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Articles

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** New Series*

Nirma University Journal of Business and Management Studies

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Contents

Articles

IMPACT OF ALTERNATIVE DATA ON FINANCIAL MARKETS WITH SPECIAL REFERENCE TO U.S. PRESIDENT TRUMP'S TWEETS

Renisha Chainani*
Bharati V Pathak**

ABSTRACT

In recent times we have seen Twitter becoming a key source for accessing freaking information and learning about events. This medium of 'Alternative Data' as a 'New Normal' is used by global investors to beat market returns. This empirical and conceptual research paper looks at the sentimental impact of sample tweets of US President Donald Trump on different financial asset classes such as Capital market[a] (denoted by the DJIA-Dow Jones Industrial Average Index[d]), foreign exchange markets (represented by the Dollar Index), commodity markets (represented by COMEX Gold Price) and bond markets (represented by US Government 10Year Treasury Bond Yield). Twitter sentiment analysis has been carried out on 60 sample tweets selected from more than 5800 tweets posted by him about the US economy, US financial markets and American foreign policy over a period of two years from 8th November, 2016 (when Trump was elected) to 7th November, 2018 (US midyear election results). The Pearson Chi-square Test[g] and Fisher Exact Test[e] were used to find the relationship between the President's tweets and financial asset classes. The outcomes of the paper

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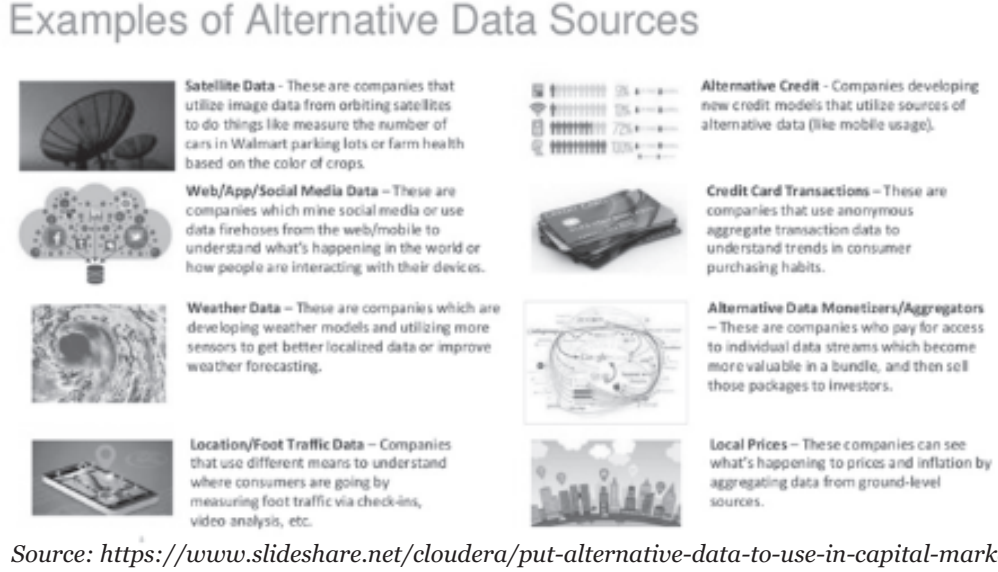
indicate that the sample tweets have had a significant impact on the Dow Jones Industrial Average Index and the US Government 10 Year Treasury Bond Yield; but have not had much of a significant impact on the Dollar Index and Gold prices on a daily basis.

Keywords: *Twitter, Sentiment, Dollar Index, Donald Trump, Tweet, Gold, DJIA, US 10 Year Bond Yield*

1. INTRODUCTION

Active fund managers are having a harder and harder time beating benchmarks year after year, so they are constantly looking for an edge. One of the ways to do this involves looking at data that is not commonly used or hasn't been commonly used. As we know, differentiated, reliable and real time information is key to staying strong in today's cultural, competitive trading environment; however breaking news can impact even the most impressive trading strategies. Traditional sources of real time information are being seen all the more as backwards and slow.

One area of finance that is rapidly expanding is the introduction of *alternative data*. Unlike traditional data sources, alternative data is information collected and utilized in an investment strategy that does not come directly from the company in question. To stay ahead of the curve, investors are using alternative data as a competitive advantage to generate alpha. Alternative data is defined as a wide array of information that isn't traditionally considered when making investment decisions. These data sets can range from social media feeds, to communications metadata, to satellite imagery, and nearly everything in between [21].



Source: https://www.slideshare.net/cloudera/put-alternative-data-to-use-in-capital-markets-91317[21]

1.1 Why Use Alternative Data?

Considering that traditional data sources in our industry have served us well for numerous decades, one might ponder why one ought to move towards alternative data? First off, utilizing alternative data doesn't mean abandoning conventional information. Instead, including alternative data to our arsenal only serves to upgrade our decision-making process. We'll have more data than before, giving us more of an advantage when it comes to making smart decisions.

Furthermore, conventional information sources have striking esteem. We moreover got to be beyond any doubt that everybody else inside our industry likely has get to those same information sources. What we're collecting isn't precisely new or unique. Elective information sources, on the other hand, can provide special experiences that don't continuously acclimatize with ordinary thought in our industry. A failure to utilize alternative data means we are only getting a portion of the overall picture; so we would be making investment decisions based on fragmented data.

1.2 Using Social Media as Alternative Data

"Alternative data (finance)" (2017) [3] refers to data used to obtain insights into the investment process. These datasets are often used by hedge fund managers and other institutional investment professionals within an investment company. Alternative datasets refer to information about a particular company that is published by sources outside of the company, which can provide unique and timely insights into investment opportunities.

Alternative data sets are often categorized as big data, which means that they may be very large and complex and often cannot be handled by software traditionally used for storing or handling data, such as Microsoft Excel. An alternative data set can be compiled from various sources such as financial transactions, sensors, mobile devices, satellites, public records, and the internet. Alternative data can be compared with data that is traditionally used by investment companies, such as investor presentations, SEC filings, and press releases. These examples of 'traditional data' are produced directly by the company itself.

Social media has become the main source of news online with more than 2.4 billion internet users. Nearly 64.5 percent receive breaking news from Facebook, Twitter, YouTube, Snapchat and Instagram instead of traditional media (Martin, 2018) [15]. Information is the life blood of the financial services industry: Everyday, investors and analysts comb through gigantic information sets to create the smartest monetary decisions. While traditional data

sources, such as quarterly results, earnings calls, and expert industry insights are still vital, the recent big data trend has made alternative sources of insight critical to today's investment process. As innovation develops, emerging data sets coming from sources like social media and satellite imagery have gotten to be critical resources for finance professionals looking to preserve an information-edge.

The method by which individuals interact with each other has been modified by Twitter — The Social Networking platform. Twitter[j] is a 'micro blogging' platform that allows us to send and receive concise posts referred to as tweets. Tweets can be up to 280 characters long and can embody links to relevant websites and resources.

The big question here is how to remain ahead when innovation and more particularly Twitter has forever modified how news is breaking. We can see a dramatic shift in how information and data is being utilized. More recently we've seen Twitter in particular, becoming a key source for getting to freaking information and events. It gives readers characteristics of being a worldwide one to numerous for communication. Companies, governments, on-ground sources, local correspondents, and subject matter specialists are among others who are leveraging Twitter in an effective way. If someone is not already leveraging Twitter[i] as one of the core sources of breaking information, they are really missing out on a key differentiator.

Within the past decade, Twitter has experienced an enormous advancement around the world with the advancement of social networks. It's no wonder that so many analysts have begun to look at the ways in which this micro-blogging platform can be utilized to seek out new applications in across domains. Online sentiment tracking has surprisingly managed to get importance in the last few years; however, its range of applications is actually more extensive. Particularly, some analysts have taken a concern for the probability of foreseeing financial market trends by gauging the Twitter sentiment.

E.g. Carl Icahn, founder of Icahn Capital Management, reported on August 13, 2013 about his position on Apple Inc, over Twitter, calling it essentially underrated. Just in a few seconds the Apple stock saw a bullish rally and in minutes its market cap rose by $17 billion.

Source: Financemagnates.com

1.3 President Trump Social Media presence

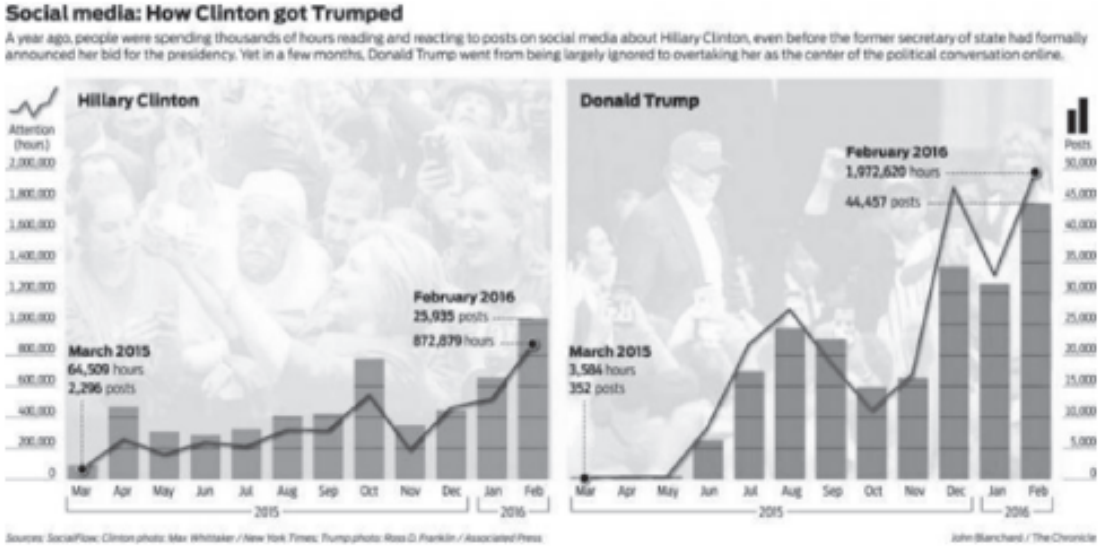
An avid user of Twitter long before his most recent bid for the presidency, President Trump has developed a highly individualized voice through his Twitter feed; one that is strengthened by the sheer output of tweets and the greatly repetitive and self-referential nature of his tweets.

Hailing him as 'modern day presidential', Trump's victory and ubiquity is generally due to his internet presence. Within the months driving up to the presidential race, it was detailed that "as much as 45% of Trump's campaign budget in a given month [was] committed to digital outreach and research". This funding was primarily spent on surveys and voter identification, utilized towards developing one of the foremost vigorous combinations of political Big Data in America. Bloomberg has cited that the value of Trump's voter information database was as much as $100 million. This collection of data does not incorporate the more provocative, and thus, more 'shareable' angle of Trump's online candidacy: his use of social media to spread influence in the form of attack ads and fake news.

In addition to empowering activity among his supporters, Trump also effectively worked to restrain his opposition through social media. He had three major voter concealment operations under way, aiming the Trump social media behemoth at bringing down the voter turnout of key Clinton groups: white liberals, youthful ladies, and African Americans. Posting advertisements that played off Sanders supporters' disinterest in Clinton, which emphasized

Bill Clinton's history of sexual wrongdoing, the Trump campaign centered its endeavors on lessening support for Clinton just as much as raising his own impact.

By utilizing Facebook as a means to spread his impact and attest his political presence, Trump managed to reach more distant voters than possible under conventional strategies of political advertising. Trump's ability to seize control of public attention is displayed in the picture below. He quickly surpassed Clinton in social media presence, cementing his presence and validating his political identity.



Trump's social media presence [26] is maybe the single most critical angle of his candidacy. On Facebook alone, Pro-Trump advocates purchased at least $100,000 worth of advertisements prior to the November election. A former Facebook official gauges that this was sufficient to reach at slightest 126 million Americans. Facebook itself readily offers to political campaigns its claim deals staff, who are prepared to 'assist campaigns in spreading their messages, expanding engagement and getting immediate feedback on how they are performing'. Trump utilized this highly successful service to maximize his Facebook presence, whereas the Clinton campaign did not look for the help of Facebook officials, instead choosing to depend on her acclaimed social media experts. Not only is Trump more engaged online then, but he is more strategic, utilizing each opportunity to gain an edge over other more traditional candidates.

