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THE EDITORIAL

Dear Reader,

CU Global Management Review publishes scholarly empirical and theoretical research to provide in-depth understanding of the management theories and practices. The journal aims to publish discerning, theoretically grounded, evidence-based and rigorous manuscripts on issues relevant to all aspects of management field. The journal strives to deliver an extensive contribution to the literature by advancing both theoretical and empirical research in all the major disciplines of management. The current issue provides a set of six manuscripts that provide new insights for traditional paradigms, approaches, and methods, as well as more recent developments in research methodology in management research.

The issue begins with the first research paper titled as "Foreign Exchange Rate in the Face of Coronavirus Disease: A Study of Nigeria" which investigates the foreign exchange rate in the face of COVID-19 in Nigeria, using Vector Autoregression (VAR) technique. The second paper titled "Impact of Covid-19 on Digital Payment in Rural Region in India" studies the impact of COVID-19 on digital payments through various applications especially in towns and villages of India. The next paper titled as "Customer Service in Private Sector Banks in Tirunelveli District". This insightful manuscript measures the impact of demographic profile of customers on the customer services in private sector banks. The next paper titled as "Using WSNs in Big Data System Management: Application for Firms" addresses the current challenges and provides strategies to overcome the limits of the usage of WSNs in Big Data System Management. Further, the research paper titled "The Effects of Behavioural Factors on Personal Financial Planning in Aruppukottai Town, Tamil Nadu" is an attempt to elucidate the significant association between financial literacy, financial planning, propensity to plan and future orientation. The study further determines the mediating role of the savings attitude on such associations, using Structured Equation Modelling. The final research paper titled "The Why and How of Employer Branding" offer insights to employer branding and how firms are engaging in it to reap various benefits.

CU Global Management Review invites theoretical/conceptual and empirical papers based on quantitative and qualitative research endeavours that makes significant contribution to the management field. Authors should endeavor to produce original and pragmatist knowledge based on academic rigour and of relevance for academicians, researchers, management practitioners, and policy makers in the requisite format of the journal available at the end of the current issue. For details and queries, the authors should contact on the following **email ID: cuglobalmgtreview@cumail.in.**

Foreign Exchange Rate in the Face of Coronavirus Disease: A Study of Nigeria

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Abstract

The coronavirus disease 2019 (COVID-19) does not only affect the health of the people, but the economies of nations are also not spared by the pandemic. Considering the significance of foreign exchange rate as a macroeconomic variable and a policy tool in the hands of the policy makers, empirical investigation of foreign exchange rate in the face of COVID-19 is a necessity. The present study titled: "Thus, this research explores the impact of COVID-19 on foreign exchange rate in Nigeria" based on event study methodology. Vector Autoregression (VAR) technique was applied in the analysis of the daily data on COVID-19 related positive (confirmed) cases, fatalities, and recovers (discharged cases), and the US Dollar-Naira exchange rate from 27th February to 25th September, 2020. Empirical finding indicates that COVID-19 has short-run, positive but non-significant impact on exchange rate in Nigeria. This implies that though its influence is not statistically significant, COVID-19 has the potential to further reduce the value of the Nigerian Naira. Further studies should incorporate other variables in addition to coronavirus measures while examining its impact on exchange rate in Nigeria. Government should keep a watch on exchange rates in Nigeria while designing foreign exchange policies that consider pandemic such as the COVID-19.

Keywords- COVID-19, Exchange Rate, Foreign Exchange Market, Dollar, Naira.

Introduction

The economy of a nation could be open or closed. It is open when such nation relates with other economies in trade, exchange, capital flows and other commercial activities. A closed economy, however, does not correlate with other economies of the world. It has been noted by (Babarinde, 2019; Idris et al., 2019), that there is barely any nation that can live in complete economic independence in this globalized world. According to the authors, economies of the world are connected, for instance, in terms of import, export, foreign exchange, foreign direct investment, etc. This fairly indicates that fluctuations in the value of local currency regarding other currencies of the world is a subject of economic and financial significance, since the fact that unnecessary fluctuation in exchange rate establishes a risk disclosure to the economy enormously (Babarinde, 2019; Idris et al., 2019). Thus, exchange rate is an essential variable in the macroeconomic situation, in fact, it is the most energetic price in an open economy that has the possible to affect the economy at large, and precisely the flow of goods, services, capital, balance of payments, as well as inflation and other macroeconomic variables in the country (Obi et al., 2016; Odhuno, 2020). Moreover, exchange rate has also been considered as one of the monetary aggregates through which the Central Bank's monetary policy is guided in order to achieve set policy goals such as ideal unemployment rate, inflation rate and economic growth (Gidigbi, et al., 2018).

The Nigeria economy hardly recovered from the 2016 economic recession induced by the global oil crash and inadequate foreign exchange, before the outbreak of coronavirus (COVID-19) pandemic. Historically, COVID-19 was first discovered on 31st, December 2019 in Wuhan City, Hubei Province of China (World Health Organisation [WHO], 2020), and Nigeria got her own share of the virus with the first confirmed case on 27th February, 2020 (Nigeria Centre for Disease Control[NCDC], 2020). Afterward, on 11 March 2020, COVID-19 was declared a global pandemic by WHO. Statistics from NCDC shows that, as at 25th September, 2020, the viral disease has been symbolized in all 36 States including the Federal Capital Territory of Nigeria; with the country's total confirmed cases of 58,062 and total discharged cases standing at 49,606. As at the same date, Nigeria had a total fatal case of 1103 which eventually left the total active cases to be 7353. However, globally, there were 216 countries and territories affected with 32,110,656 confirmed cases and 980,031 fatalities (NCDC, 2020).

The outbreak of pandemic has not left Nigerian economy the same then its advent in February, 2020. Principally, there is a reduction of Nigeria's output index to about 45% (AC-Ogbonna, 2020). Other effects of the pandemic include a plunge in the demand for oil products and revenues; mass unemployment; decline in income of the informal workers and the poor; food insecurity; business and school closures; economic uncertainties; hyperinflation, among others (AC-Ogbonna, 2020; Otache, 2020; Ozili, 2020). Furthermore, the pandemic has led to business letdowns, and reduction of the value of currency, most especially in developing countries (Malata & Pinshi, 2020; Zhang et al., 2020). In the same vein, Olure-Bank et al, (2020), restated the issue of the fluctuating of the Naira, that the Nigerian exchange rate policy changes is an overvaluation of currency, which ends in the alteration of the economy. According to the authors, the overvaluation mobs out local production and cheers importation; as import becomes fairly cheaper.

