizations can only afford to investigate a sample of the customer interactions. A small sample sets do not represents the total volume of customer interactions. To get a more precise understanding of compliance and agent performance, organizations would be required more resources. Manual evaluation of the total volume of interactions is also cost-prohibitive.

Speech analytics solutions bank upon speech-to-text (phonetic conversation) engines, which are not precise enough for factual determination of expressions, leading to many omissions of the meaning, compliance defilements and numerous "false-positives". In addition, the espousal of digital channels puts more hassle on the requirement to be able to study both speech and text oriented interactions like email,

chat, and social media communications. This inaccuracy results in a absence of actionability from voice analytics and amplified manual work for your processes and quality management crews.

WHY SPEECH ANALYTICS

Speech analytics is the process of using specific speech recognition engines to find valuable facts in interaction data. Speech analytics solutions identify words and scrutinize audio patterns to distinguish emotions and strain in a speaker's voice.

Speech analytics solutions are often used in contact centers to recognize insights like the motive for the call, the keywords mentioned and the caller's attitude. If efficiently used, speech solutions can quickly recognize a customer's needs, wants and expectations. It indicates areas that need improvement for agents and the business. Speech solutions allow a business to take action on the insights extracted from the customer interactions and gain business value.

Speech analytics solutions are being used to monitor the agents' performance and coach them in managing clients and their data. Speech analytics solutions help organizations in recognizing selling opportunities, script tracking, adherence and regulatory compliance.

With the help of speech solutions, organizations frequently coach to agents to improve first call resolution and shorten average handle time. Through analysis of both customers and agents' interactions, organizations identify the operational issues. Organization leverage issues identification in task allocations and performance management.

LITERATURE REVIEW

After having spent the last decade implementing enterprise resource planning software and other solutions that support their operations, companies now have large databases with transactional and operational data. Thousands of consulting hours and sometimes millions of dollars later, the return-on-investment scorecards range from poor to very good. However, one desire is common across all industries: to be able to quickly and easily analyze their data in the corporate databases in order to be able to make more intelligent decisions about the future. (Rasmussen, Goldy, & Solli, 2002).

Business intelligence and analytics (BI&A) and the related field of big data analytics have become increasingly important in both the academic and the business communities over the past two decades. Industry studies have highlighted this significant development. (Chen, Chiang, & Storey, Business Intelligence and Analytics: From Big Data to Big Impact, 2012).

For example, based on a survey of over 4,000 information technology (IT) professionals from 93 countries and 25 industries, the IBM Tech Trends Report (2011) identified business analytics as one of the four major technology trends in the 2015s. In a survey of the state of business analytics by Bloomberg Business week (2015), 97 percent of companies with revenues exceeding $100 million were found to use some form of business analytics. A report by the McKinsey Global Institute (Manyika et al. 2011) predicted that by 2018, the United States alone will face a shortage of 140,000 to 190,000 people with deep analytical skills, as well as a shortfall of 1.5 million data-savvy managers with the know-how to analyze big data to make effective decisions. (Chen, Chiang, & Storey, Business Intelligence and Analytics: from Big Data to Big Impact, 2012).
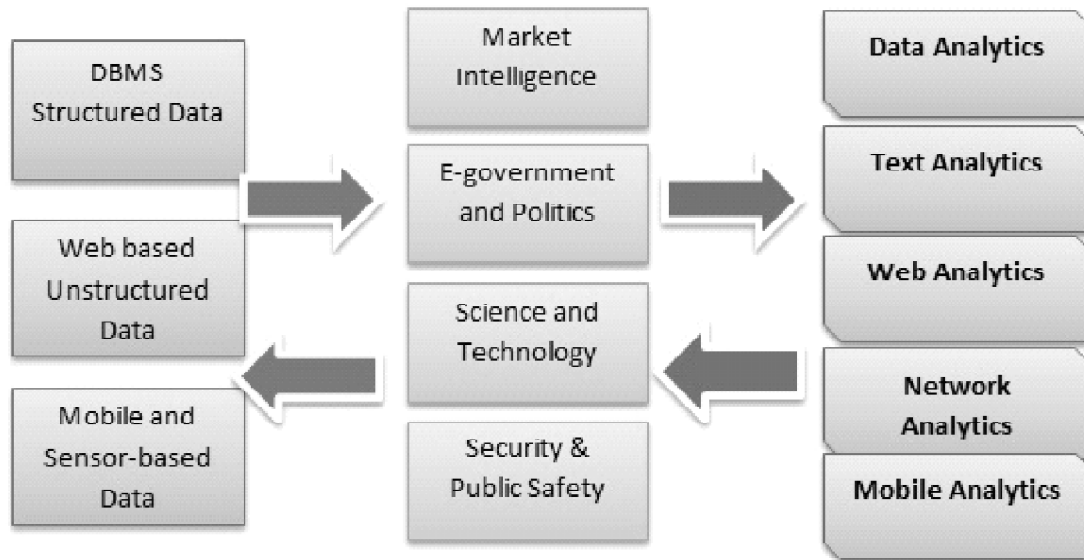
Figure 1: Overview: Evolution, Applications and Emerging Research