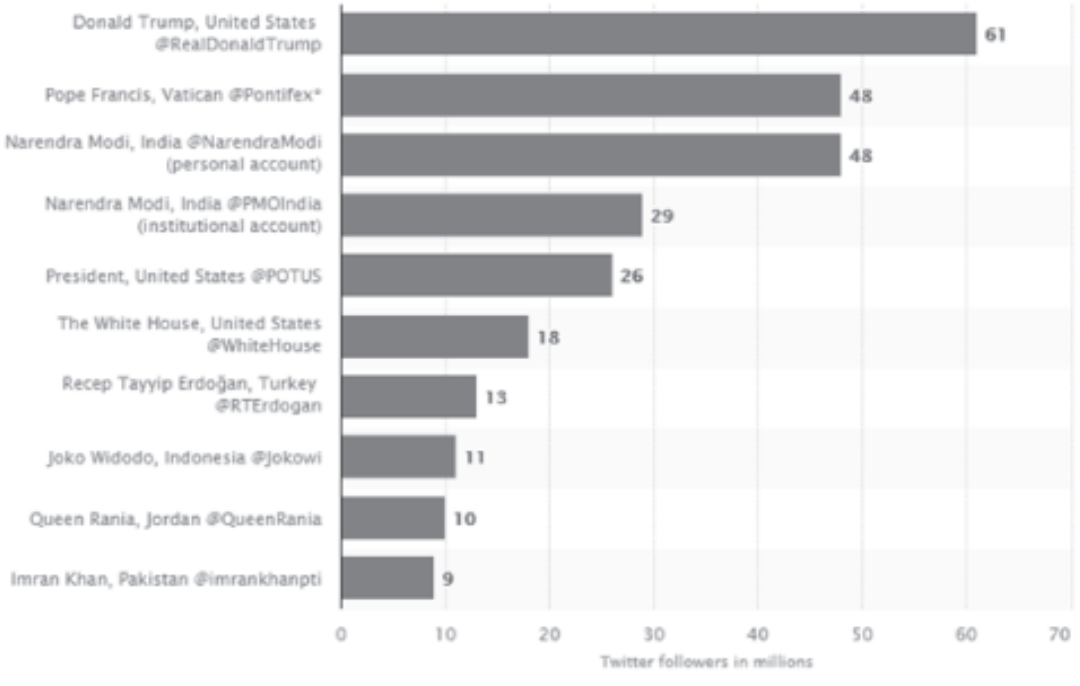
1.4 President Trump Tweets Impact on Financial Assets

As per Statistia[9], based on the latest data of 2018, the micro-blogging service, Twitter, averaged at 326 million monthly active users. Singers and Hollywood celebrities were the

most followed people on twitter. US President Donald Trump has been a Twitter user since March, 2009, and stands at 16th position, after amassing more than 68 million followers and posting more than 47000 tweets, as per the latest data of 2019.

As per Statistia[25], till January, 2019, 187 countries were represented through an official presence on Twitter, either by personal or institutional accounts run by heads of state and government and foreign ministers. During the measured period, U.S. President Donald Trump was ranked first, having accumulated over 61 million Twitter followers on his personal account.

World leaders with the most Twitter followers



Source: Statistia, January, 2019

Twitter has the strength to persuade governments and financial markets through tweets. The way President Donald Trump dominates the media, no other president has managed to do this; for the most part, this is attributable to his extraordinarily active posting habits and his turgid writing traits Ever since Mr. Trump has been elected as President, he has resorted to Twitter to showcase his liking and disliking towards a vast variety of issues, events, policy changes, and much more. Personal or not, his tweets have continually had a profound effect on financial markets, bringing short-term volatility to equities, commodities, bonds and FOREX markets.

President Donald Trump is the second president in power to efficiently take an interest in Twitter, with the first being his forerunner, Barack H. Obama. President George W. Bush did not take part in using the early versions of Twitter which were launched during his second term as President of the US. This could be because Twitter was not that popular those days. As for earlier presidents — Bill Clinton and George H.W. Bush — Twitter wasn't around when they were running for President; nevertheless, both now have active Twitter accounts. A solid promoter of Twitter, President Trump refers to its utilization as a brilliant method to address the citizens of the US in a straightforward manner without any biases or media intermediaries.

The post-race month of December, 2016 gave a variety of representations of the amount of impact Trump's tweets had on the stock value of government contract holders, expressly members within the aviation and defense industries.

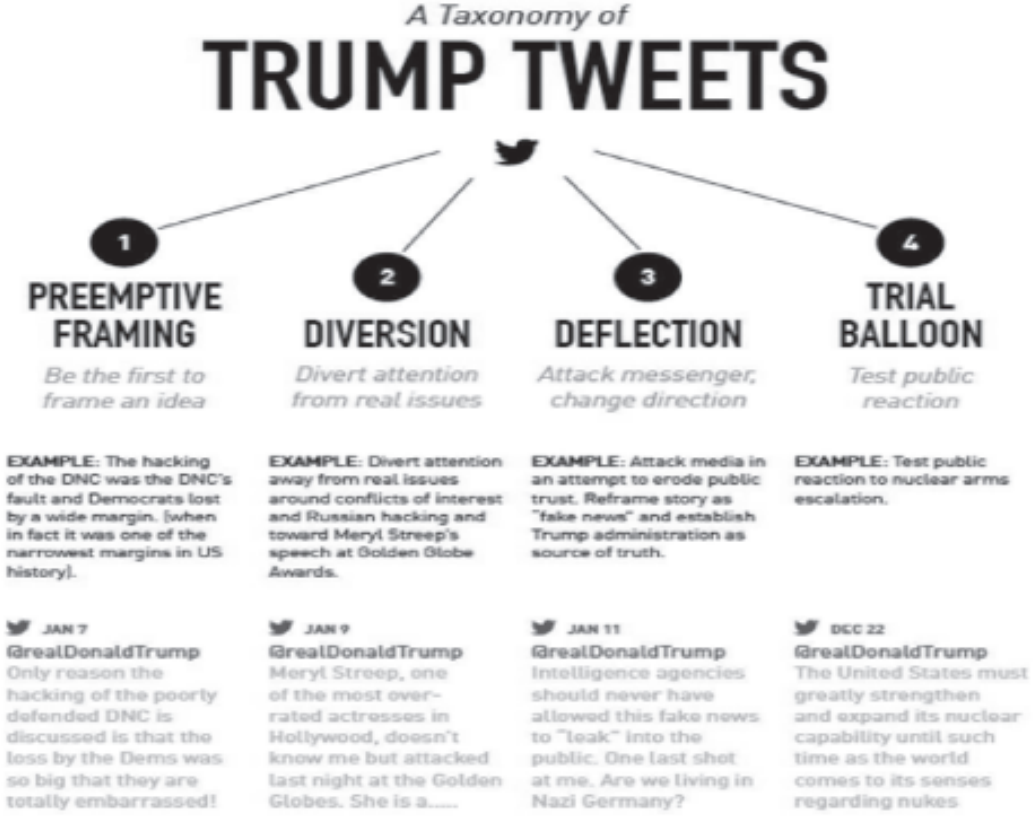
According to a study by the Wall Street Journal, President Trump's Twitter releases impacted twelve major company stocks within the aftermath of his elections in December, 2016. E.g. his tweet [1] regarding Toyota's business operations on January 5, 2017, said: "Toyota Motor said will build a new plant in Baja, Mexico, to build Corolla cars for U.S. NO WAY! Build plant in U.S. or pay big border tax" [25]. As a result, the company stocks lost almost US$1.2 million in market cap in mere 5 minutes of the tweet being uploaded. Over the consequent few months, the stock continued its downward spiral, losing a total of $12 billion in market cap

Mr. Donald Trump tweeted [1] on December 3, 2016 addressing his worries with reference to Boeing's administration contract to manufacture a future Air Force One. He tweeted, "Boeing is building a brand new 747 Air Force One for future presidents, but costs are out of control, more than $4 billion. Cancel order!" [25]. After his tweet, the Boeing stock quickly realized a 1% fall in Market Cap value on the hypothesis that the organization may lose support with the new administration, voiding current government contracts.

Mexico's trade and cross-border relationship had been a prominent theme of the 2016 US presidential election. On January 3, 2017, Mr. Trump tweeted [1] and expressed his annoyance concerning the US auto industry's involvement in Mexico. He tweeted, "General Motors is sending Mexican made model of Chevy Cruze to U.S. car dealers-tax free across border. Make in U.S.A. or pay big border tax!" [25]. After this tweet, USD/MXN rate fell by 2%, to a record low of 21.619 pesos to the dollar. During the extended session, the rate dropped by 3.5%, which then finally led to an intervention by Mexico's Central Bank.

US President Donald Trump has posted over 5800 tweets over a period of two years from 8th November, 2016 (when he was elected) to 7th November, 2018 (US Midyear Election results). Mr. Donald Trump has weaponized Twitter, utilizing it to achieve the majority, as well as to control the news agenda through rants and diversions. Specialists state that the 71-year-old has utilized Twitter in a manner that has no equivalent when compared with other political leaders.

George Lakoff, professor at University of California, Berkeley and also the author of the book 'Don't Think of an Elephant', is a American cognitive linguist, specialist on intellectual science, and a philosopher. The author has investigated the tweets of Mr. Donald Trump and established that President Trump utilizes social media life as a tool to regulate the news cycle. It has exactly the intended effect. His tweets are strategic as opposed to substantive. Professor Lakoff has even made a taxonomy in which he puts the Tweets by Donald Trump into one of four classifications — Pre-emptive Framing, Diversion, Deflection, and Trial balloon[25], shown below.



Source: https://twitter.com/georgeLakoff/status on 3rd Jan 2018[25]

A large number of studies have been conducted on the impact of Twitter and other social media platforms with sentiment analysis on financial markets. Several authors look at the effect of social media, especially Twitter, on financial markets, collecting facts from a large number of social media users for shorter time frames spanning from one month to fifteen months. So, to fill this gap, this study has taken into consideration a larger period of two years from 8th November, 2016 (when Trump was elected) until 7th November, 2018 (US Midyear Election results). Another gap which was identified and filled was that no other researcher had studied the impact of tweets on all four financial markets together, i.e. on the equity market (denoted by the Dow Jones Industrial Average Index), foreign exchange markets (represented by the Dollar Index), commodity markets (represented by gold prices), and bond markets (represented by the US Government 10 Year Treasury Bond Yield).

2. LITERATURE REVIEW

Financial market prediction is one of the most attractive topics in scholarly study as well as in real life business. Many researches have been attempted to address the question of whether financial markets can be anticipated. A portion of this research was based on the random walk hypothesis and the Efficient Market Hypothesis (EMH). Agreeing to the EMH (Fama et al., 1969; Fama, 1991) [10], the present financial market completely mirrors all accessible data. Henceforth, value changes are only due to new data or news. Since news happens haphazardly and is unknowable in the present, financial asset prices ought to pursue a random walk pattern and the best bet for the next price is the current price. On the other hand, various researches determine that the financial market prices don't pursue a random walk, and can be anticipated to some degree (Bollen et al., 2011) [4].

There are three prominent types of online data sources that have been used for financial analysis. First, news sites have been perceived to be important sources for gauging the sentiment of the investor (Tetlock, 2007) [24]. Secondly, search engine data has been informative in anticipating market fluctuations by keeping tabs on search volumes of specific stocks. Lastly, one source of online data is social media feeds. Social media feeds are becoming highly important for determining and measuring the social mood and investor behavior. Twitter is a popular micro-blogging service whereby users write messages called 'tweets'. Millions of messages are written daily, and there is no limitation on the content.

2.1 Alternative data as the new normal

Among investors and portfolio managers, the greatest challenge nowadays isn't getting to alternative data: It's managing, prioritizing, and contextualizing all of it to gather real market

insights from what may effectively be information overload. Never has the cliché, "separating signals from the noise" been more significant, as Dataminr's report [11] on how institutional investors utilize alternative data uncovers. In the third quarter of 2018, Dataminr commissioned WBR Insights to survey trading teams and portfolio managers in Europe and North America about their utilization of alternative data and challenges they confront with this new era of information.

While the lion's share of institutional investors — 79% of those surveyed [11] — use some form of alternative data, many have expressed dissatisfaction regarding interpreting it as real-time data that's relevant to their trading books and portfolios. Some of the top challenges include a need for workflow integration, as well many data sources, and concerns around integrity of information, the wrong type of data, or values that are troublesome to understand.

A recent study by global market intelligence and advisory services firm Greenwich Partners [7] found that 80% of investors need superior access to alternative data. Statistics like this highlight how alternative data has clearly moved from the fringes to the mainstream. In parallel, Greenwich Associates [7] found that fund managers need better access to logistics (36%), evaluated prices (35%), private company data (33%), supply chain risk data (30%), and other data sets to assist in improving investment techniques and performance.

Besides, alternative data has become so predominant, the term 'alternative data' itself has become outdated; more than 60% of asset managers [7], including traditional managers and hedge funds depend on huge non-traditional information sets to foresee future market moves. Management consultancy Opimas shared in its 2017 report "Alternative Data—The New Frontier in Asset Management" that investors are investing approximately 20% more each year to get access to alternative data. Alternative data is no longer alternative, but necessary for any analyst to preserve an advantage in today's advancing market.