There is a constant decline in oil prices which is Nigeria's major foreign exchange earner (providing more than 60 percent of government revenue). The oil sales being denominated in U.S. dollars, there makes it to account for more than 90 percent of Nigeria's foreign exchange (Central Bank of Nigeria [CBN], 2019). The declining of the Nigeria's foreign exchange reserve has put the country in a very tough economic position and this compounded by the economic significances of the coronavirus pandemic. As a result of the shortage in foreign exchange earnings, the CBN devalued the Naira from an official rate of ₦306 to ₦360 per dollar (Campbell, 2020). The coronavirus-driven doubt describing the investment in Nigeria fixed with fall in the value of the Naira, have encouraged foreign investors to be averse in holding Naira-denominated assets and domestic investors are also running to meaningless investment climates which are less hit by the virus. Ozili (2020) observes that the fear of financial and economic failure led to panic buying, hoarding of foreign currency by individuals and businesses for hypothetical reasons, flight to safety in consumption, households stocking up on essential food and commodity items, businesses asking workers to work from home to reduce operating costs.

It has been established that panic-laden news (such as information on cases on the coronavirus), to a large extent is impactful on financial markets (money, capital and foreign exchange markets) and economic sectors (Haroon & Rizvi, 2020). Scholars have demonstrated that coronavirus is of great impact not only on the health of the people but most important also, on the macroeconomic environment. Variables in the macro-economy such as the foreign exchange rate in developing country like Nigeria is of importance considering its role as monetary policy instrument capable of influencing macroeconomic aggregates such economic growth, foreign reserves, international trade, balance of payments, and inflation. Considering the fact US Dollar constitutes the most traded foreign currency in Nigeria, it is suitable to empirically examine the behavior of the US Dollar-Naira exchange rate in the face of COVID-19 currently ravaging the world. The extent to which the foreign exchange rate responds to information on cases of COVID-19, has not been explained in empirical studies, most especially in developing country such as Nigeria. While some studies examined the influence of coronavirus on the economy at large (AC-Ogbonna, 2020; Otache, 2020; Ozili, 2020; Ozili & Arun, 2020); an event study of the impact of coronavirus on specific macroeconomic variable such as the exchange rate is considered a relatively virgin ground in Nigeria treaded by few scholars, if there is any. Thus, this study attempts to fill the empirical hole.

Therefore, this study aims to determine the response of the US Dollar-Naira exchange rate to cases of positive, discharges and fatalities resulting from coronavirus disease in Nigeria from 27th February to 25th September, 2020. However, the specific objectives of this study are:

1. To determine the relationship between COVID-19 fatalities, positive cases, recovered cases, and foreign exchange rate in Nigeria.

2. To assess the impact of COVID-19 positive cases on foreign exchange rate in Nigeria;

3. To evaluate the impact of COVID-19 fatal cases on foreign exchange rate in Nigeria; and,

4. To examine the impact of COVID-19 recovered cases on foreign exchange rate in Nigeria.

Literature Review

Foreign exchange basically refers to foreign currency, but the price at which a foreign currency is accepted and sold in the foreign exchange market establishes foreign exchange rate (or simply exchange rate. The author conceptualizes exchange rate as the ratio at which a unit of currency of one country is expressed in terms of another currency. In other words, a section of the financial market where foreign exchange rates are determined is called foreign exchange market. According to (Ayodele et al., 2020), the market deals with the determination of the ratio of the local currency to its foil foreign currency, especially in adopting of international trade and transactions.

Although past empirical findings on the on the effect of exchange rate on economic growth in Nigeria are mixed between positive (Afolabi et al., 2016; Anyanwu et al., 2017) and negative (Ayodele, 2014; Idris et al., 2019), but there is a compromise confirmation of a long run relationship between foreign exchange rate and gross domestic product of countries (Afolabi et al., 2016; Anyanwu et al., 2017; Ayodele, 2014; Idris et al., 2019). This implies that since foreign exchange rate in Nigeria has long-term inferences on the growth of the economy and by extension, aspects in the macroeconomic environment, such as the COVID-19 which could be potentially leading on foreign exchange rate, should be not be ignored. In the same vein, (Anyanwu et al., (2017) contended that the exchange rate policy constitutes the life-wire of the Nigerian economy, most especially from the 1986's Structural Adjustment Programme, which the marked the genesis of depreciation of the Naira's against the US dollar. Authors further stated that a favorable foreign exchange rate is normally to reduce cost of living, especially for developing countries such as Nigeria which rely deeply on imports for consumption. The authors demonstrate the Nigerian Naira/US Dollar exchange rate to shape production activities in the country, such that any fluctuation in the value of the US dollar would be transferred by way of shocks to Nigeria due to our reliance of dollar for importations.

The performance of the financial market depends mostly on the fundamental condition of the economy within which it operates (Ayodele et al., 2020). The coronavirus is a global pandemic, which constitutes not a health threat but economically frightening. The virus is spread via droplets of saliva or touching contaminated surfaces. The World Health Organization gave certain preventive measures to be taken in order to minimize the spread of the virus. Some of these guidelines include regular hand washing with soap and water or use of an alcohol based hand sanitizer; maintaining social distancing, avoiding touching eyes, nose and mouth; use of face shield

or nose mask; good breathing hygiene; staying at home and self -isolation whenever an individual feels unwell; and also seeking of speedy medical attention in case symptoms such as malaria accompanied simultaneously by cough, sore throat, fever, difficulty in breathing, loss of taste or appetite, and others.

According to (FXCM, 2020), COVID-19 placed significant pressure on the foreign exchange rates of evolving market currencies. The author posits that widespread lockdowns, travel bans, and quarantines prompted a severe world-wide economic contraction, which translated into shutdown of commerce, turbulence in the commodity markets and a rush to safe-havens, which eventually destabilized the exchange rates of emerging market currencies. According to the author, the interrupted market volatilities prompted widespread value destruction in risk assets and commodities, and consequentially, investors rushed into safe-haven assets, led by the US Dollar, for insurance against the unknown.

COVID-19: Channels of Transmission of Economic Harm

Baldwin and Weder di Mauro (2020) observed that COVID-19 virus is transmittable economically as it is medically. The four channels of transmission of economic harm of the virus, catalogued by World Food Programme [WFP], (2020), are global trade (supply and prices of food and primary commodities); foreign financial flows (remittances); tourism, and domestic capital. The report further explains that global value chains are being disrupted by factory shutdowns and delayed resumption of operations. Commodity prices as a result are also disrupted and there is also a decline in foreign financial flows (remittances) or its shifting away from coronavirus-driven countries. Furthermore, the WFP opines that the declining demand and expanding travel restrictions also cause a fall in revenue stream from tourism and the domestic human and financial capital become underutilized as factories are idled and people stay at home.