WHY SPEECH ANALYTICS?

Organizations plan to drive robust customer relationships by delivering seamless customer experiences across the different communication channels. Handling customer interactions through the different channels is vital for organizations to be customer focused in their approach. However, it expressively adds up to the overall operational cost. This cost further increases with the seasonal increment in the call volume, amplified average handle time, and recurring contacts by customers to discuss the same problem. These defies can turn a "customer contact centers" into a "cost centers".

Call centers are still rely on the customary interaction monitoring and valuation method. Due to this they have been missing out the exceptional opportunities for the service improvement. Supervision of millions of customer calls annually costs a lot to them. Variances like repeat calls, longer average handle time, and disorganized processes can further supplement this cost. By using an integrated speech analytics solution, contact center can save a huge amount of capital annually, while taking their operational proficiency and enactment to the next level.

COMPARISON BETWEEN SPEECH ANALYTICS AND THE TRADITIONAL CALL EVALUATION METHOD

Speech analytics solutions are an effective tool in comparison of the traditional call monitoring and assessment method. It helps to evaluate 100 % of customer calls automatically which further enhance the quality standards.

Traditional call quality monitoring method includes analysis of the handful of randomly chosen calls; it doesn't portray the comprehensive representation of customer contact center operations which includes key issues and chance of perfection. Apart from the agent routine performance development, it misses out on numerous worthwhile opportunities – to upturn process competences, reduce high functional costs due to poor KPIs enactment, and improve overall customer experiences.

Factors	Speech Analytics Solution	Traditional Call Monitoring System
Nature & Time Consumption	Manual, Time Consuming & Expensive	Automatic, Fast & Cost-effective
Significance & Reliability	Statistically insignificant due to small sample sizes	Statistically significant due to 100% data analysis
Insights	Delayed and Limited Insights	Immediate and Comprehensive Insights with Drill-down Facility
Trend Analysis	NA	Spontaneous Trend Analysis
Prediction	NA	In-built predictive models to forecast future outcomes and trends
Prescription	NA	Recommendations to meet future opportunities and risks, along with what-if risk assessment
Workflow Integration	NA	Seamless workflow Integration for quick actions
Customized Reporting	NA	Detailed and customized reporting with an instant reports sharing ability
ROI Calculation	NA	ROI Calculation based on in-depth analysis reports on FCR, AHT, Retention, Collection, Sales, etc.
Context Creation	Inadequate descriptions on what is happening or had happened	Advanced context creation with insights on what, why, when and how
Sentiment Analysis	Customer voice sentiments analysis,	

Figure 2: Differences between Traditional Quality Monitoring Approach and Speech Analytics Solution

As the time passes by, the lost opportunities will be increased and lead to the high cost of delaying the acceptance of the speech solution for the customer contact centers.

HOW SPEECH SOLUTION CAN DECREASE THE CONTACT CENTER COST AND IMPROVE OPERATIONAL EFFICIENCY?

With the help of the speech analytics solution, customer contact centers can significantly reduce the cost of their operations by restructuring the key processes, optimizing client interactions and deflecting additional calls to more apposite and cost-effective channels. This can further lead to additional benefits like improved operational effectiveness and customer experiences.

A speech solution pinpoints words and phrases most often used within a specific time period to deliver automated trend study, displaying whether the usage is increasing or decreasing. Using this facts, customer contact centers can immediately spot vagaries in consumer behavior and take appropriate actions

to shrink the call volume. This can be accomplished by quickly updating self-service channels like website, IVR, or flowing information on social media sites. Agents can also be supervised near real-time on how to quickly handle those rising customer queries via different channels.