2.2 Social media as a communication platform

There is no satisfactorily explainable or mathematically expressible relationship between the stock prices of firms and their respective social media activities (Kaushik et al, 2017) [12]. Although social media has sometimes proven to be very crucial to the changes occurring in stock prices, firms should not worry too much about how they are handling their social media accounts on Facebook, Twitter, LinkedIn, and YouTube. They should only carry out the mandatory practices, essential awareness, and marketing schemes that nowadays every firm carries out.

Bukovina (2016) [6] did an academic research to link social media and capital markets. He studied less rational factors of behavioral finance like investors' sentiment or public mood as influential for asset pricing or capital market volatility. His paper introduced social media data from a technical and economic point of view and contributed to the theoretical construction of the transmission mechanism.

Nguyen et al. (2015) [18] built a model to predict stock price movement using the sentiment from social media; not at all like past methodologies where the general moods or sentiments were considered, where the sentiments of the specific topics of the company were incorporated into the stock prediction model. Zhang et al. (2012) [28] evaluated sentiment in financial news articles. They paired a financial news article prediction system (Arizona Financial Text [AZFinText] system) with a sentiment analysis tool. They found out that subjective articles with positive sentiment predicted positive price direction maximum number of times and vice versa.

2.3 Link between tweets and market performance

Since the conception of Twitter in 2006 studies regarding the properties of Twitter have grown in popularity and can be classified into one of the following streams; Structural, Content, or Sentiment. When evaluating the structural properties of Twitter as a social network, studies have focused on user influentially. Content analysis studies have focused on analyzing the content, virility, and motivations of tweets. Sentiment analysis studies have focused on using Twitter chatter sentiment for predicting behavior.

Mozetic et al. (2018)[16] analyzed that tweets related to EUR and USD currency pair, the EURUSD exchange rate, ECB and FED financial announcements impact the EUR/USD currency pair rates over a period of three years (from January 2014 to December 2016). They showed that there are considerable differences between Twitter accounts in terms of Twitter stance distribution and Cumulative Abnormal Return (CAR). There is a significant correlation between the Twitter stance and CARs of EURUSD currency pair.

In order to explore the relationship between politics-related sentiment and FTSE 100 movements, Yeung et al. (2018) [17] conducted a short-window event study of a UK based political event. Their findings suggest that there is evidence of correlation between the general mood of the public and investment behavior in the short term; however, the relationship is not yet determined as statistically significant. Overall, their results show promise for using sentiment analytics on Twitter data for forecasting market movements. Abbees (2016) [2] extended previous studies to investigate the impact of tweets' sentiment on

stock market movements and make dependable forecasts that could be usable by financial specialists. In reality, he just utilized a rule-based approach to label each tweet with a positive, negative, or neutral value. In any case, the approval of this system depended on an irregular example of 200 opinionated tweets which were manually annotated.

Paul (2015) [19] hypothesized that using Twitter to communicate with investors actually leads to asset mispricing. She reported a negative connection between the log of anomalous volume and firm-started declaration tweets for both product recalls and monthly sales announcements. Ciftci, Kursad, and SerdaOzturk (2015)[8] investigated the relationship between Twitter content categorized as sentiments, such as Buy, Sell, and Neutral, with US Dollar/Turkish Lira exchange rate (USD/TRY) currency movements. The results suggested that there exists a relationship between the number of tweets and the change in USD/TRY exchange rate. Tweets sent by verified accounts in specific dates, show that when stock return has a jump due to news regarding the stock, the number of tweets sent on Twitter jumps in the same direction, adding value to the granger causality analysis (Tabari et al., 2018) [23].

Li et al. (2014) [13] analyzed the news impact from sentiment dimensions. They first implemented a generic stock price prediction framework. Secondly, they used Harvard psychological dictionary and Loughran–McDonald financial sentiment dictionary to construct the sentiment dimensions. Experiments which were conducted on five years' historical Hong Kong Stock Exchange prices and news articles showed that sentiment analysis helps improve the prediction accuracy. Wang and Lu (2013) [27] tried to answer two things: i) Is there any causal relationship between quantified public's Twitter Mood and Dow Jones Stock Indices, and ii) If there is a relationship, can it help predicting future stock indices by including past data of public's Twitter Mood. He used the Granger Causality Test and auto-regression model to conclude that the factor of public mood can predict the stock movement pretty accurately. Sharma and Vyas (2011) [22] performed a sentiment analysis on a tweet corpus collected Using an extended version of the Profile of Mood States (bipolar) (POMS) questionnaire. They extracted the public mood along six bipolar dimensions — Composed, Agreeable, Elated, Confident, Tired, Confused. They were able to employ a well-established psychometric tool to get a measure of public mood from Twitter, and were able to demonstrate the strong correlation between one of the POMS mood dimensions and the Dow Jones Average Index.

2.4 Effect of the Tweet by US President Donald Trump

Colonescu (2018) [9] found some evidence of some persistent effects of Twitter announcements by the US president on some financial and foreign exchange aggregates, such as the Dow Jones Industrial Average, the US-Canadian currency exchange rate, and the aggregate US dollar exchange rate index. Rayarel (2018) tested the Efficient Market Hypothesis by analyzing the effect of US President Donald Trump's company-specific tweets on financial markets. Using a sample of 24 company-specific tweets, he concluded that a tweet by Trump leads to an abnormal trade volume of 43.54% on the day of the tweet and an increase in Google search activity on the week of the tweet, and also leads to statistically significant abnormal returns that last for 2 to 3 trading days.

Malaver-Vojvodic (2017) [14] used GARCH model and analyzed more than 7400 tweets and ranked 64 as 'negative' based on the tone and content of the message delivered. The research concluded that the tweets classified as negative had an impact on the daily volatility of the Mexican peso/U.S. dollar exchange rate, possibly leading to market inefficiencies and arbitrage opportunities. Porshnev et al. (2014) [20] used a lexicon-based approach to categorize user moods conveyed in Twitter posts through 755 million tweets for the period from February 13, 2013 to September 29, 2013 to improve accuracy of price forecasts for Precious Metals by using Support Vector Machines (SVM).

By classifying tweet emotional words into "Hope and Fear" on daily basis, Zhang et al. (2011) [28] tried to forecast US Stock Market Indices like DJIA, S&P 500, NASDAQ, and VIX. They studied the relationship between these indices and the stock market indicators. These emotional words are divided into two groups a) positive ones indicating hope and happiness; and b) negative ones indicating emotions of fear, worry, nervousness, anxiety, and being upset. They found out that emotional tweets have a negative correlation with DJIA, NASDAQ, and S&P 500, but a positive correlation to VIX. Therefore, it appears that just looking for emotional words of any kind on twitter provides a forecast of the next day's stock market performance. Moreover, Bollen et al. (2011)[4] categorized more than 9.8 million tweets in reference to people's sentiments for 2.7 million people using Twitter from March, 2008 to December, 2008. He found that the daily changes in the DJIA index closing values can be predicted by more than 87% when they include indicators derived from Twitter, such as the level of individual's cheerfulness and calmness.

After conducting the literature review, the following questions come to mind. The objective of carrying out this study and research was to answer the below questions:

- What is the impact of US President Mr. Donald Trump's tweets on all four financial markets — equity markets, commodity markets, bond markets, and currency markets?
- Is there any significant association between the sentiment of US President Mr. Donald Trump's tweets and financial markets' prices?
- Which financial market has the highest relationship and correlation with sentiment of Mr. Trump's tweet?
- Do US President Mr. Donald Trump's tweets impact the financial market prices in the short term or long term?
- Is there a positive or negative correlation between US President Mr. Donald Trump's Tweets and various asset classes?

3. RESEARCH METHODOLOGY

3.1 Data Collection

Two datasets are used here for analyzing the impact of US President Donald Trump's tweets' impact on financial markets. The first one is the sample of 60 of his tweets about the US economy, US financial markets, and American foreign policy posted over a period of two years from 8th November, 2016 (when Trump was elected) to 7th November, 2018 (US Midyear Election results). The second one is a historical price dataset of the capital markets (represented by Dow Jones Index), foreign exchange markets (represented by Dollar Index), commodity markets (represented by COMEX Gold Price) and bond markets (represented by US Government 10 Year Treasury Bond Yield).

3.1.1.1 Twitter

US President Donald Trump has posted 5843 tweets over a period of two years from 8th November, 2016 (when Trump was elected) to 7th November, 2018 (US Midyear Election results). A sample of 60 tweets has been taken from the official Twitter account @realDonaldTrump. Only those tweets have been manually selected as part of the sample, in which he has tweeted about the US economy, US financial markets and American foreign policy.

Now the next step is to determine the general mood of the tweet. This is done using the Loughran-McDonald financial sentiment dictionary, which has 6 dimensions — Negative Words, Positive Words, Uncertainty Words, Litigious Words, Modal Words Strong, Modal

Words Weak. Therefore, in this analysis, a tweet is classified as 'Positive', 'Negative' or 'Neutral', as per the text tweeted by President Donald Trump.

Below are the three classifications that have been made:

a) Positive Tweet: Contains words from the list of Positive Words, Modal Words Strong, and Litigious Words from Loughran and McDonald Financial Sentiment Dictionary. E.g. best, wow, up, incredible, nicely, good, massively, great, all-time high, setting records, strong, better than anticipated, tremendous, beautiful and excellent.

b) Negative Tweet: Contains words from the list of Negative Words, Modal Words Weak, and Uncertainty Words from Loughran and McDonald Financial Sentiment Dictionary. E.g. dropped, unfairly, insult, badly, tariff, slowest, pay tax.

c) Neutral Tweet: Contains words which don't fall in the above two categories. E.g. respect, fair, surprised, bargaining.

3.1.1.2 Historical prices

Historical traded prices of the Dow Jones Index, the Dollar Index, COMEX Gold, and the US Government 10 Year Treasury Bond Yield is taken from the CBOT and CME Exchange for a 2-year period. For each transaction date of a tweet sample, % change is recorded.

3.2 Hypothesis Testing

Hypothesis for Q1

Null Hypothesis 1: There is no significant association between US President Donald Trump's Tweets and the Dollar Index on a given day.

Alternate Hypothesis 1: There is a significant association between US President Donald Trump's Tweets and the Dollar Index on a given day.

Hypothesis for Q2

Null Hypothesis 2: There is no significant association between US President Donald Trump's Tweets and the DJIA on a given day.

Alternate Hypothesis 2: There is a significant association between US President Donald Trump's Tweets and the DJIA on a given day.

Hypothesis for Q3

Null Hypothesis 3: There is no significant association between US President Donald Trump's Tweets and COMEX Gold prices on a given day.

Alternate Hypothesis 3: There is a significant association between US President Donald Trump's Tweets and COMEX Gold prices on a given day.

Hypothesis for Q4

Null Hypothesis 4: There is no significant association between US President Donald Trump's Tweets and the US Government 10 Year Treasury Bond Yields on a given day.

Alternate Hypothesis 4: There is a significant association between US President Donald Trump's Tweets and the US Government 10 Year Treasury Bond Yields on a given day.

3.3 Data Analysis

Chi-square[b] test has been used here to determine whether a relationship exists between tweets and financial asset classes. The Chi-Square[b] statistic is most normally used to access Tests of Independence when using a bivariate table. Cross tabulation presents the distributions of two categorical variables at the same time, with the intersections of the categories of the variables appearing in the cells of the table. The Test of Independence measures whether a relationship exists between the two variables by comparing the observed pattern of responses in the cells to the pattern that would be expected if the variables were truly independent of each other. Calculating the Chi-Square statistic and comparing it with a critical value from the Chi-Square distribution allowed to assess whether the observed cell counts were considerably dissimilar from the projected cell counts.

Here the independent variable is 'Tweet Sentiment', which is converted into a categorical variable by assigning scale values to Positive Tweet as 1, Negative Tweet as -1 and Neutral Tweet as 0. The dependent variables are i.e. % change in closing price of Dow Jones, Dollar Index, COMEX Gold Price, and US Government 10 Year Treasury Bond Yield. These four dependent variables are also converted into categorical data by converting the % change into following categories:

% Change in Price	Categorical Value and Scale allotted
<= -0.1 %	-1
-0.1% to 0.1%	0
>= 0.1%	1

Then a Chi-Square Test[b] was run in SPSS[h] software keeping Sentiment Scale in the row and Dollar Index, Dow Jones Scale and Gold Scale in columns. While analyzing the output, it was found that more than 20% of the data had an expected count less than 5 in all three Chi-square test tables and Degree of Freedom (Df) was taken as 4. The Fisher Exact Test was also used to solve this error. Below are the three outputs published by SPSS software:

3.3.1 Link of US President Donald Trump's Tweet Sentiment Scale with Dollar Index % Change Scale

			Dollar %Change Scale			Total
			-1	0	1	
Sentiment Scale	Negative	Count	9	5	8	22
		Expected Count	9.2	4.4	8.4	22.0
	Neutral	Count	0	1	1	2
		Expected Count	.8	.4	.8	2.0
	Positive	Count	16	6	14	36
		Expected Count	15.0	7.2	13.8	36.0
Total		Count	25	12	23	60
		Expected Count	25.0	12.0	23.0	60.0

Chi-Square Test

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square[g]	2.181[a]	4	.703	.761
Likelihood Ratio[f]	2.748	4	.601	.753
Fisher's Exact Test[e]	2.555			.724
N of Valid Cases	60			

Here the p-value is 0.724, which is (>0.05), so we accept Null Hypothesis 1. This suggests there is no significant association between US President Donald Trump's tweets and the Dollar Index on a daily closing price basis.