Similarly, Baldwin and Weder di Mauro, (2020) stated that economies are coupled by cross-border flows of goods, services, knowhow, people, financial capital, foreign direct investment, international banking, exchange rates and also by beliefs. These flows within and across nations, according to the authors, are also likely vectors connecting the medical and economic aspects of COVID-19. Explaining exchange rate as a classic mechanism of shock transmission of coronavirus, Baldwin and Weder di Mauro gave the example of the Asian crisis of the late 1990s, wherein, companies and countries that had borrowed in one currency while earning income in another; such that a sudden exchange rate devaluation of the Thai currency, almost instantly made many Thai companies bankrupt due to the fact that the dollar value of their income couldn't cover the dollar cost of the interest and loan repayment obligations. Similarly, the lessons of these crisis has led to significantly less cross-currency borrowing (Baldwin & Weder di Mauro, 2020). Ozili and

Arun, 2020) in their idea identified two methods by which coronavirus stifled economic activities. First, the authors explained that the coronavirus-induced social distancing led to the closure of financial markets, corporate offices, businesses and events. Similarly, the exponential rate at which the virus was spreading, and the delicate uncertainty caused by the pandemic spur flight to safety in consumption and investment among consumers, investors and international trade companions.

Empirical Review

Empirically, relatively few studies have been carried out on the impact of COVID-19 on exchange rates. For instance, Iqbal et.al. (2020) explored the nexus between COVID-19, temperature and exchange rate in Wuhan city, China. The result of the study revealed that temperature does not played any role in the containment of COVID-19 in Wuhan but the virus had a negative but limited impact on Chinese currency exchange rate against US Dollar. This suggests that the more the number of confirmed cases of coronavirus, the higher the value of the Chinese currency vis-à-vis US Dollar.

In another study, Banerjee et al. (2020) assessed the effect of COVID-19 on the foreign exchange rates and stock market performance of India via correlation analysis and VAR technique. The correlation analysis indicates a positive relationship between COVID-19 and exchange rate, while a negative correlation was confirmed to exist between the virus and stock market in the country. This suggests that growth rate of the number of confirmed cases, the higher the rate of depreciation of Indian currency, and the lower the performance of the country's stock market. The result of the VAR model differs by showing that COVID-19 cases has no significant effect on the values of the exchange rate and stock market in the country. In line with VAR estimates, the authors assert that increase in the confirmed COVID-19 cases caused suggestive but not statistically significant changes in the values of the exchange rate and stock market in India.

Comparatively, in the epicenter of COVID-19, Wuhan, China, the virus does not a constitute a significant determinant of exchange rate (Iqbal et. al., 2020). This same suggestive but non-significant relationship between the virus and exchange rate was also confirmed by Banerjee et al. (2020) in India.

In another study, Odhuno (2020) noted that as COVID-19 pandemic continues, the disorder of foreign exchange rates becomes a serious policy concern. According to the scholar, the impact of the pandemic on the exchange rate in Papua New Guinea (PNG) was difficult to assess and was also limitation in the success of monetary policies at smoothening exchange volatility at times of crisis.

Furthermore, Benzid and Chebbi (2020) studied the impact of COVID-19 cases and related deaths in the US on the country's exchange rate volatility. Unlike Odhuno (2020), Benzid and Chebbi

clearly show that an increase of the number of cases and the deaths in the US has a positive impact on the USD/EUR, USD/Yuan and USD/Livre Sterling exchange rates. This implies that the more of COVID-19 cases, the lower the exchange rate value of USD against the comparative currencies. By this result, the authors have shown that the pandemic is a significant determinant of exchange rate fluctuation in US, unlike the non-significant effect of the pandemic on exchange rate in China and India based on the submissions of Iqbal et.al. (2020) and Banerjee et al., (2020) respectively.

In another study, Bakar and Rosbi (2020) explored the impact of COVID-19 on equity market and currency exchange rate between US dollar (USD) and Malaysian Ringgit (MYR). The study concludes that COVID-19 exerts significant negative impact on equity market index and currency exchange rate in Malaysia.

In a related empiric in Nigeria, Ayodele et al. (2020) evaluated the effect of the coronavirus on the performance of the Nigerian money market, capital market, and foreign exchange market. The results of the study show evidence of a low positive parallel between coronavirus and each of money market rate and the capital market. The study also confirmed a moderate and positive correlation between the virus and foreign exchange rate in Nigeria. This implies that the more the number of confirmed cases of the COVID-19 in Nigeria, the higher the level of depreciation of the Naira against US Dollar. This shows that exchange rate in Naira does not displays elasticity against the shock from the virus.

Research Methodology

This study adopts an event study approach, which in line with similar studies (Babarinde, 2020; Ikwuagwu et al., 2020; Liu et al., 2020) entails the measurement of the impact of a particular event/activity/phenomenon on a subject of interest. An event study focuses on the impact of an event, occurrence, entity on a variable of interest. Thus, confirmed, discharges and death cases resulting from the COVID-19 were studied vis-à-vis their impacts on USD-Naira exchange rate. The daily time series data on foreign exchange rate were sourced from the CBN website while the Nigeria Centre for Disease Control (NCDC) website constitutes the source of data on COVID-19 cases. The study covers a period from the first confirmed case of COVID-19 in Nigeria (27th February 2020) to September 25, 2020.

Following similar studies (such as Alade et al. 2020;, Babarinde, 2020;, Banerjee et al., 2020), this current study employs Vector Autoregression (VAR) model in the analysis of data. The VAR model, aside it usage for data description, estimation and forecasting (Babarinde, 2020), the model is also reputed to be flexible, simple and applicable for modelling multivariate time series data which are autoregressive in nature (Suharsono et al., 2017). With a high forecasting ability, VAR technique is also applicable in determining short-term changes in variables (Cuvak & Kalinauskas, 2009).

Therefore, the model of this study is as specified in equation (1). The VAR model in equation 1 expresses the endogenous variable (EXCR) as a function of its lagged values and the lagged values of indicators of COVID-19 included in the model.

$$EXCR_t = \alpha + \Psi_0 EXCR_{t-1} + \Psi_1 EXCR_{t-2} + \beta_1 CNNP_{t-1} + \beta_2 CNNP_{t-2} + \Phi_1 CNNF_{t-1}$$
$$+ \Phi_2 CNNF_{t-2} + \gamma_1 CNNF_{t-1} + \gamma_2 CNNR_{t-2} + \varepsilon_t \qquad (1)$$

Where;

EXCR denotes exchange rate measured as the central rate of US Dollar-Naira rate on a daily basis,

CNNP represents COVID 19 daily new positives (confirmed cases),

CNNR represents COVID 19 daily new recovers (discharge cases),

CNNF represents COVID 19 daily new fatalities (death cases),

Ψ β Φ, γ are the short-run dynamic coefficient of the model adjustment,

γ is the error term,

t = time in days from 27th February to 25th September, 2020.