Different automation tools like quality management systems can be combined with speech analytics solution to identify the key call drivers of Repeat Call, Customer Satisfaction, Average Handle Time, Call Transfers, Quality Scores, NPS, Process Strengths, Weaknesses, and help to improve the overall efficiency of a contact center. Using speech analytics, following are the crucial developments that can be brought about:

Self-service Channels Improvement

High incoming call volume means high handling cost for customer contact center. This cost can be reduced by reducing the number of incoming calls and enabling customers to help themselves, contact centers can drastically reduce the cost per call.

With the help of Speech Analytics Solution, customer contact centers can analyze customer interactions to classify customers' channel choices, spot the causes of customer calls, and recognize low snag calls that can be easily controlled over self-service channels. By handling low significance and low complication calls through self-service channels, customer contact centers can not only lessen the costs of their operations, but also improve customer satisfaction and agent productivity. Improving the effectiveness of self-service channels will mostly encompass the following steps:
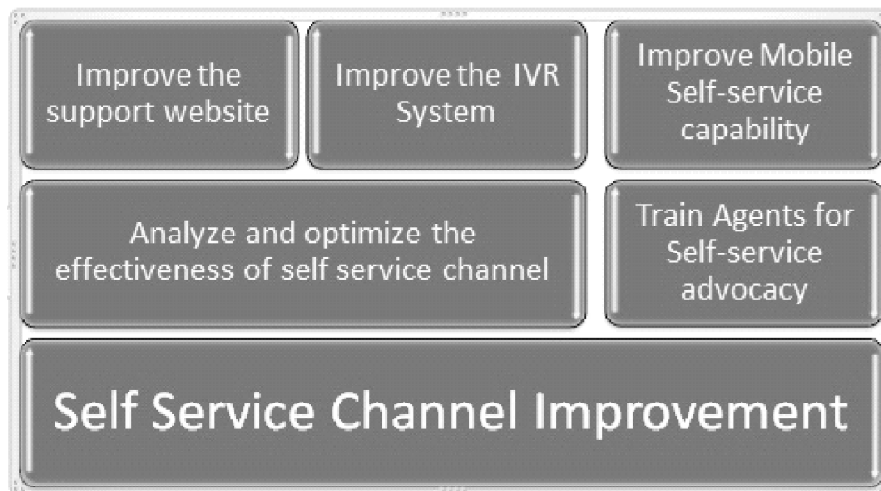
Figure 3: Necessary Steps for Improving Self-service Channels

FCR Improvement

Customer Contact Centers' failure to solve customer inquiries in the first call can be the reason of repeat calls, higher cost of customer service and customer disappointment. Understanding the top drivers of repeat calls is necessary to take corrective actions for the FCR enhancement.

To perform a Call Driver Analysis, speech solution classifies different call types causing to repeat calls and thus high call volume in a customer contact center. Further analysis benefits diagnose frequently used

words and phrases in customer discussions and the reasons of repeat calls. Mingling the speech data with other data features like agent / customer demography, CRM, IVR etc., an analytics solution provides a unique value scheme to not only measure the FCR but also to forecast the potential repeat calls.
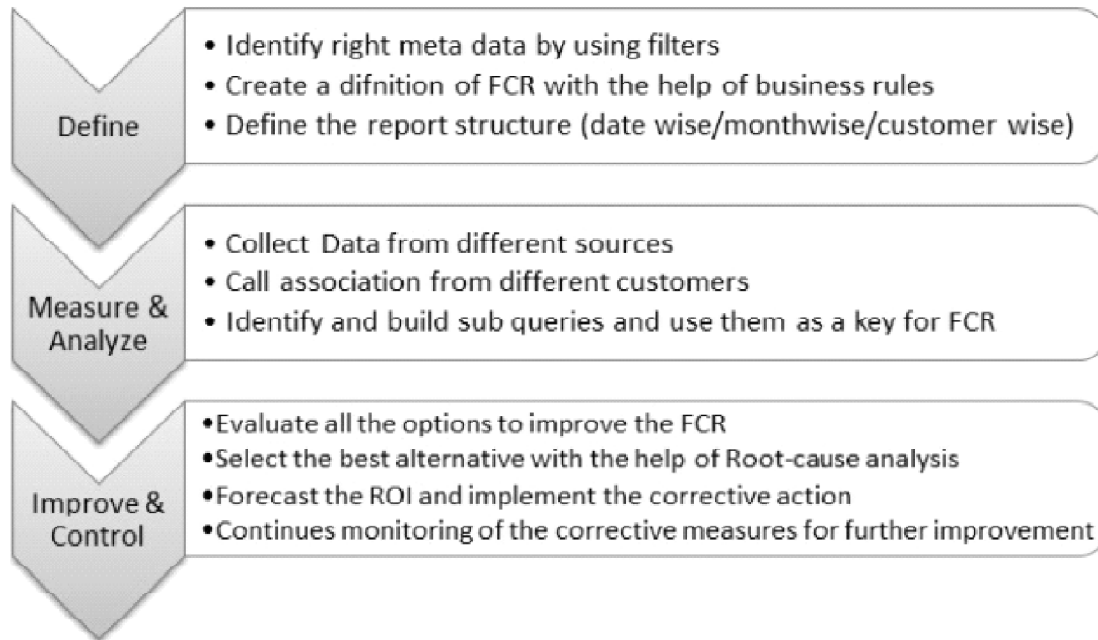