3.3.2 Link of US President Donald Trump's Tweet Sentiment Scale with the % Change in the Dow Jones Industrial Average Index Scale

			Dow %Change Scale			Total
			-1	0	1	
Sentiment Scale	Negative	Count	10	5	7	22
		Expected Count	6.2	2.9	12.8	22.0
	Neutral	Count	0	0	2	2
		Expected Count	.6	.3	1.2	2.0
	Positive	Count	7	3	26	36
		Expected Count	10.2	4.8	21.0	36.0
Total		Count	17	8	35	60
		Expected Count	17.0	8.0	35.0	60.0

Chi Square Tests

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square[g]	10.682[a]	4	.030	.031
Likelihood Ratio[f]	11.472	4	.022	.019
Fisher's Exact Test[e]	10.106			.020
N of Valid Cases	60			

Here the p-value is 0.02, which is (<0.05), so we can't accept the Null Hypothesis 2. Therefore this suggests there is a significant association between US President Donald Trump's Tweets and the Dow Jones Industrial Index on a daily closing price basis.

3.3.3 *Link of US President Donald Trump's Tweet Sentiment Scale with the % Change in the COMEX Gold Price Scale*

			Gold % Change Scale			Total
			-1	0	1	
Sentiment Scale	Negative	Count	8	2	12	22
		Expected Count	9.9	1.1	11.0	22.0
	Neutral	Count	0	0	2	2
		Expected Count	.9	.1	1.0	2.0
	Positive	Count	19	1	16	36
		Expected Count	16.2	1.8	18.0	36.0
Total		Count	27	3	30	60
		Expected Count	27.0	3.0	30.0	60.0

Chi-Square Test				
	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square[g]	4.254[a]	4	.373	.356
Likelihood Ratio[f]	4.956	4	.292	.377
Fisher's Exact Test[e]	4.529			.334
N of Valid Cases	60			

Here the p-value is 0.33, which is (>0.05), so we can accept the Null Hypothesis 3. This suggests there is no significant association between US President Donald Trump's tweets and COMEX Gold on a daily closing price basis.

3.3.4 Link of US President Donald Trump's Tweet Sentiment Scale with the % Change in the US Government 10 Year Treasury Bond Yields Scale

			Bond Yield % Change Scale			Total
			-1	0	1	
Sentiment Scale	Negative	Count	16	1	5	22
		Expected Count	8.8	1.8	11.4	22.0
	Neutral	Count	0	0	2	2
		Expected Count	.8	.2	1.0	2.0
	Positive	Count	8	4	24	36
		Expected Count	14.4	3.0	18.6	36.0
Total		Count	24	5	31	60
		Expected Count	24.0	5.0	31.0	60.0

Chi-Square Test				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square[g]	16.452[a]	4	.002	.006
Likelihood Ratio[f]	17.479	4	.002	.001
Fisher's Exact Test[e]	15.824			.001
N of Valid Cases	60			
a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .17.				

Here the p-value is 0.001, which is (<0.05), so we cannot accept the Null Hypothesis 4. Therefore this suggests there is a significant association between US President Donald Trump's tweets and US Government 10 Year Treasury Bond Yields on a daily closing price basis.

From the sample data of 60 tweets and as per the Chi-square and Fisher Exact Test run on categorical values of Tweet Sentiment and Financial Asset Classes, the following were the findings:

- There is a significant relationship between US President Donald Trump's tweets and the Dow Jones Industrial Average Index on a given day. 68 percent of times, the DJIA Index has closed in positive territory, when US President Trump has tweeted something positive about the US economy, which indicates a positive correlation between them.

- There is a significant relationship between US President Donald Trump's tweets and the US Government 10 Year Treasury Bond Yield on a given day. 67 percent of times, the US Government 10 Year Treasury Bond Yield has closed in positive territory, when US President Trump has tweeted something positive about the US economy, and 72 percent of times, the US Government 10 Year Treasury Bond Yield has closed in negative territory, when US President Trump has tweeted something negative about the US economy, which indicates a positive correlation between them.

- There is no significant relationship between US President Donald Trump's tweets and the Dollar Index on a given day, but it affects the prices on a shorter time frame and the impact is nullified by the end of the day.

- There is no significant relationship between US President Donald Trump's tweets and COMEX Gold prices on a given day, but it affects the prices on a shorter time frame and the impact is nullified by the end of the day. 54 percent of times, Gold has closed in negative territory, when US President Trump has tweeted something positive about the US economy, and vice-versa, which indicates a negative correlation between them.

4. CONCLUSION, IMPLICATION AND FUTURE RESEARCH

The results of this paper suggest that the sample tweets have had a significant impact on the Dow Jones Industrial Average Index and the US Government 10 Year Treasury Bond Yield, while not having much of a significant impact on the Dollar Index and Gold prices on a daily basis.

This study could have given better results if prices of financial asset classes were taken on a real-time basis such as the hourly closing or 4-hourly closing price immediately after the President's tweets, as the tweets often impacted the prices of various asset classes in a timespan of a few hours. Future research should look at hourly price data of all asset classes.

The classification of tweets was done from Loughran and McDonald Financial Sentiment Dictionary to label each tweet with a positive, negative, or neutral value. However, the validation of this technique was based on a random sample of 60 opinionated tweets which were manually annotated. The sample of Trump's tweets was manually selected and may be subject to bias. On several thousands of entries, the sample size was rather slim. The true accuracy could have varied as compared to our current estimation. This could have led to the inclusion and exclusion of wrong observations in the dataset. Future research could be done through NLP (Natural Language Processing) using software like Python.

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6. APPENDIX

60 Sample Tweets of US President Donald Trump

No.	Date	Sentiment	Tweet
1	6-Nov-18	Positive	Republicans have created the best economy in the HISTORY of our Country – and the hottest jobs market on planet earth. The Democrat Agenda is a Socialist Nightmare. The Republican Agenda is the AMERICAN DREAM!
2	2-Nov-18	Positive	Wow! The U.S. added 250,000 Jobs in October - and this was despite the hurricanes. Unemployment at 3.7%. Wages UP! These are incredible numbers. Keep it going, Vote Republican!
3	1-Nov-18	Positive	Just had a long and very good conversation with President Xi Jinping of China. We talked about many subjects, with a heavy emphasis on Trade. Those discussions are moving along nicely with meetings being scheduled at the G-20 in Argentina. Also had good discussion on North Korea!
4	30-Oct-18	Positive	The Stock Market is up massively since the Election, but is now taking a little pause - people want to see what happens with the Midterms. If you want your Stocks to go down, I strongly suggest voting Democrat. They like the Venezuela financial model, High Taxes & Open Borders!
5	23-Oct-18	Negative	Billions of dollars are, and will be, coming into United States coffers because of Tariffs. Great also for negotiations - if a country won't give us a fair Trade Deal, we will institute Tariffs on them. Used or not, jobs and businesses will be created. U.S. respected again!
6	16-Oct-18	Positive	Incredible number just out, 7,036,000 job openings. Astonishing - it's all working! Stock Market up big on tremendous potential of USA. Also, Strong Profits. We are Number One in World, by far!
7	3-Oct-18	Positive	The Stock Market just reached an All-Time High during my Administration for the 102nd Time, a presidential record, by far, for less than two years. So much potential as Trade and Military Deals are completed.
8	17-Sep-18	Negative	Tariffs have put the U.S. in a very strong bargaining position, with Billions of Dollars, and Jobs, flowing into our Country - and yet cost increases have thus far been almost unnoticeable. If countries will not make fair deals with us, they will be "Tariffed!"
9	29-Aug-18	Positive	Our new Trade Deal with Mexico focuses on FARMERS, GROWTH for our country, tearing down TRADE BARRIERS, JOBS and having companies continue to POUR BACK INTO OUR COUNTRY. It will be a big hit!

10	24-Aug-18	Positive	Our Economy is setting records on virtually every front - Probably the best our country has ever done. Tremendous value created since the Election. The World is respecting us again! Companies are moving back to the U.S.A.
11	10-Aug-18	Negative	I have just authorized a doubling of Tariffs on Steel and Aluminum with respect to Turkey as their currency, the Turkish Lira, slides rapidly downward against our very strong Dollar! Aluminum will now be 20% and Steel 50%. Our relations with Turkey are not good at this time!
12	5-Aug-18	Neutral	Tariffs are working far better than anyone ever anticipated. China market has dropped 27% in last 4 months, and they are talking to us. Our market is stronger than ever, and will go up dramatically when these horrible Trade Deals are successfully renegotiated. America First.....
13	5-Aug-18	Positive	Tariffs have had a tremendous positive impact on our Steel Industry. Plants are opening all over the U.S., Steelworkers are working again, and big dollars are flowing into our Treasury. Other countries use Tariffs against, but when we use them, foolish people scream!
14	24-Jul-18	Negative	Tariffs are the greatest! Either a country which has treated the United States unfairly on Trade negotiates a fair deal, or it gets hit with Tariffs. It's as simple as that - and everybody's talking! Remember, we are the "piggy bank" that's being robbed. All will be Great!
15	23-Jul-18	Negative	To Iranian President Rouhani: NEVER, EVER THREATEN THE UNITED STATES AGAIN OR YOU WILL SUFFER CONSEQUENCES THE LIKES OF WHICH FEW THROUGHOUT HISTORY HAVE EVER SUFFERED BEFORE. WE ARE NO LONGER A COUNTRY THAT WILL STAND FOR YOUR DEMENTED WORDS OF VIOLENCE & DEATH. BE CAUTIOUS!
16	20-Jul-18	Negative	The United States should not be penalized because we are doing so well. Tightening now hurts all that we have done. The U.S. should be allowed to recapture what was lost due to illegal currency manipulation and BAD Trade Deals. Debt coming due & we are raising rates - Really?
17	20-Jul-18	Negative	China, the European Union and others have been manipulating their currencies and interest rates lower, while the U.S. is raising rates while the dollars gets stronger and stronger with each passing day - taking away our big competitive edge. As usual, not a level playing field...

18	22-Jun-18	Negative	Based on the Tariffs and Trade Barriers long placed on the U.S. and it great companies and workers by the European Union, if these Tariffs and Barriers are not soon broken down and removed, we will be placing a 20% Tariff on all of their cars coming into the U.S. Build them here!
19	15-Jun-18	Negative	US announces tariffs on $50 billion of imports from China, with Trump threatening more if China retaliates. China responds in kind.
20	12-Jun-18	Positive	Stock Market up almost 40% since the Election, with 7 Trillion Dollars of U.S. value built throughout the economy. Lowest unemployment rate in many decades, with Black & Hispanic unemployment lowest in History, and Female unemployment lowest in 21 years. Highest confidence ever!
21	4-Jun-18	Positive	This is my 500th. Day in Office and we have accomplished a lot - many believe more than any President in his first 500 days. Massive Tax & Regulation Cuts, Military & Vets, Lower Crime & Illegal Immigration, Stronger Borders, Judgeships, Best Economy & Jobs EVER, and much more...
22	6-Apr-18	Negative	Russia and China are playing the Currency Devaluation game as the US keeps raising interest rate. Not acceptable.
23	6-Apr-18	Negative	Despite the Aluminum Tariffs, Aluminum prices are DOWN 4%. People are surprised, I'm not! Lots of money coming into U.S. coffers and Jobs, Jobs, Jobs!
24	4-Apr-18	Neutral	We are not in a trade war with China, that war was lost many years ago by the foolish, or incompetent, people who represented the U.S. Now we have a Trade Deficit of $500 Billion a year, with Intellectual Property Theft of another $300 Billion. We cannot let this continue!
25	3-Apr-18	Positive	We are bringing back our factories, we are bringing back our jobs, and we are bringing back those four beautiful words: MADE IN THE USA!
26	30-Mar-18	Positive	JOBS, JOBS, JOBS! Unemployment claims have fallen to a 45-year low. Together, we are making the economy great again!
27	23-Mar-18	Negative	US imposes a 25 percent tariff on all steel imports (except from Argentina, Australia, Brazil, and South Korea) and a 10 percent tariff on all aluminium imports (except from Argentina and Australia).
28	10-Mar-18	Negative	The European Union, wonderful countries, who treat US very badly on trade are complaining about the tariffs and Aluminium. If they drop their horrific barriers and tariffs on US products going in, we will likewise drop ours. Big Deficit. If not, we tax Cars, etc. FAIR!