Results and Discussion

According to the descriptive statistics in Table 1, the average Dollar-Naira exchange rate was N348.62. The rate was as high as N379.50 per US Dollar between 27th February, 2020 and 25th September 2020, while the lowest was N306.45. With an associated standard deviation (50.64) lower than its mean value, exchange rate displayed some level of stability over the study period. Exchange rate is negatively skewed (-3.41) and also leptokurtic (kurtosis>3) in nature. The Jarque-Bera formally confirms the non-normality of exchange rate, this is in line with the results of the non-zero skewness value and non- mesokurtic nature of the series.

Furthermore, the statistical behavior of the indicators of coronavirus disease between 27th February and 25th September, 2020, shows that the positive, fatal and recovered cases of COVID-19 in Nigeria to be 275, 5 and 173 respectively on daily basis. There were days when the cases reported were as low as zero for the positives, fatalities and fatalities related cases of the COVID-19. However, there was a maximum of 790, 31 and 3442 cases of positives, fatalities and recoveries respectively in relation to coronavirus disease in Nigeria in the period under study. A comparison of the standard deviation with their respective average value reveals that COVID-19 new positive and fatal cases are not widely dispersed from their mean, but just like exchange rate which exhibits stability over the study period. However, COVID-19 new recovery per day are volatile, (or widely

dispersed), as evidenced by its standard deviation value (297.30) which exceeds it mean value (172.86). Furthermore, COVID 19 daily new fatalities (CNNF) and COVID 19 daily new recovers (CNNR) have their respective kurtosis exceeding 3, thus, they could be described as being leptokurtic. This is against COVID 19 daily new positive cases (CNNP), whose kurtosis is less than 3, thus could be regarded as being platykurtic. Even though, the skewness of CNNP is roughly zero, the formal test of normality (J-B), shows that all the three indicators of coronavirus, (including CNNP) are not normally distributed. This is because the hypothesis of normality is rejected at 0.01 significant level.

Table 1: Descriptive Statistics

Variables	Mean	Minimum	Maximum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
EXCR	348.624	306.450	379.500	50.648	-3.411	15.040	1787.625*
CNNP	274.919	0.000	790.00	222.422	0.368	1.928	14.930*
CNNF	5.480	0.000	31.000	5.473	1.234	4.789	77.498*
CNNR	172.867	0.000	3442.000	297.309	7.105	73.278	45412.720*

Source: Authors' computation from E-views (2021).

Note: *Statistically significant at 0.01

Stationarity Tests

The results of the stationarity test piloted using Phillips-Perron (PP) display that exchange rate (EXR), COVID-19 new fatalities (CNNF) and COVID-19 new recovers (CNNR) passed the stationarity test while COVID-19 new positive (CNNP) showed non-stationarity. This means that, three of the variables are co-integrated, while the other one is non-cointegrated. Since CNNP is found to be non-stationary, the order of integration is ascertained and the stationary form of the variable is added to the VAR model (García-Ascanio & Mate, 2010).

Table 2: Phillips-Perron (PP) Unit Root Tests

Unit Root Test Type	Variables	t-Statistic	Prob	I(d)
Phillips-Perron test statistic	EXR	-5.971	0.000*	I(0)
Phillips-Perron test statistic	CNNF	-9.056	0.000*	I(0)
Phillips-Perron test statistic	CNNP	-31.817	0.000*	I(1)
Phillips-Perron test statistic	CNNR	-4.822	0.000*	I(0)

Source: Authors' computation from E-views (2021).

Note: * denotes rejection of null hypothesis of presence of unit root at 0.01 significance level.

Vector Autoregression Analysis

Vector regression model was used in this study due to the non-stationarity of the dataset (Alade et al., 2020). This is also in addition to its added advantage of correcting for any element of multicollinearity, auto-correlation, heteroscedasticity (Cuvak & Kalinauskas, 2009). To determine the lag length appropriate for the model, three criteria were applied, namely, the Akaike information criterion (AIC), Schwarz information criterion (SC) and the Hannan-Quinn information criterion (HQ) for determining the appropriate lag length for the model. Starting from lag 1 to 8 and the selected lag length values for the AIC, SC and HQ are as shown in Table 3.

Table 3: VAR Lag Order Selection Criteria

Lag length	Akaike Value	Schwarz Value	Hannan-Quinn Value
1	36.413	36.757*	36.552*
2	36.330*	36.949	36.581
3	36.376	37.271	36.739
4	36.428	37.599	36.902
5	36.554	38.000	37.140
6	36.632	38.354	37.330
7	36.743	38.740	37.552
8	36.735	39.008	37.656

Source: Authors' computation from E-views output (2021).

Note: * optimum lag selected due to be smallest value out of the criteria

From Table 3, Akaike criterion indicated that the optimum lag length is two (2), because lag 2 has the smallest values for the criterion. Therefore, the VAR model is estimated based on lag order two formation, in line with the suggestion of AIC. The results of the VAR model are summarised in Table 4 below (details in the appendix).

Table 4: Vector Autoregression Estimates (Summary)

Variables	Coefficient	S.E.	t-statistic	p-value
EXCR (-1)	0.958	0.073	13.054	0.000
EXCR (-2)	-0.002	0.072	-0.035	0.973
CNNF(-1)	0.020	0.066	0.302	0.750
CNNF(-2)	-0.004	0.067	-0.067	0.944
D(CNNP(-1))	0.002	0.003	0.617	0.525
D(CNNP(-2))	0.001	0.003	0.300	0.767
CNNR(-1)	0.000	0.001	0.214	0.811
CNNR(-2)	0.000	0.001	0.261	0.735
Constant	15.873	6.104	2.600	0.009
R-squared	0.954			
Adj. R-squared	0.952			
Serial correlation : LRE/ Rao Fstat	19.813/1.244			0.2288

Source: Authors' computation from E-views output (2021).

In this study, impact of COVID-19 associated positives, discharges and fatalities, on exchange rate in Nigeria are examined using VAR technique. The estimates of the model as reported in Table 4 indicate that the lag one of exchange rate (EXCR (-1)) has positive and significant impact on its

current value. However, the lag two of exchange rate (EXCR (-2)) exerts negative and non-significant influence on its own current value. These results indicate the autoregressive properties of exchange rate in Nigeria.