Figure 4: FCR improvement steps

The FCR analysis can be leverage to curtail repeat calls by 5 to 10 percent. Estimated 10% improvement in FCR can directly lead to potential annual cost saving of over $ 5 million for a mid-size contact center with around 1 million annual call volumes. (R Systems; Anagram, 2016)

Improvement in Average Handle Time

AHT is a key performance metrics that precisely defines a customer contact centers' overall functional efficiency. Almost every contact center carefully traces this metric as it is directly associated with the operational cost and customer experience.

Disproportionate silences should be avoided on client service calls. Long call lengths show that the agent is not able to professionally handle the customer inquiry. Besides, long silences intensify the total call time, and hence the cost of contact center service. These can further impact the queue times and users' experience.

Compliance Monitoring With Speech Solutions

Meet the compliance and regulations are essential for customer contact centers. Non-compliance with regulatory guidelines can lead to several dreadful consequences like heavy fines and consequences. This can further cause an unalterable damage to an organization's reputation. Leveraging speech analytics solutions, customer contact centers can automatically score and gauge 100% of all calls, thwarting the risk of heavy penalties and litigations associated with non-compliance.

Customer contact center agents are essential to include certain conversation, while discussion with customers to meet compliance norms. With well-defined and simple business rules, speech analytics classifies calls with and without the declarations mandatory for the compliance drive. Using these insights, contact center agents can be taught to meet compliance standards more efficiently.
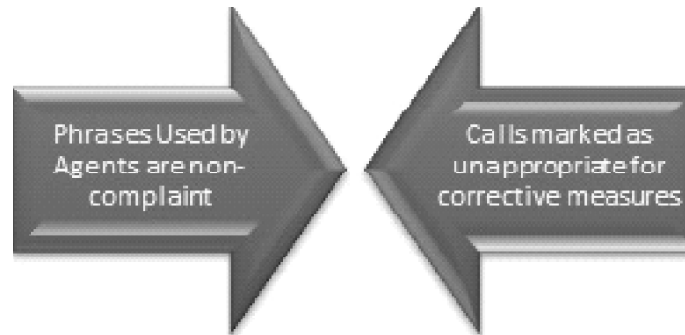
Figure 5: Speech Analytics for Compliance

Reduce Customer Effort and Improve Loyalty

Harvard Business Review introduced the new term 'customer effort' in 2010. Harvard report revealed that by reducing customer effort an organization can increases customer loyalty.

Consumers' impulse to punish bad service—at least more readily than to reward delightful service—plays out dramatically in both phone-based and self-service interactions, which are most companies' largest customer service channels. In those settings, our research shows, loyalty has a lot more to do with how well companies deliver on their basic, even plain-vanilla promises than on how dazzling the service experience might be. Yet most companies have failed to realize this and pay dearly in terms of wasted investments and lost customers. (Dixon, Freeman, & Toman, 2010).

Customer loyalty is a commanding indicator of customers' willingness to continue using services or doing business with an organization; increase their expenditure and feast positive word-of-mouth. Contrariwise, the more effort customers exert to make businesses, the more displeased they are.

Customer interaction analytics is an exclusive way to quantity and reduce customer effort score. It includes gaging CES by scrutinizing customer interaction data. This eliminates the need to conduct a different CES survey. Customer effort is recorded using each customer interaction be it phone, email, chat or social media interaction.