29	27-Feb-18	Positive	“American consumers are the most confident they've been since 2000....A strong job market is boosting confidence. The unemployment rate has stayed at a 17-year low.”
30	7-Feb-18	Negative	In the “old days,” when good news was reported, the Stock Market would go up. Today, when good news is reported, the Stock Market goes down. Big mistake, and we have so much good (great) news about the economy!
31	2-Feb-18	Positive	With 3.5 million Americans receiving bonuses or other benefits from their employers as a result of TAX CUTS, 2018 is off to great start! Unemployment rate at 4.1%. Average earnings up 2.9% in the last year. 200,000 new American jobs.
32	24-Jan-18	Positive	Tremendous investment by companies from all over the world being made in America. There has never been anything like it. Now Disney, J.P. Morgan Chase and many others. Massive Regulation Reduction and Tax Cuts are making us a powerhouse again. Long way to go! Jobs, Jobs, Jobs!
33	11-Jan-18	Positive	In new Quinnipiac Poll, 66% of people feel the economy is “Excellent or Good.” That is the highest number ever recorded by this poll.
34	3-Jan-18	Negative	North Korean Leader Kim Jong Un just stated that the “Nuclear Button is on his desk at all times.” Will someone from his depleted and food starved regime please inform him that I too have a Nuclear Button, but it is a much bigger & more powerful one than his, and my Button works!
35	28-Dec-17	Positive	Retail sales are at record numbers. We’ve got the economy going better than anyone ever dreamt - and you haven’t seen anything yet!
36	19-Dec-17	Positive	DOW RISES 5000 POINTS ON THE YEAR FOR THE FIRST TIME EVER - MAKE AMERICA GREAT AGAIN! 70 Record Closes for the Dow so far this year! We have NEVER had 70 Dow Records in a one year period. Wow!
37	2-Dec-17	Positive	Consumer Confidence is at an All-Time High, along with a Record High Stock Market. Unemployment is at a 17 year low. MAKE AMERICA GREAT AGAIN! Working to pass MASSIVE TAX CUTS (looking good).

38	30-Nov-17	Positive	The Dow just broke 24,000 for the first time (another all-time Record). If the Dems had won the Presidential Election, the Market would be down 50% from these levels and Consumer Confidence, which is also at an all-time high, would be “low and glum!”
39	12-Nov-17	Negative	Why would Kim Jong-un insult me by calling me "old," when I would NEVER call him "short and fat?" Oh well, I try so hard to be his friend - and maybe someday that will happen!
40	16-Oct-17	Positive	Since Election Day on November 8, the Stock Market is up more than 25%, unemployment is at a 17 year low & companies are coming back to U.S.
41	14-Sep-17	Negative	China has a business tax rate of 15%. We should do everything possible to match them in order to win with our economy. Jobs and wages!
42	16-Aug-17	Negative	Amazon is doing great damage to taxpaying retailers. Towns, cities and states throughout the U.S. are being hurt - many jobs being lost!
43	12-Aug-17	Positive	As promised on the campaign trail, we will provide opportunity for Americans to gain skills needed to succeed & thrive as the economy grows!
44	1-Aug-17	Positive	Stock Market could hit all-time high (again) 22,000 today. Was 18,000 only 6 months ago on Election Day. Mainstream media seldom mentions!
45	31-Jul-17	Positive	Highest Stock Market EVER, best economic numbers in years, unemployment lowest in 17 years, wages raising, border secure, S.C.: No WH chaos!
46	29-Jul-17	Negative	I am very disappointed in China. Our foolish past leaders have allowed them to make hundred of billions of dollars a year in trade yet.
47	25-Jul-17	Positive	Working on major Trade Deal with the United Kingdom. Could be very big & exciting. JOBS! The E.U. is very protectionist with the U.S. STOP
48	13-Jul-17	Positive	After 14 years, U.S. beef hits Chinese market. Trade deal an exciting opportunity for agriculture.
49	30-Jun-17	Positive	Our new American Energy Policy will unlock MILLIONS of jobs & TRILLIONS in wealth. We are on the cusp of a true energy
50	2-Jun-17	Positive	Wall Street hits record highs after Trump pulls out of Climate pact
51	26-Apr-17	Negative	The U.S. recorded its slowest economic growth in five years (2016). GDP up only 1.6%. Trade deficits hurt the economy very badly.

52	3-Apr-17	Positive	Jobs are returning, illegal immigration is plummeting, law, order and justice are being restored. We are truly making America great again!
53	24-Mar-17	Positive	Today, I was thrilled to announce a commitment of $25 BILLION & 20K AMERICAN JOBS over the next 4 years. THANK YOU
54	2-Mar-17	Positive	Since November 8th, Election Day, the Stock Market has posted $3.2 trillion in GAINS and consumer confidence is at a 15 year high. Jobs!
55	16-Feb-17	Positive	Stock market hits new high with longest winning streak in decades. Great level of confidence and optimism - even before tax plan rollout!
56	20-Jan-17	Positive	We will bring back our jobs. We will bring back our borders. We will bring back our wealth - and we will bring back our dreams!
57	20-Jan-17	Positive	It all begins today! I will see you at 11:00 A.M. for the swearing-in. THE MOVEMENT CONTINUES - THE WORK BEGINS!
58	5-Jan-17	Negative	Toyota Motor said will build a new plant in Baja, Mexico, to build Corolla cars for U.S. NO WAY! Build plant in U.S. or pay big border tax.
59	3-Jan-17	Negative	China has been taking out massive amounts of money and wealth from the US in totally one-sided trade, but wont help with North Korea. Nice
60	6-Dec-16	Negative	Boeing is building a brand new 747 Air Force One for future presidents, but costs are out of control, more than $4 billion. Cancel order!

CONSUMERS' RESPONSE TO M-COMMERCE ADOPTION INTENTION IN THE STATE OF GUJARAT

Vinod Nair*

ABSTRACT:

The main aim of this paper is to find the consumers' M-Commerce adoption intention for product or services purchase in the western state of India - Gujarat. To conduct this study, a primary research technique using an online survey form method was used as a research instrument & 53 samples were collected from various towns and cities of Gujarat state. The methods used for analysis of the responses are mean, standard deviation and ANOVA. This research paper discusses the various factors that play a key role in enabling consumers to adopt online purchase through mobile phones compared to traditional e-commerce portals. The findings of this study state that the people of Gujarat show an inclination to adopt M-Commerce based on need, availability of attractive schemes and enhanced security features on the electronic payment platforms.

The practical implication of this paper is that the companies in India can leverage the platform of M-Commerce to market their products or services, as this gives them the scope of wide spread, fast reach and penetration to their intended target audience.

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Consumers, in turn, will have the privilege of choosing the product or service based on their requirements, areas of interest, offers available and current location through M-Commerce applications. This research will enhance value-addition to M-Marketing firms as they can send marketing related messages or videos to consumers based on their search profiles. Consumers, on the other hand, can also request information based on their current location and perform M-Commerce operations based on needs, offers available and convenience.

Keywords: M-Marketing, M-Commerce, Accessibility, E-Commerce, Location-specific messaging.

1. INTRODUCTION:

People in India are now moving towards cashless economy through various digital platforms like Mobile wallet, M-Marketing and M-Commerce tools in the current scenario of high digitalization, and the recent demonetization of high denomination currency enforced by the union government. India being a developing market for smartphones, the focus of M-Marketing and M-Commerce is likely to gain further momentum in the coming years. With the Government of India redrafting the telecom policy, broadband through wireless media like smartphones and tablets will have a whirlwind effect on the use of M-Marketing and M-Commerce in India. According to MMA (2011), firms looking forward to compete with each other on mobile platform should prioritize the development of smartphone apps that look to provide customers with basic utility, fun and entertainment at home or on the move connectivity.

Brands must make aware about the real risk and opportunities of M-Commerce through smartphones, before expecting returns in the form of interactivity and revenue from customers (MMA-2011). Any brand should first understand the social inclination of its users and then manage its way to instill itself in the minds of the customers (MMA-2011). Apart from this, the biggest hurdle in analyzing whether the mobile strategies and campaigns were successful lies in its measurement techniques.

The customer value created by firm's mobile marketing applications results in adoption intention, usage and loyalty which in turn affect association and loyalty to the firm. To understand customer repurchase behaviors, both, cognitive and affective variables are taken into consideration. Trust and attitude form important determinants of customer adoption intention towards M-Commerce applications.

Consumers spend more time on Facebook, Twitter and Instagram these days. As a result, smartphone has become more social and has provided marketing firms with a platform to

interact with users simply and effectively. Since, the entire targeted customer base is on same platform, it is easier for M-Marketing firms to advertisement and interacts with customers at virtually no-cost (MMA-2011). Thus, mobile marketing can devise extraordinary experiences for customers that they can share with family and friends (MMA-2011). Ultimately, smartphones must be seen as long-term investments that enhances value to customer (MMA-2011).

2. LITERATURE REVIEW:

According to a survey by Harris Interactive & Tea-leaf Survey, 2011, 47% of consumers expect their smartphone transaction to be at least the same or even better than in-store experience. Among these 47% customers, 80% of them expect it to be at par or even higher than in-store experience, and 85% expect it to be comparative or even superior to their online experience using a laptop or desktop computer. According to another survey conducted by Local and e-tailing group 2012, 47% of customers use their smartphone's local information search such as a store nearby to visit, 46% of users check product prices on shop's mobile apps, and 42% verify stockpiles before shopping from a store.

According to Mobile Audience Insights Report from JiWire, 2012, 80% of smartphone users look for local advertising relevant to them and 75% after going through location-specific messages, may take action. According to eDigitalResearch, eCustomerServiceIndex (2012), 30% of online shopping had happened through tablets, while only 25% of shopping had happened through smart-phone.

As per reports of study conducted by inMobiHoliday Mobile Shopping (2012), 29% of customers approach smartphones to study brand new products or services, 27% access the smartphone while making a decision to buy and 15% of shoppers utilize it to make a purchase during holiday season. According to a study by InMobi Holiday Mobile Shopping (2012), apart from product research by consumers through mobile devices over 21 million consumers, i.e. 36%, make direct purchase plans from their mobile devices.

According to Balasubramanian, 2002 & Chenandnath, 2004, the customer value created by mobile services should be independent of time and place, and should be customized based on their personal profile, time and location. According to kumar and Zahn (2003), interactivity by customer and operational efficiency turned out to be real business drivers for firms resulting in increased effectiveness and efficiency for retailers. According to Barnes, 2002; Buellingen and Woerter, 2004; Mamaar, 2003; Shankar and Balasubramanian 2009, several activities by multiple actors contribute to mobile marketing value chain thereby improving communication and sales.

Mobile marketing should also include location-specificity which is a unique feature that is not found in internet marketing. Thus, firms should focus on identifying M-Marketing opportunities that adequately leverages the customer's physical location (Kolmel and Alexakis, 2002). Similarly, a customer should not be cluttered with offers and messages. They must be targeted selectively in a tailor made fashion with offers rather than being harrowed through messages that are indiscriminately broadcasted to the entire customer base.

According to Cabanillis, Fernandez & Munoz-Leiva (2012), the customer's age plays an important role in the proposed behavioral model. Apart from the trust factor, perceived risk also plays the role of an impediment in the adoption of mobile payment-related activities. Experience also exhibits a major factor in the use of m-commerce related activities such as m-payment, m-banking and m-transaction. After a certain number of attempts, the user generally feels comfortable in handling mobile-related transactions due to fast, convenient, safe and simple way of handling the transaction menu within a given device.

The vendors and companies are also at advantage because of the experience of m-commerce activity as compared to e-commerce related activity because of its anytime, anyplace accessibility. Another important factor the user experiences is the standards used by telecom-service providers, such as GSM, UMTS and SIM Cards that provides safer interaction for economic transaction through their data encryption technique. Thus, with experience the intention to use m-commerce related activities either through dedicated websites or through virtual social network will increase because of improved reliability and reduced wait time and errors.

According to Gupta et al 2013; future M-Marketing apps can be personalized to gain highest performance as future marketing strategies targets the power of apps within the mobile domain. Similarly, retailers should apply a mobile marketing focus to create a sustainable and profitable relationship with smartphone savvy customers. According to various research documents, innovativeness has frequently been considered as an important construct in explaining adoption of new technologies like QR codes and NFC by customer (Aldas-Manzano et al. 2009; Bauer et al. 2005; Kim et al; 2008).