Furthermore, the lagged one COVID-19 new fatalities (CNNF (-1)) and lagged two COVID-19 new fatalities (CNNF (-2)) have positive and negative positive associations with exchange rate respectively but neither of them is statistically significant. In the same vein, the lags one and two of COVID-19 new positives (CNNP) have positive but statistically insignificant impact on exchange rate in Nigeria. Likewise, lagged one COVID-19 new recoveries (CNNR (-1)) and lagged two COVID-19 new recoveries (CNNR (-2)) are positively related with exchange rate but neither of them is statistically significant. Generally, the positive and non-significant impact of coronavirus on exchange rate in Nigeria implies that as the number of cases of coronavirus increase so does the value of Naira decrease in relation to US Dollar, this is because in a floating exchange regime that we are in Nigeria, the local currency (Naira) loses its value when the amount of local currency needed to acquire a unit of the foreign currency (say Dollar) increase. This finding is in tandem with Banerjee et al., (2020) in India, Benzid and Chebbi (2020) in USA, but contrary to Iqbal et al., (2020)'s finding that the virus had a negative but limited impact on Chinese currency exchange rate against USD, and Bakar & Rosbi (2020) who show that COVID-19 creates significant negative impact for equity market index and currency exchange rate in Malaysia.

In summary, COVID-19 related positive, discharged and fatal cases do not exert significant on exchange rate in Nigeria in the study period. This suggests that information on coronavirus disease does not significantly explain variation in the Dollar-Naira exchange rate. This is suggestive of the fact that Nigeria foreign exchange market tends to exhibit perceived resilience against the impact of COVID-19, just like how China and India do in line with the findings of Iqbal et.al. (2020) and Banerjee et al. (2020) respectively.

The review above exposures the scantiness of research on the effect of coronavirus disease on exchange rate in Nigeria. Thus, this current study serves as one of the pioneering studies on the subject matter of exchange rate-coronavirus nexus in the country.

Conclusion and Recommendations

This study examined the impact of coronavirus disease (COVID-19) on foreign exchange rate in Nigeria based on event study methodology. This study uses the daily data of COVID-19 related positive cases, fatalities, recovers and the US Dollar-Naira exchange rate from 27th February to 25th September, 2020. Empirical findings show that, though, there is an evidence of a weak positive correlation between exchange rate and coronavirus related positive, fatalities and recovers cases in Nigeria, the short run impact of these events as discovered by the vector

autoregression (VAR) shows that of positive but is not statistically significant in explaining the movement in exchange rate in the period of study. This implies that coronavirus disease has potential to cause a loss in the value of the Naira, but it is not statistically significant over the study period. This is based on the fact that as the number of cases increases, so also the rate of exchange of Naira to US Dollar increase, thus making Nigerian Naira loses value in terms of its exchange value with Dollar. It can therefore be concluded that coronavirus disease is not a significant determinant of exchange rate in Nigeria, thus revealing a potential and suggestive resilience of the Nigerian foreign exchange market against coronavirus-oriented shocks.

It is therefore recommended that the Nigerian Government should keep a watch on exchange rates in Nigeria while scheming foreign exchange policies that can moderate the effect of pandemic such as the novel coronavirus disease. It is also suggested that further studies should incorporate other variables in addition to coronavirus measures, while examining the effect COVID-19 on foreign exchange rates in Nigeria. Moreover, does the finding of this study which seems to portray Nigerian foreign exchange market to be resilient place Nigeria in the same economic class hierarchically with countries like China and India in terms of the responses of their foreign exchange market to COVID-19? This constitutes another subject worthy of empirical investigation in the future.

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APPENDIX

Vector Autoregression Estimates

Standard errors in ( ) & t-statistics in [ ]				
	EXR	CNNF	D(CNNP)	CNNR
EXCR(-1)	0.958678	-0.022280	0.432107	1.168891
	(0.07344)	(0.07802)	(1.50379)	(5.06626)
	[13.0546]	[-0.28556]	[0.28734]	[0.23072]
EXCR(-2)	-0.002598	0.043662	-0.089111	1.660221
	(0.07257)	(0.07710)	(1.48601)	(5.00634)
	[-0.03580]	[0.56629]	[-0.05997]	[0.33162]
CNNF(-1)	0.020187	0.362448	1.005385	6.243446
	(0.06668)	(0.07085)	(1.36547)	(4.60024)
	[0.30275]	[5.11596]	[0.73629]	[1.35720]
CNNF(-2)	-0.004502	0.274135	0.231409	-4.184553
	(0.06705)	(0.07124)	(1.37303)	(4.62573)
	[-0.06714]	[3.84810]	[0.16854]	[-0.90463]
D(CNNP(-1))	0.002145	0.014649	-0.616039	-0.018694
	(0.00348)	(0.00369)	(0.07119)	(0.23984)
	[0.61713]	[3.96595]	[-8.65353]	[-0.07794]

D(CNNP(-2))	0.001049	0.006539	-0.277009	-0.161965
	(0.00350)	(0.00371)	(0.07158)	(0.24114)
	[0.30015]	[1.76072]	[-3.87013]	[-0.67167]
CNNR(-1)	0.000409	-0.000890	-0.064522	0.271272
	(0.00191)	(0.00203)	(0.03912)	(0.13178)
	[0.21411]	[-0.43866]	[-1.64950]	[2.05848]
CNNR(-2)	0.000501	0.002185	-0.061467	0.242229
	(0.00192)	(0.00204)	(0.03929)	(0.13235)
	[0.26130]	[1.07220]	[-1.56463]	[1.83020]
C	15.87368	-5.835139	-106.6037	-924.5757
	(6.10472)	(6.48607)	(125.010)	(421.157)
	[2.60023]	[-0.89964]	[-0.85276]	[-2.19532]
R-squared	0.954135	0.396102	0.318586	0.180211
D(CNNP(-2))	0.001049	0.006539	-0.277009	-0.161965
	(0.00350)	(0.00371)	(0.07158)	(0.24114)
	[0.30015]	[1.76072]	[-3.87013]	[-0.67167]
CNNR(-1)	0.000409	-0.000890	-0.064522	0.271272
	(0.00191)	(0.00203)	(0.03912)	(0.13178)
	[0.21411]	[-0.43866]	[-1.64950]	[2.05848]
CNNR(-2)	0.000501	0.002185	-0.061467	0.242229
	(0.00192)	(0.00204)	(0.03929)	(0.13235)
	[0.26130]	[1.07220]	[-1.56463]	[1.83020]
C	15.87368	-5.835139	-106.6037	-924.5757
	(6.10472)	(6.48607)	(125.010)	(421.157)
	[2.60023]	[-0.89964]	[-0.85276]	[-2.19532]