As conducting a CES study is a costly and time consuming method, interaction analytics is a better option in terms of cost-efficiency, precision and speed. Customer interaction data collected to score customer effort is used as a key for tumbling customer effort across all touch-points.

HOW DO COMPANIES MEASURE CUSTOMER EFFORT?

Companies did not want to replace one metric with another or simply add another overall metric that did not provide actionable insight. Each company spent some time trialing and reviewing how an approach to customer effort would work for them. (Clark & Bryan, 2013).

For Example: British Telecom has developed their own 'net easy' metric, which is similar in structure to the NPS scale. They can apply this across all contact channels, including voice, web chat, online, email, social media, white mail and IVR. (Clark & Bryan, 2013).

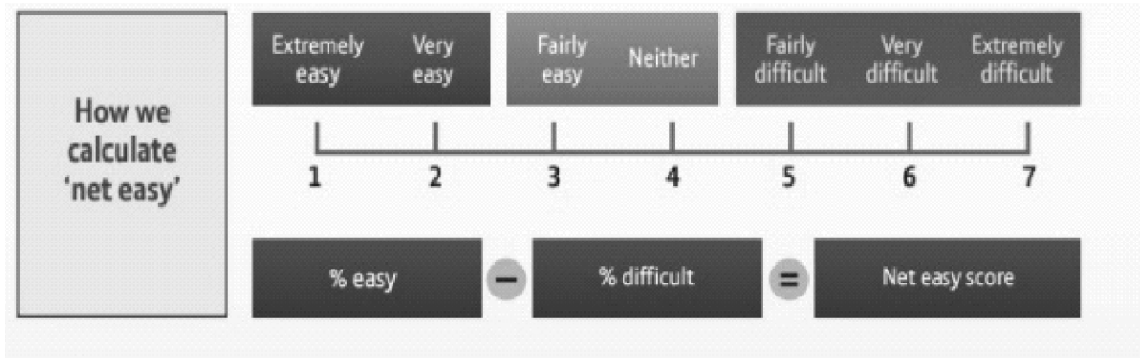**Overall, how easy was it to get the help you wanted today?**

Figure 6: British Telecom 'Net Easy' Score

Outpacing the outdated survey technique, interaction analytics appeared as a more effective method to determine CES. Organizations have adopted this revolutionary technology to reduce customer effort and advance customer satisfaction and loyalty.

FUTURE SCOPE OF SPEECH ANALYTICS SOLUTIONS

Moving onward, the customer interaction analytics space will grow exponentially. Organizations have realized the importance of n the technology and automation in contact center quality monitoring. An effective quality management leads to the seamless customer experience; which further leads to the ROI and word of mouth publicity. Interaction analytics solutions are intuitive in order to get more scrutinized data to stakeholders' desk so they can take better, faster decisions about customers and service— not just with reference to the customer contact center, but across the organization. However, adoption of speech technology may continue to lag if only big organizations can afford the solutions due to high investment.

Speech solution needs to have a cross-functional compatibility in order to reach outside the contact center to boost the entire business. Eventually, analytics is more than speech, for today's tools can analyze far more than just the interaction at hand. Advanced tools also enable companies to assess how agents use said tools during those interactions, allowing leaders to pinpoint problems and improve agent performance in an effort to boost customer satisfaction and reduce handle times. (Speech Analytics Goes Back to the future, 2017).

The speech analytics market size is estimated to grow from USD 589.1 Million in 2015 to USD 1.60 Billion by 2020, at an estimated CAGR of 22.0% from 2015 to 2020. (Speech Analytics Market: Global Forecast to 2020, 2016).

CONCLUSION

Organizations' current investment resolutions have a significant sway on their future outcomes. By evaluating 100% of customer interactions, organizations can get more inclusive and meaningful insights. By these

insights, customer contact centers can control excessive call volume, improve FCR and AHT, as well as increase agent efficiency and performance.

If they decide to postpone the adoption of an analytics solution, they would be delaying its impending benefits, such as the opportunities of shrinking the cost of operations and taming overall business efficiency. According to the speech solutions' industry leaders and early adopters, speech analytics delivers a rapid ROI as soon as in one to three quarter of time. Where early adopters are already harvesting its rewards, new adopters stand to benefit in numerous ways by implementing Speech Analytics. Its procrastination can cause several missed opportunities that can generate immense value for organizations by means of reduced costs, improved efficiency and enhanced customer experience.

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