3. OBJECTIVE:

The main objective of this study is to understand the consumer expectations and consumer adoption intention of m-commerce apps in the state of Gujarat. Therefore, the objective of this research would be:

1. To analyze the consumer's response to m-commerce in Gujarat.

2. To identify the factors responsible for customer adoption of M-Commerce in Gujarat.

3. To determine the moderating effect of age, experience and external influence in the adoption intention of consumers towards M-Commerce app in the state of Gujarat.

4. HYPOTHESES AND RESEARCH MODEL:

As per study conducted by, Roselius (1971); Featherman and Fuller (2003), it was stated that consumers with lower level of experience in using M-Commerce tools will perceive a high level of risk in using such tools will therefore require an external boosting from their family, friends and peers. Therefore, as the external influences increases, consumers' level of trust also increases. Hence, the following hypothesis is proposed:

H1. External influence has a moderating effect on perceived ease-of-use of m-commerce apps in adopting these tools.

Because of the awareness of the risk associated with M-Commerce apps, customers with a higher experience will exhibit higher level of trust towards such apps (Flavián & Guinalíu, 2007; Ruizet al., 2007; Sultan, 2002). Customers with zero experience with similar M-Commerce apps will require a greater trust to reduce the effort required for adoption of such system. Based on the above, the following hypothesis is proposed:

H2. Trust has a moderating effect on perceived ease-of-use of m-commerce apps in adopting such tools.

Additionally, experience will negatively affect the association between perceived usefulness and attitude. Thus, perceived usefulness will have a lesser effect on experienced consumers, as they have prior knowledge of such apps. Thus, higher the experience levels in a consumer will make the assessment more confusing, compared to the assessment process for inexperienced consumers. Inexperienced M-Commerce consumers will be in a better position to assess the usefulness, and their attitude towards the payment system will be supportive (Ha, Yoon, & Choi, 2007). Under these circumstances, the following hypothesis is proposed:

H3. Experience has a negative moderating effect on the relationship between attitude and adoption intention of new m-commerce tools.

The level of customer experience also moderates the relationship between usefulness and adoption intention. Customers with no previous experience with such payments tools will

have strong positive inclination towards the usage of such tools due to curiosity in exploring the usefulness of such new systems (Ha et al., 2007). Thus, customers with zero experience will develop a stronger bonding between system's usefulness and positive attitude towards the usage intention of such new payment system. Based on these aspects, it can be inferred that experience has a moderating effect on the above mentioned relationship, where consumers with no experience are better inclined towards such relationship between usefulness and adoption intention than those users who already have some experience on such m-commerce apps (Ha et al., 2007). Based on above arguments, the following hypothesis is proposed:

H4. Experience has a negative moderating effect on the relationship between perceived usefulness and adoption intention of new m-commerce tools.

Young consumers are more inclined to adopt contemporary technological apps due to their inherent perception of greater ease of use. According to a survey conducted separately by ONTSI (2011) on the use of e-commerce, and by AMETIC (2011) on mobile internet, based on social networks on raw data, it was statistically verified that young consumers have a higher inclination to accept the latest technological apps. Thus, it can be stated based on the above evidence that elderly customers will require greater external influence and will require greater guidance from a social group (Van de Watering, 2007) than younger users (Chung, Park, Wang, Fulk, & McLaughlin, 2010). Based on the above reasons, the following hypothesis is proposed:

H5. Age has a moderating effect on the relationship between perceived ease of use and adoption intention of latest m-commerce tools.

Based on their knowledge and greater accessibility of latest technological apps (INE, 2012; ONTSI, 2011), younger users are expected to show greater trust and ease of use than older users due to the latter’s reluctance towards latest payment tools. Hence, it can be stated that young users will display great affinity towards new technology based on trust factor, thereby resulting in perceived ease (Lorenzo, Alarcón, & Gómez, 2011). Under these circumstances, the following hypothesis is proposed:

H6. Age has a moderating effect on the relationship between perceived risk and adoption intention of latest m-commerce tools.

Under the influence of extrinsic rewards, young users will have fewer difficulties in processing complex stimuli compared to older users. This determines the extent to which younger users intend to adopt a new transaction system (Venkatesh et al.,2003). On the

other hand, elderly customers will require others' influence or opinion to adopt such new payment tools (Venkatesh et al., 2003). Thus, again, the external influence seems to moderate the approach towards adoption of new payment tools in case of older customers, than in case of younger customers. On the basis of the above reasons, the hypothesis mentioned below is proposed:

H7. Age has a moderating effect on the relationship between perceived usefulness and adoption intention of a new m-commerce system.

Lastly, young users' attitudes are more inclined towards new technology as they trust, and put in less effort to understand the nuances of new technology, thereby enhancing their attitude towards these services (Lorenzo et al., 2011). Conversely, older users trust less and put in more effort to understand the details of these services including the content, quality and security aspects. Hence, on the basis of above argument, the proposed hypothesis is:

H8. Age has a moderating effect on the relationship between attitude and adoption intention of new m-commerce system.

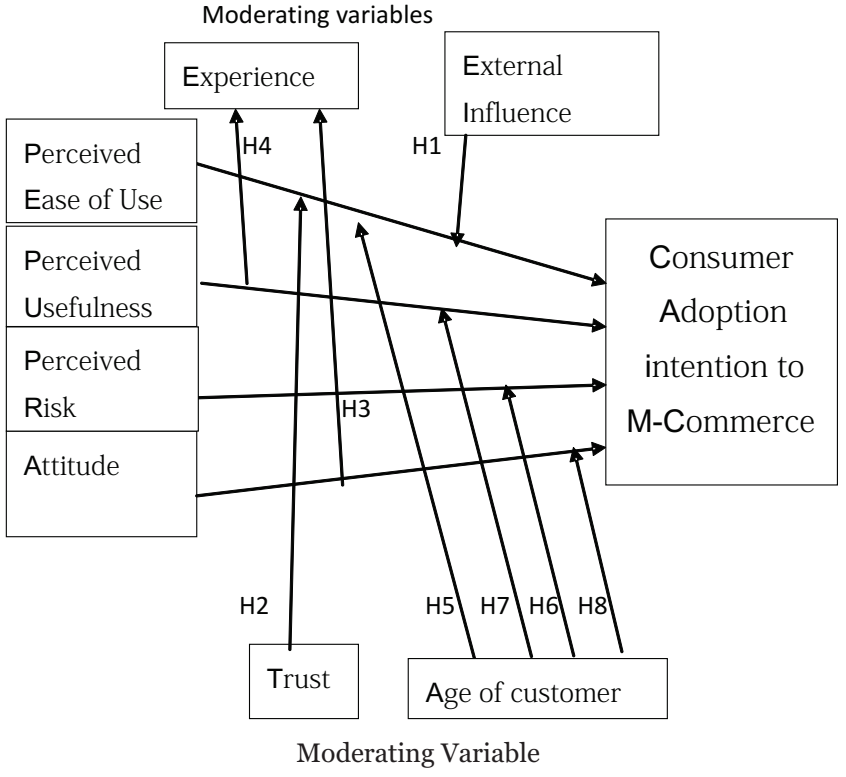

Figure (a):- Conceptual model

5. RESEARCH METHODOLOGY:

The research methodology used in this study relies on online survey technique where questionnaires with measurement scale items adapted from extant literature were circulated amongst students, young-working professionals and middle level working professional. They were asked to submit their response. The data collected thus was then compiled together and analyzed in SPSS 17.

Data Collection & Sampling:

Since the study is based on mobile users of all age group and across various professions, data collection was carried out through the convenience quota sampling technique, which is a non-probability sampling technique known for ease of data collection, lower costs, and lower turnaround time.

Data collection was done across various districts of the cosmopolitan state of Gujarat. The questionnaire was prepared using Google Forms for technical ease of distribution and collection. Overall, 126 online survey forms were sent via email, to various respondents across Gujarat; 53 were received back.

All the item scales for the constructs were adapted from existing literature, and were based on the 5-point Likert scale. Before circulating the questionnaire for data collection, two external experts were consulted for questionnaire reviewing. The questionnaire was also tested on junior research fellows and other visiting scholars for language clarity and validity. The list of measurement scale items and their sources of adaptation are mentioned below in Table 5.1

Table 5.1 Measurement scale items and their sources

Statements	Construct	Source of adaptation
1. Purchase of products/service through M -Commerce apps is quite user-friendly & easy.	Perceived Ease-of-use	Chong et al (2012).
2. I experienced a better level of comfort while transacting through M-Commerce apps than other online/offline mode through GPRS, 3G or 4G.		
3. I am able to use M-Commerce app connect to location based services, purchase product/services easily.		

4. M-commerce app allows me to improve my work productivity.	Perceived usefulness	Chong et al (2012).
5. Entertainment offered by m-commerce app is better and more convenient than pc based Internet		
6. M-Commerce is much more convenient than e-commerce.		
7. I will use m-commerce in the near future also.	Adoption intention	Chong et al (2012).
8. I will purchase m-commerce enabled smartphones in the near future as well.		
9. I am currently using m-commerce app frequently.		
10. Transactions through M -Commerce apps are as s afe & secure.	Trust	Chong et al (2012).
11. Transactions via m-commerce apps are secured.		
12. I am confident with the security measurements offered by m-commerce apps.		
13. Privacy on m-commerce app is well protected		
14. I am not worried about providing credit card information for m-commerce transactions through apps.		
15. M-commerce app is as secure as any e-commerce websites.		
16. Friends and family members have great influence on my decision to use m-commerce apps.	External Influence	Chong et al (2012).
17. Mass media (e.g. TV, Radio, newspapers) always influence my decision to use m-commerce apps.		
18. It is the current trend to use m-commerce apps.		
19. I like the idea of using my smartphone to purchase products or services.	Attitude	Gao et al. (2013)
20. My smartphone could be a good way for me to access information about things to do and places to go at anytime, anywhere.		
21. I would enjoy receiving coupons or other offers and incentives on my smartphone.		

22. I am reluctant to provide personal information such as my name and e-mail address in lieu of receiving something of value to me.	Perceived Risk	Gao et al. (2013)
23. It is annoying to receive random or unsolicited texts from companies or organizations.		
24. I am reluctant to provide my personal information such as my name or email address in lieu of access to news and information of interest to me.		

DATA ANALYSIS:

Based on sampling theory, the sample size should have an item-to-response ratio ranging from 1:4 to 1:10 for each set of scale items to be analyzed (Hinkin et al, 1995). In this research, there are 29 measurement items therefore a sample size of 116 to 290 respondents was considered appropriate for data analysis. As per above theory, an average sample size of 160 is well justified.

Analysis of variance (ANOVA) between m-commerce activities and several variables such as age group and experience, among others has been analyzed to see whether the objectives of the study are fulfilled or not. The data is presented in the tables below.

Table 5.2: External Influence v/s Experience Level

External Influence v/s Experience Level	**Experience Level**					
	No Experience	**Low-level**	**Medium-level**	**High-level**	**F-Value**	**Sig.**
External Influence	-	2.8	2.0	2.011	9.23	0.002

The results visible in Table 5.2 state that as the level of experience increases, the level of influence decreases from low to medium experience with significant analysis of variance $F(2,50)=9.23$ ($p<0.05$). The results signify that as the experience level of the customer increases, the amount of external influence becomes less imminent. Therefore, the results show that external influence has a significant effect on low-level experience than on high-level experience. Hence, hypothesis H1 stands supported.

Table 5.3: Trust v/s Experience Level

Trust v/s Experience Level	**Experience Level**					
	No Experience	**Low**	**Medium**	**High**	**F-value**	**Sig.**
Trust in Adoption(Mean Value)	-	3.44	3.6	4.08	10.69	0.001

From Table 5.3, we understand that at a low level of experience, the trust is low, whereas when the level of experience increases, the trust in adopting the new technology also increases; $F(3,49)=10.69$ is also significant ($p<0.005$). Hence, hypothesis H2 stands supported.

Table 5.4: Usefulness v/s Experience Level

Usefulness v/s Experience Level	**Experience Level**					
	No Experience	**Low-level**	**Medium-level**	**High-level**	**F-value**	**Sig.**
Usefulness (Mean Value)	-	4.33	4.21	4.16	11.24	0.001

From Table 5.4, we understand that less experienced users are better placed to assess the usefulness of m-commerce apps and m-marketing tools compared to more experienced users, based on the result of analysis of variance with $F(2,50)=11.24$ at $p=0.001$. Hence, hypothesis H3 stands supported.

Table 5.5: Attitude v/s Experience Level

Attitude v/s Experience Level	**Experience Level**					
	No Experience (%)	**Low-level (%)**	**Medium-level (%)**	**High-level (%)**	**F-value**	**Sig.**
Attitude (Mean Value)	-	3.88 (39%)	3.6 (38%)	4.16 (23%)	10.58	0.002

From Table 5.5, we understand that low to moderately experienced users feel more positive about adopting new technology such as M-Commerce, compared to highly experienced users as the analysis of variance value $F(3,49)=10.58$ is significant at $p<0.05$. Similarly, the mean value of attitude also states that individuals with lesser experience show a higher level of positive attitude compared to users with medium levels of experience. But, from medium level to high level of experience, the attitude slightly decreases towards adoption of M-Commerce. Hence, hypothesis H4 stands supported.