R-squared	0.954135	0.396102	0.318586	0.180211
Adj. R-squared	0.952163	0.370128	0.289278	0.144951
Sum sq. resids	3129.158	3532.307	1312157.	14893049
S.E. equation	4.101638	4.357855	83.99170	282.9667
F-statistic	483.6768	15.24988	10.87024	5.110950
Log likelihood	-547.3062	-559.1220	-1136.076	-1372.925
Akaike AIC	5.705705	5.826892	11.74437	14.17359
Schwarz SC	5.856766	5.977953	11.89543	14.32465
Mean dependent	358.8436	5.589744	1.194872	186.4154
S.D. dependent	18.75314	5.490939	99.62917	306.0130
Determinant resid covariance (dof adj.)	1.77E+11			
Determinant resid covariance	1.46E+11			
Log likelihood	-3613.468			
Akaike information criterion	37.43044			
Schwarz criterion	38.03469			
Number of coefficients	36			

Impact of covid-19 on Digital Payment in Rural Region in India

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Abstract

In a fastest "moving digital world there is one largest growing mode of making payments called as Digital Payments. Digital payment is an emerging concept of that involves a monetary transaction between two or more people by adopting online or digital platform instead of having exchanging money physically. It is a platform where no physical interaction is required to pay or receive sum of money that can be done via mobile or computer across globe round the clock. The main objective of making payments digital is to have fair recording of all monetary transactions and safeguarding public from loos of theft of their hard earned money. COVID-19 or Coronavirus is a serious health disease due to which the whole globe was declared as pandemic and shuts all business through implementing worldwide lockdown by governments of every nation in order to safeguard health's and lives of common people suffering to which numerous individuals lost their existence. The aim of present research is to study the concept of digital payment along with impact of COVID-19 on digital payment services especially at root level that is in towns and villages of India. The secondary research covers some view-points or insights of other researches who contributed their knowledge in related concern. The conclusion of present research paper shows that there is an high increase in use of digital payments services through various applications in Indian towns and villages which was not much high" before the happening of world-wide pandemic Covid-19.

Keywords: Digital payments, COVID-19, Monetary transaction.

Introduction

The "term digital payment refers to a process of making some payment for certain sum of amount through using mobile application or website round the clock across globe. This involves direct transfer of money from debtor's bank account to creditor's bank account without having any physical transaction between parties. Government of every nation contributes its efforts in promoting digital payments services regularly which is backed by several benefits. The concept of digital payment has taken birth last decade but is now trending with faster pace" especially in towns and "villages of India after the happening of world-wide pandemic that is COVID-19 which has taken all economies to face set back due to regulation of full lockdown."

In India "the concept of digital payment starts flouring in year 2016 though launch of Digital India mission encouraging Indian businessman's as well as country people adopting digital technology in their life in order to strength country's economy through paperless, Faceless and cashless transactions. In year 2020 when country faced huge negative impact due to coronavirus every second person has started making payments for purchase of their essentials through digital move by avoiding cash payments in order to safeguard themselves from any kind of contact with another person whether a person from city, town or even villages. An individual can make digital payment either by installing mobile banking application or by any third party app such as Amazon Pay, Google Pay, Phone Pay, Paytm and several others where both the parties such as payer as well as payee are required to link their bank account with payment application in order to place transaction or needs to deposit amount on their digital wallet of installed" application.

The "impact of COVID-19 had an adverse effect on most of the industries world-wide such as retail, fashion, hospitality, airlines and several others, on the other hand the global pandemic has boosted use of digital payments in few sectors such as buying groceries and medicines online, subscribing OTT (over-the-top) channels for latest movies or web series with an compliance of governmental rule for maintaining social distance and less use of cash payments in circulation. Many shopkeepers in order to make their cashless sales have adopted a means of digital payment which allowed them to accept and make various transactions through different applications. Not only there are third party applications but some of the e-commerce websites such as Amazon or messenger applications like WhatsApp have also started offering digital payment" services to general public.

The "concept of digital payment services has provided endless benefits to public in having easy as well as frequent payments and also acts as a necessity after the happening of COVID-19. The first and foremost advantage of making transactions through digital services is that it assists society in maintaining social distance and safeguards their life from any kind of contact with infection or viruses. Making payments through applications encourages people through availing some cash backs or shopping vouchers that motivated them to make more use of such digital payment service applications and make their payments. In the areas of towns or villages where buying and selling necessities through cash was very difficult, digital payment helped" sellers to make "their sales and experience increase due to acceptance of digital payments directly into their bank accounts, this also reduced their stress for depositing money into bank at the time when even banks were closed. Digital payments helps public in making their dues clear even from distant places or helping their peer members when they are in need, digital payment does not take into consideration the location or place of payer as well as of payee. It was very helpful for using digital payments in order to make payments of their utilities such as electricity bill payment, fuel, and

school or college fees, home rents and even helped a lot in having" regular investments.

Objectives of the Study

The objectives of the study are as follows.

- To study the "concept of digital payment system in rural region in India."
- To know the "usages of digital payments."
- To highlight the "issues of digital payment systems."

Different Digital Payments Apps

Google Pay (Tez)

The "application was being launched by Google Incorporation launched in year 2015. Google pay is most commonly used digital payment application that is easily available on android or iOS operating systems. An individual can transfer money or pay its utility bills either directly from their bank account or by having Unified Payment interface (UPI) id that can be created only after installing Google Pay application. The app offers dual security to its users as well as securing through their fingerprints which makes them stress free from any kind of theft or losing their secret credentials. It can be used by small shopkeepers, wholesalers or even large business organisations to make or receive their payments. As of date the application has more than 100 million users out of which more than 67 million are solely from India making transactions higher than $110 billion every year."

Paytm

Paytm is an "Indian origin digital payment service third party mobile and computer based application. The concept of Paytm came into existence in year 2010 as a private business operating firm. The application has a specialisation in areas of e-commerce, financial technology as well as digital wallets. It a widely accepted application that offers its services in 11 different languages of India with an aim that can be easily understood by every citizen" of country. Other than "serving facility of making and receiving payments, the application also fulfils several needs of its customers such as by its Paytm mall, Gamepind, Paytm money, Paytm smart retail and Paytm Payments bank. As of date the application is having more than 350 million users who are active to its services and considers application for their use generating net income of more than 360 million each year."

PhonePe

PhonePe is "another Indian based payment service application being launched in year 2015 as a

private owned multilingual mobile and computer based application. The company has it's headquarter in Bangalore city in Karnataka region of India. PhonePe is a unified payment interface (UPI) based app where a user is required to link his or her bank account and generate a UPI id to make any kind of transaction or paying utility bills. Like Paytm the app is also available in 11 languages for users from India. As of date the application is having more than 280 million customers who use services of PhonePe." In the year 2020 January the company has launched ATM service for its users under the name "PhonePe ATM". It generates revenue more than $60 million each year.