Table 5.6: Adoption Intention v/s Experience Level

Adoption Intention v/s Experience Level	Experience Level					
	No Experience	Low-level	Medium-level	High-level	F-value	Sig.
Adoption Intention (Mean Value)	-	3.11	2.56	2.25	8.415	0.001

From the analysis, we infer that 43.4% of the respondents, irrespective of their experience level, show positive adoption intentions towards M-Commerce apps, whereas 35.8% of the respondent seems neutral, and the remaining are not in favor of adopting this new technology. Similarly, it can be stated that on average, an individual with lesser experience shows higher adoption intention compared to an individual with moderate (Mean value=2.56/5.0) experience and high level of experience (Mean value=2.25/5.0) with $F(3,49)=8.415$ at $p<0.05$. Hence, hypothesis H5 stands supported.

Table 5.7: Adoption Intention v/s Age group

Adoption Intention v/s Age group	Age Group					
	16-30 years	31-45 years	46-60 years	Above 60 years	F-value	Sig.
Attitude (Mean Value)	3.80	2.88	3.0	4.0	8.965	0.002

From the analysis of Table 5.7, we infer that proportionately, the younger age group seems to accept this new technology more than the older age group. This is backed by the result of analysis of variance, $F(3,49)=8.965$ at $p<0.05$. Therefore, hypothesis H6 stands supported.

Table 5.8: Perceived Risk v/s Age Group

Perceived Risk v/s Age Group	Age Group					
	16-30 years	31-45 years	46-60 years	Above 60 years	F-value	Sig.
Perceived Risk (Mean Value)	3.75	3.55	4.0	4.0	7.956	0.002

Contrary to the general perception that there is no significant role of age in the perceived risk avoidance in adopting new technology system like M-Commerce for buying products (Dabholkar, Bobbit and Lee, 2003), the findings of the analysis in this study is different. Based on the analysis of results, from Table 5.8, we can infer that on average the perceived risk avoidance is higher for higher age groups, at ANOVA value, $F(2,50)=7.56$ at $p<0.002$. Hence, hypothesis H7 stands supported.

Table 5.9: Perceived Usefulness v/s Age Group

Perceived Usefulness v/s Age Group	Age Group					
	16 – 30 years	31 – 45 years	46 – 60 years	Above 60 years	F-value	Sig.
Perceived Usefulness (Mean Value)	3.97	4.02	4.0	3.0	9.357	0.002

The analysis result stated that 26 out of 36 respondents fall in the age group of 26–34 years; they agree to the perceived usefulness of M-Commerce apps influenced through various social media and group. Similarly, 10 out of 15 respondents in the age group of 35–44 years (middle-aged working professionals) agree to the perceived usefulness of M-Commerce apps directly influenced by social media or groups. It can be concluded that compared to older users, the younger users are highly persuaded by the perceived usefulness of M-Commerce apps as the analysis of variance value, $F(3,49)=9.357$ is highly significant at $p<0.05$.

Similarly, from Table 5.9, we infer that students, young working professionals and middle-aged working professionals have higher perceived usefulness about M-Marketing tools and M-Commerce apps compared to older generations. Hence, hypothesis H8 is supported.

Table 5.10: Attitude v/s Age group

Attitude v/s Age group	Age Group					
	16-30 years	31-45 years	46-60 years	Above 60 years	F-value	Sig.
Attitude (Mean Value)	4.44	3.65	4.0	4.0	8.954	0.001

Similarly, the analysis of variance result in Table 5.10 shows analysis of variance F(3,49)=8.954; this is again highly significant, implying that younger age groups display a positive attitude towards adopting this new technology. Finally, it can be stated that all the reviewed respondents displayed a positive attitude towards adoption of this new technology. It can be concluded based on the above findings that younger users are more positive towards adopting the new technology of m-marketing tools or m-commerce apps; however, there is need for further elaborate study on the adoption intentions and attitudes of people of higher age groups (45 years and above), towards this new technology.

Based on Table 5.10, it can be inferred that students show a higher positive attitude towards adoption of new technology compared to members of older age groups, such as young working professionals, middle-aged working professionals, and senior-level working professionals. Hence, hypothesis H9 stands supported.

6. DISCUSSION:

Based on the data analysis detailed above, it can be primarily concluded that students, young working professionals, middle-aged working professionals, and older working professionals are positive in their approach towards the features, security aspects, and benefits of adopting the latest m-commerce apps compared to other online shopping modes such as e-commerce websites, and offline modes such as retail store purchase, wholesale store purchase, and physical banking at banks. From the data analysis, it can be stated that the people of Gujarat are ready to adopt m-commerce apps in the coming years due to the primary advantages such apps offer, such as the always-on feature, one-touch accessibility, the mobility feature, convenience, and added discounts.

For future studies, this study can further be elaborated to understand value-addition to m-marketing firms, as they can send marketing-related messages or videos based on customer search patterns. Customers, on the other hand, can request information based on their current location, and perform m-commerce operations based on needs, offers, and convenience. The practical application of this study can help smartphone manufacturers in developing apps as per customer expectations. It would also help various m-commerce firms to decide whether to go for push or pull based m-marketing in the coming years to capture more market share for online purchases through mobile phones.

Limitations of this study:

Like most studies, this one, too, is not free from limitations. This study is restricted geographically to the western state of India — Gujarat. It can be extended to other parts of India in future. Here, the sample population comprises of a large number of young people. A

quota sample with a larger number of people of older age groups may provide greater insights about behaviors, approaches, and intentions of those from younger age groups. The category of homemakers, which is an integral part of Indian society, is yet to be studied for further insights into the adoption intentions towards M-Commerce apps.

This study does not discuss repeat purchase behavior, brand loyalty because of adoption intention, and customer relationship commitment due to increased satisfaction. Due to geographical constraints in data collection, convenience sampling was used here; this means the findings cannot be generalized to the entire nation. Other segments of the population, such as senior-level working professionals, senior citizens, and housewives, could be analyzed separately in more depth.

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GAMIFICATION - A REVIEW ON TECHNOLOGICAL TOOLS FOR TALENT DEVELOPMENT & ENGAGEMENT

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ABSTRACT:

Dixon, Khaled, & Nacke (2011) explained gamification as the execution of gaming techniques in the non-game environment. Google (2014) says that though gamification was initially highlighted in the year 2008, it could not get great acceptance; later in 2010, it was displayed on Google Trends. Gartner (2011) predicted that after a year, about 70% of the world's Fortune 2000 companies would utilize gamification for at least one business operation. This paper reviews the existing literature available on gamification and its strategic applications in Talent Development and Management. The paper has also tried to understand different strategies for the HR team to use in order to apply gamification in their process of acquiring and managing talent. The paper has used a qualitative approach and drawn conclusions on these bases.

Keywords: Gamification, Technology, Talent Development, Talent Engagement.

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INTRODUCTION

The aim of technology is to humanize HR, and collectively we need to spearhead and champion this cause. What used to be referred to as the Personnel Development Department in the early 1970s became known as the Human Resource Department in the late 1990s; today we refer to this department as the Talent Development and Engagement Department. Over the years, technology has played a vital role in contributing towards this paradigm shift every time. Initially HR leaders were spending time and money on consultants for hiring talent; now technology is helping them hire talent from job portals. HR leaders are also integrating job portals into their own websites to meet their talent acquisition needs. Today HR managers are comfortable with social media recruitment and mobile recruitment.

It's time for HR leaders to think about the increasing popularity of gamification. Made popular by the addiction that users have to social gaming, gamification is about taking gaming principles and applying them to design (Mas, Mesquida, Rout, Connor & Dorling, 2012). Gamification uses a virtual environment where real time techniques with simulation support the users in managing challenges. Everything from talent acquisition to progress management can be gamified within the purview of HR management. HR is often discussed more at social media and marketing oriented events than at HR-specific events. Not only are HR leaders talking about social media usage, marketing, and branding, but conversations are also steering to how social media and gamification can be used for recruitment, performance management, and learning and development (Gopinathan, Suri, 2016). More than recruitment and development of talent, gamification has been identified as one of the most important technological tools for human engagement (Majuri, Koivisto & Hamari, 2018).

OBJECTIVE:

a) To understand the concept of gamification

b) To understand the difference between gamification and simulation

c) To strategize gamification for talent development and talent engagement

LITERATURE REVIEW:

Gamification has evolved as a present-day trending technique that utilizes game techniques and game design as components to impact, measure, and recompense target user conducts. Game physiognomies such as feedback, promotions, goals, recompense, rules, features of fun, and playfulness are executed in this technique in order to solve trade complications. Gamification also helps in improving communication practices and engaging users effectively. It permits companies to instill valuable awareness into consumers, improve staff conduct, and enhance actions across other significant platforms like mobile applications,

social inter-connection applications, and websites. By utilizing these facts, organizations would become capable of monitoring the content that is broadcasted, top-standard encounters, and even consumer reactions in connection with trade outcomes. With the aid of gamification, companies can engage their staff members, acknowledge their motivation levels, and continue to involve them with apt gaming techniques. Gamification works like an extra surface on top of social co-operation software to acquire important, much needed insights into customer behavior, views, and employee actions and responses across various touch points.

Gamification creates an exceptional environment with curiosity by addressing aspects such as teamwork, emotions, fun, continuous reflection, challenges, game narrative, pleasure, rewards, and competitiveness. These aspects stir and develop positive competitiveness among staff members towards encountering challenging tasks every day. As per Pereira (2018), in the view of educational methods, the capability of gamification is great and exact, because it solves complicated conditions, contributes to participation growth, evolves autonomy and creativity, triggers desires, and fosters dialogue (Koivisto & Hamari, 2017). The observation and examination of Koivisto & Hamari (2017) states that the present surveys on gamification literature figure that learning and education are the top general situations for the study of gamification.

DIFFERENCES IN GAMIFICATION AND SIMULATIONS:

Gamification is a unique idea different from other ideas like critical simulations and games. An important uniqueness is the time cycle on which it works. Simulations and games typically enclose a conclusive starting and ending. Simulations operators and game performers are characteristically known to be engaged in a simulation or a game, respectively. Both involve an innate result — a loss or win framework, or the finishing of a task or a bunch of tasks to complete the level. While in the environment of gamification, though gamified situations are added with other matters that are general to simulations and games, they are characteristically reasoned to develop long-term involvement and supply limited specified user paths not concentrating on the loss or win framework. Kapp (2014) found that rather than promoting a whole game, in gamification, the gaming matters are added over an environment or a live program to intensify the users' motivation to get involved in the environment. Although the number of concepts of gamification increase progressively, users are familiar with the fact that gamification influences the user involvement via many psychological techniques such as goal setting, competition, and innate motivation. Examining those techniques and implementing them in the work spot is left to I-O psychologists. Leader boards, badges, virtual goods, levels, progress bars, and points are the general components added, having been characteristically 'borrowed' from conventional

games and implemented in nongame environments. Muntean (2011) reviewed that the components stated above act to motivate users by furnishing status, feedback, ability to compete, and recognition.

GAMIFICATION AND TALENT DEVELOPMENT:

Based on brain science research, by integrating a variety of game elements and techniques in the existing training content, an adaptable gamified environment can be created, thereby making learning fresh, inspiring, and enjoyable. As learning and dissemination of information generally happens over a long span of time, and trainings are not designed to be conducted in a single day, gamification has helped engage people in learning at places and times of their convenience. For topics that are theoretical or non-engaging, and in environments where learner resistance is high, gamification is appropriate for training programs with its fun and challenging approach. Kapp (2018) has highlighted that gamification is the most suited approach for skills that require fortification over time, and need to be remembered vividly by employees.

The fact that gamification has been part of training is elucidated by statistics of Talentlms, which reveal that 61% of employees use gamification in training. In a study to understand what kinds of apps employees would want to see more game-like features in, results revealed that more gamification in communication and corporate training apps and software would be appreciated. However, both these areas were found to play no role in the subjects' everyday activities or in repetitive tasks at work; instead such software were largely used to complete additional projects and side activities in order to improve work outcomes (Apostolopoulos, 2019).

Below are a few reasons why gamification should appeal to learning and development professionals. Gamified learning is well suited to deliver micro learning in short, effective bursts each day. Gamified learning allows better knowledge retention with the power of the spacing effect, while job disruption is minimized. In addition to this, consistent exposure to information to be acquired, helps learners in keeping their fresh ideas and allows them to use it in daily discussions, which can be critical when it comes to safety procedures or customer service practices. Gamified learning is found to be effective when practiced every day for duration of 60 seconds to 60 minutes. Including fun game elements, use of proven research-based techniques, and incentivizing learning are important means for value addition to employee training programs.