Internet Banking

The "concept of internet banking is also referred as web banking or online banking by users. A bank account holder can avail services through internet banking either by installing mobile application or by direct visit on its official website from bank account of one party to another. This offers various kinds of corporate as well as personal banking assistance in a form of money transfer, having a look towards transactions which recently made, generating statements, paying bills for utilities and several others. The application provides dual security to its users so to remain stress free from security issues and fear. As of date more than 150 million account holders uses services through online banking comprising more than 45 million users from urban areas of India. "

Literature Review

Singhal Rashi, (2021) found that RBI and Indian government has brought up some noticeable acceptances with an entry of a mode such as non-financial system of deferred payments. The regular improvement in transmission of media as well as innovation has provided stimulation to voluntary framework of computerised instalments. Further she also mentioned about various governmental activities such as demonetization" or GST which is contributing to the economic expansion along with spreading of net for high expenses.

Vally Suma and Divya Hema, (2018) mentioned that digital payments in India with perspective of consumer adoption" that digital payments services got hike after the happening of demonetization which gave rise to use of BHIM and UPI applications with a presence of full transparency. The researchers performed a primary survey of 183 respondents from the Hyderabad region of India and analysed their results using the Chi-square approach. They discovered that the use of technology in the instance of digital payments has improved banking performance, allowing them to achieve the goal of a cashless economy. They went on to say that banks must implement certain effective methods in order to raise awareness while deploying security" or technology.

Pal et. al., (2018) mentioned that adoption of digital payment services solely depends upon certain factors such as transaction scope, form of goods sold, some personal aspects that are specific to enterprise owners upon familiarity of use as well as comfort. They compared the influence of the environment on technology adoption to trust, behaviours, and transactional control. They discovered in their investigation that there is a need to impart high technology in order to have modernism in digital payments with frequent initiatives rather than experiencing the productivity that is present in today's digital payments situation. For the effective conduct of their research, the researchers interviewed 238 different vendors and used various coding approaches to obtain correct data results. It was discovered that following demonetization, retailers used digital payment methods, but as soon as new currency notes entered circulation, they switched back to cash payments.

Balaji and Vijaykumar (2018) analysed the concept of "Diffusion of Digital payment system in Rural India" and mentioned the significance of cashless country in context to Southern" Indian economy "through application of a specific research tool that is Structural Equation Modelling. The researchers have collected some data from people who belong to rural areas of South India and founded that there are some people who are still unaware about the economy which is moving towards cashless country and were very much reactive while mentioning for their responses. On the other hand they founded that digitalization is now a priority of survival, the economy of digitalisation has a significance impact on social lives of people. The adoption of digital payment services by rural community will enhance south India and contributes in installing computerised systems" in areas.

Chavda (2018) mentioned that using of digital payment services by rural people in India was very rare in fact was a fluke only. Digital India, demonetization, and the rise in smartphone and internet use in India are just a few of the factors that have boosted the popularity of mobile payments. Political and socioeconomic developments have aided the adoption of digital payments in rural areas in some circumstances.

Thirupathi, Vinayagamoorthi &Mathiraj (2019) analyzed the concept of "effect of Cashless Payment Methods: A case study perspective analysis. Several financial institutions and banks are being interconnected with a system of digital payments on a daily basis, according to a case study perspective analysis. This relationship helps the Indian government achieve economic success and growth, as evidenced by the demonetization effect. They discovered that electronic payments account for only around 5% of total transactions, and that only roughly 26% of the population had internet access. They also discovered that, in order to encourage clients to use digital wallets, banks are now offering discounts if they pay with their debit or credit cards, as well as tempting offers if

they pay with digital wallets. Making transactions electronically has made country people more comfortable by eliminating the need for paper. They also said that banks are investing heavily in mobile payment systems these days, as well as focusing on various IT efforts such as online and mobile" banking.

Srivastava (2018) studied "the concept of "Digital financial services: Challenges and prospects for liberalised and globalized Indian economy. The goal of this research is to describe financial services in a digital format in India's globalised and liberalised economy, to predict digital services for the general public in a cashless society, and to provide light on some of the obstacles of digital services in India. The researcher created a hypothesis test for the data obtained and discovered that the trend of digital services will continue to expand and improve with regular innovation, perhaps dominating the Indian payment scenario. He said that a major difficulty in the Indian system is low literacy in regard to digitalisation, lack of sufficient internet connection, lack of bank infrastructure, and an unorganised market for rural people, all of which might stymie the expansion of digital services in the country.

Tiwari and Iyer (2018) quoted in "their study of "Adoption of Digital Wallets by Petty Vendors Post Demonetisation in India: A Prediction Approach" that the happening of demonetisation has given a large hit to the markets of India especially to small shopkeepers. The researchers looked at the purchase habits and demographics of 223 distinct small merchants in two Indian cities. They looked at the obstacles and advantages that such businesses confront when using digital payment methods. It was discovered that there has been a considerable movement in India's markets, in both unorganised and organised sectors. Some small business owners were struck hard and were forced to switch to digital payments, whilst many vendors' livelihoods were jeopardised due to a lack of knowledge about technology and how to use it. They urge that the government raise public awareness about the importance of teaching people about technology and digital payments so that these merchants feel comfortable incorporating digital payment services into their operations. Some vendors were willing to embrace digital services and change their payment methods in order to stabilise their sales.

Adarsh et. al., (2018) mentioned in "their study of Transformation towards E-wallet payments Systems pertaining to Indian Youth" that there are approximately 80.5 crores users for digital wallet alone in India and the major group who uses such service is youth. The study focused on students in Indian universities and performed a survey in which they were asked a series of questions in order to determine the impact of digital payments on students' everyday spending following the implementation of demonetisation. They discovered that over two-thirds of young people prefer to do their mobile recharges and ticket bookings online because it is less time

consuming and convenient. They also discovered that numerous cash backs, loyalty, and point redemption programmes entice people to make digital payments and take advantage of the greatest deals."

Jain, Sarupria &Kothari (2020) studied "the Impact of COVID-19 on E-wallet's payments in Indian economy"and analysed that happening of COVID-19 has brought a great boost for the Indian economy especially for the sectors like food and beverages, entertainment and others. The services of digital payments have seen huge growth that is from 5 per cent to 30 per cent after the happening of demonetarisation also with continuous efforts of government towards economy. There is a big contribution by entertainment and hospitality industry which is approximately 40 per cent to the economy which is helping for growth."

Research Methodology

In the "present research, the researcher has used secondary data in order to conduct a successful study on Impact of COVID-19 on Digital Payment Services at towns and Villages. The data has been studied and collected from secondary research such as previously published articles, journals and government published sources."

Past Trends and Future Projection of Digital Payments in India

The past trends refer to an analysis of previous years related to digital payments in India and the future projections shows an idea of some upcoming years. In order to have more strong conclusion research has considered some graphs which shows trend of digital payments in India from financial year 2012 to financial year 2023."