While deciding whether or not to merge gamification into development and learning master plans, developers realized that there are some significant features that need to be

acknowledged for developing appropriate gaming content. A proper structure and framework need to be outlined to employees for effective participation in the gamification effort. This can be achieved by clearly describing the problems in front of them, and explaining the demands and standards of gamification, thereby creating transparency. These initiatives can help develop better conduct, increase retention, promote better learning, and finally, help in achieving desired results. The quashing of ordinary stories of gamification is a good beginning to introduce in any learning plan. For subjects that require regular reinforcement and are relevant to employees' day-to-day activities, training through gamification can be implemented based on the concepts, practices, and techniques involved in the retrieval of learning after specific tenures to make sure a strong scientific foundation is at the base of the gamification efforts. The main focus must be on the anticipated result and learning of the educational meeting. Thus, gamification can contribute the desired advantage in learning if incorporated, developed, and structured with exact accuracy.

The attempt must not be aimed only at leaderboards, points, and badges. As a fundamental phase of a greater plan, learning leaders should acknowledge desired learning results and constructed gamification attempts.

GAMIFICATION & TALENT ENGAGEMENT:

As per Pontiggia (2015), the prime and foremost target of gamification is to develop the involvement of users by utilizing 'game-like mechanisms'. It is observed that involvement is a great standard in gamification, and it demands differentiation from simulation. Involvement defines a person's desire towards something which he/she is actually interested in. In this instance, we are referring to the open interest of people in taking part in these games. In any matter, the involvement can never be generated by itself (Pontiggia, 2015); the organization needs to inculcate it into their employees.

Employee engagement signifies our ability to relate and contribute to a workplace. This includes our ability to relate to the actual work or role itself, our acquaintance with our managers and leaders, our connection to associates in the work place, and the mapping of self-goals to those of the organization. The state of flow popularized by Mihaly Csikszentmihalyi in Flow: The Psychology of Optimal Experience (2013) may be experienced by employees when they are optimally engaged. Flow generates intense and focused concentration, a sense of balance in challenge and talent, a confluence of necessary action to be taken, an ability to do, a sense of personal control, extending efforts unminding of our sense of time, and an experience of an activity as naturally rewarding (Hoang, 2016). Gaming platforms are integrated with the above mentioned factors to make the experience of gaming more engaging for the player or participant. These four underlying traits need to be

remembered while designing the framework of gamification as there is a possibility of getting lost in the complexity of gaming and losing sight of the fundamental attributes that initiated the engagement. Gamification in the workplace appears to be the present trending buzzword and is sometimes seen as a brand-new concept; but that is not true. The principles and practice of gamification have been around for a while; however, platforms have evolved from a black board to multiplayer online games. In the early 1900s, the practice of gamification was outlined by Charles M. Schwab, the American steel magnate in Succeeding with What You Have. He recounted the following story.

Schwab, who was worried about decrease in production in one of his steel mills, asked the foreman for the production numbers, or "heats" produced, in the day shift. The foreman replied saying that six heats were the count, and Schwab wrote a big six on the floor with a piece of chalk. The night shift workers saw the number six and asked about it. They were informed that Schwab had put down six for the productivity of the day shift, the workers of the night shift competed hard to increase their productivity and by morning they achieved seven heats. So they erased six and put down seven on the floor. The day shift workers, getting into the 'game', were able to complete 10 heats. And this practice continued day in and day out thereby making the mill — once reckoned for poorest production — the most productive mill, compared to the others nearby. This nearly century-old story reveals that with minimal application of gamification traits such as a goal, some rules, a feedback system, and voluntary participation, the productivity of the workforce can be greatly enhanced. This story brings to light that actually Schwab was an early work-gamification designer, though he never used the word 'gamification'. The importance of knowledge of progress and setbacks and its underlying correlation with engagement and disengagement of workers is explained in The Progress Principle, by Teresa Amabile and Steven Kramer (2014). They discovered that to motivate workers and engage them optimally, progress might be the single most significant influencing variable. Like a product innovation, gamification has been displayed primely in self-optimization software such as fitness trackers with motivational scores, competitions, targets, and such.

At first, gamification was greatly steered by executing a points-based badge system, economy, and leaderboards to encourage and involve talent. The present-day fashion in gamification involves evaluating trade complications. It has diverse features of gameplay, which promotes effective outcomes. For instance, the performance evaluation process is one of the main fields of constant concern for most companies. An effective performance management system is the need of the day, which has been highlighted in a Forbes blogpost by Edward E. Lawler III:

"Performance appraisals are one of the most frequently criticized talent management practices. The criticisms range from their being an enormous waste of time to their having a destructive impact on the relationship between managers and their subordinates. Criticizing performance appraisals has a long history. For decades, the literature on talent management has pointed out the flaws in most performance management systems and in some cases recommended completely abandoning them. The problem with abandoning them is that they are vital to effective talent management."(Lawler E. Edward, 2017)

The gamification of performance management system provides employees with an opportunity to display and prove their skills, achievements, and contributions. Data and outcomes of games can help employees earn appropriate recognition, take necessary corrective actions, and move towards requisite recommended behaviors. Analyzing the staff by looking at all employees' game statuses, their performance in the game, their master plans, and their ranks in each level of the game will allow us to understand the performance of an employee at every instance continuously throughout a year. These evaluations are otherwise made in the course of just one week during the appraisal cycle. Though most of the organizations are in their incipient phases in terms of internalizing social media, gamification will improve the incorporation of social media and increase employees' involvement, thereby contributing towards an effective performance management system.

GAMIFICATION CASE 1:

Below is a case with respect to gamification. Taskville is a city-building game similar to SimCity. The consummation of tasks prompts the development of buildings and urban communities in the game field. Every city implies a gathering of people in a major association. The play status of Taskville appears on huge display, players complete their genuine undertakings and present the consummation of an errand; simultaneously, a structure in their very own city continues to develop. PowerHouse is a web-based game, which follows individual vitality use in the genuine world. A home brilliant meter sends the data on close to home vitality use to the internet game framework, and afterwards this data impacts the capacities of players in a web-based game framework. Genuine vitality challenges give further focuses and prizes to game players. They likewise give numerous smaller than usual online games which propel the players to help other people to spare vitality. Roadwarrior is SAP's preparation answer for salespeople. In a reenacted gathering, an agent ought to pick his very own answer among various decisions to react to the client's explicit inquiries. Appropriate inquiries, answers, and meeting arrangements give new identifications and focuses to salesmen, and they can advance and open new levels. Plantville is an internet game, propelled by Siemens, which gives players a chance to find out about

mechanical plant through the gameboard. This product manages both specialized and business issues of the plant and issues related to their executives. The objective of Plantville is to improve familiarity with Siemens' innovations for future clients, workers, and understudies. Strip Hero is a product instructional exercise created by Microsoft. Utilizing Riboon Hero, clients investigate the key functionalities of MS Office while unraveling some intuitive difficulties.

One such example of gamification, done using the eMee platform, has been adapted successfully at Persistent Systems Ltd. (http://www.persistentsys.com/), a global company specializing in software product and technology innovation, with around 7000 employees. This initiative helped its' 7000 staff of Persistent to collaborate on various functional activities like performance management, recognition, leaning, social interactions and recompense. At Persistent, the method has been in execution for about 3 years and staff attrition has decreased by around 350 basis points every year gradually. In the year 2013, by clearing away the demand for a hard and time-consuming end-of-year evaluation method, the firm survived by a traditional approximate of over 28,000 individual hours.

The HR department wanted to improve employee engagement at Persistent. The eMee team worked with the HR department to design and adapt the eMee platform to its specific requirements. Persistent has been using this platform for over a year now and have revolutionized their appraisal process by adapting the continuous feedback mechanism provided by the platform. eMee also provides employees an innovative platform to showcase their skill set, expertise, and professional achievements to colleagues across the organization. eMee harnesses the power of social networking and collaboration to the fullest, boosting morale and productivity.

The Ninja club is another rendition of the eMee platform. The Ninja Club is an invitations-only, technical community at one of the leading global product development companies. At Ninja club, the employees can display their technical skills, and collaborate and network with colleagues. The platform provides a profile to each Ninja club member, where the member can display his skills, recent activities, and achievements. It also allows members to follow their mentors and keep them posted on their updates. It promotes the 'desired behavior' among the Ninjas by using points/badges/levels, and leaderboards. It encourages them to perform different activities, like participating in technical events, publishing technical papers, filing patents, and offering gifts/points for performing such activities. Ninjas collect points and get promoted to the next belt.

ADVANTAGES AND FUTURE OF GAMIFICATION:

We know that if an employee is motivated, his productivity also increases. Gamification helps in motivating employees by engaging them positively and collaboratively. Gamification actually increases creativity and innovation which in turn makes employees think innovatively. Also, it helps in strengthening the communication process across various levels, as users get chances to interact with their peer groups across various functional teams. This actually connects them better with the organisation and enables them to develop a greater affinity towards the organisation.

Predicting the future of gamification in the rapidly changing work environment may be difficult. Perhaps before 2025, managers in most organizations may be required to possess gamification proficiency as a necessary competency. There would be a need to intertwine swipe-cards in the corporeal identity with the necessity to navigate through the virtual elements of any organization. The rise of biological measures in conjunction with smartphones may well be the future trend for defining roles in employee engagement practices. Eliciting awe and 'wow' experiences may become more unswerving moment-to-moment measures of engagement than survey results. Alternatively, to enhance our experience of practices and engagement with work, using biofeedback within a game platform may become commonplace. It can be understood that it is time for managers to get off the seat and get ready to involve themselves in gamification practice. One need not have to become a gamification evangelist, but a better understanding of the nuances and use of gamification may go a long way in staying upbeat with the changing necessities of being a better manager, though none can boast of having a monopoly in the understanding and application of gamification in employee engagement.

DISCUSSION AND MANAGERIAL IMPLICATIONS:

There are studies which revealed that gamification has reduced the overtime work of employees and made employees feel high levels of responsibility and commitment. Gamification actually creates a competitive spirit among employees, which in general is healthy and inculcates the spirit of collaboration among them. There are also researches which found that there is a positive relationship between gamification and employee performance. Other than performance improvement, researchers have observed psychological gains as well. There is a drastic reduction of stress among engaged employees and an observable high level of satisfaction at work place. Thus, talent engagement specialists can look out for suitable gamification platforms, not only to improve the engagement level, but also to keep the employees intact within the organisation, while reducing their stress level to a large extent.

Even though we spoke about the application of gamification in talent development and talent engagement, one cannot ignore the futuristic applications in the area of talent acquisition, too. When discussed with human resource professionals of IT industries, the views came out realistically. They all felt that HR professionals would take advantage of gamification, which reduces a lot of manual effort. Now, IT and ITES companies recruit fresh graduates through campus interviews. However, this needs to be relooked according to the country head of a leading IT company. Gamification could help them in identifying few specific skills sets generally traced in interviews. By this, the researchers understand that gamification is used for different verticals in managing talents, starting from acquisition all the way through to engaging users.

SCOPE FOR FURTHER RESEARCH:

When there is a study required to furnish proof-type suggestions for launching gamification in the workplace, there is an abundance of guidelines for the usage of gamification. In other words, Huckabee and Bissette (2014) highlighted the complete significance of lining-up game components with trade skills and performance. The reasoning of gamification techniques, such as an unfurling technique, based on a long-period plan, is better than a short-period proposal. Nevertheless, Huckabee and Bissette (2014) emphasized that games should be stimulating for motivation; generating a stimulating encounter could be tricky in a development and learning environment, where the service of learning is a chief goal. They suggest splendid stability between stimulating learners and generating learning substances as approachable and feasible.

Even though some jobs have pointed to the recognition of many components, further in depth study is required to shift beyond effective responses to examine the inter-connections between many gaming components and many distal trade results. Kapp (2014) suggested that more research is required to proof and develop Gamification models as a successful tool for organisations to improve their operational excellence. In addition to this, gamification denotes the rising fashion that favours to boost study and execution inside the workplace. There is a great chance to guide the communication around gamification and form its necessity within companies where the area of I-O psychology has an important act to work.

CONCLUSION:

Subsequent to surveying in more depth, we can gather that the concept of gamification sounds as a narrowly surrounded effort to lure staff into working out tasks anticipated generally out of them. However, the originality is that to involve and generate staff in a more intense and way, the company can utilize gamification as a productive gadget. By utilizing

gamification techniques, the Human Resource (HR) group can bring together a more flexible, satisfying, and integrated workforce. At a time of decreasing gross revenues and churn costs, gamification can assist in clearing away bitterness among the staff, evolving out of the evaluation process. Gamification can furnish an innate positive motivation to steer preferable staff conduct and promote productivity and better return on investment (ROI).

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