Figure 1: Indian Digital Payments growth trend
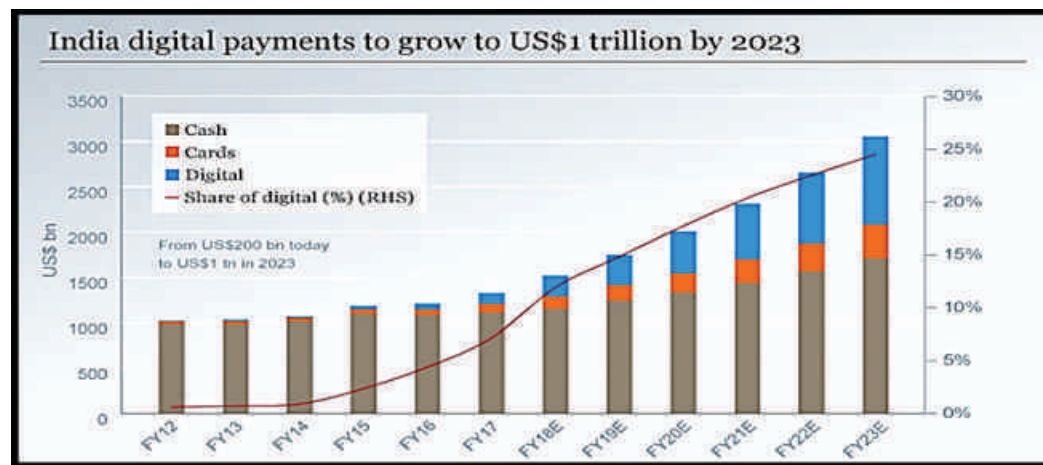
Source: RBI, CME, Credit Suisse estimates 05.04.2018

The figure 1 shows trend of India's digital payment which is predicted to grow by US$1 trillion by the financial year 2023. The graph shows an increasing trend year by year that is in financial year share of digital payment was less than 5 per cent in an economy which increased up-to 15 per cent approximately in financial year 2019 that is before pandemic. In year 2020 the share experienced a growth between 15-20 per cent which has further increased to nearby 20 per cent in current year that is financial year 2021. It is being predicted that by the year 2023 the Indian economy will have approximately 25 per cent of its share which will lead to US$1 trillion. The graph shows that the use of digital payments is continuously increasing by each year along with an growing trend in use of debit or credit cards.

Figure 2: Different digital payments volume graph
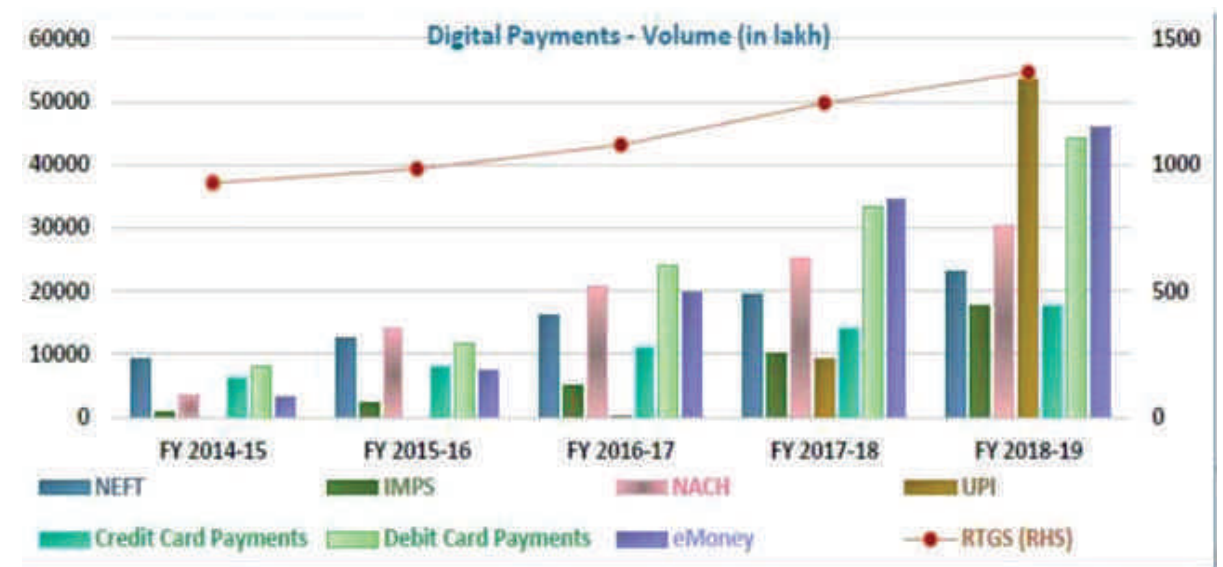
Source: RBI publications 24.02.2020

The figure 2 "shows use of various digital payments systems within India depicting NEFT, Credit card payments, IMPS, Debit card payments, NACH, eMoney, UPI and RTGS for the year 2014 to 2019 that is before pandemic. The graph shows that the use of different digital payment services/systems in financial year 2014-15 was below 10,000 units especially UPI payments were not present but year by year when Indian people started enhancing their awareness about digital payments along with an use of banking services such as NEFT, RTGS there is an increase in use of eMoney and UPI payments. It can be seen that by the financial year 2018-19 there is a high increment in use of UPI id's that is by more than 5000 people resulting into 1300 lakhs transactions, the highest digital payment system among all. Although each digital payment system

is showing a continuous growth by every year but UPI is at the top of all which means that people are more using digital payment applications such as Paytm, Google Pay, Phonepe and several others."

Digital "**payments can support the social distancing measures imposed in several countries and help reduce the spread of COVID-19.** Digital payments allow payment transactions to continue and financial support to reach those in need, when other forms of disbursement become cumbersome due to health guidelines. Paying public wages and other public transfers (both G2P and G2B) digitally is also more" cost-effective.

Digital "**payment technologies improve the ability to target cash assistance to households, particularly to the unbanked, to women,14 and to the informal" sector.** These technologies can also "improve the speed of transfers, which is of particular value in the COVID-19 crisis, as large informal sectors in many developing economies are in urgent need of assistance.15,16 Examples of country-specific uses include China (consumption coupons disbursed via Alipay and WeChat pay), India (transfers via Aadhaar-linked accounts), as well as Colombia, Morocco, Peru, and who have been expanding or leveraging existing digital payment systems, particularly to the informal sector. M-Pesa using countries (e.g., Kenya, Tanzania, Uganda) are also leveraging the system for transfers. Digital payments have also been successfully used in past health crisis experiences (Box 2). In addition, in crisis times digital G2B payments could include grants to cover wages for staff, employee retention funds for small businesses, and lending programs" for businesses.

Fintech "**developments could give governments the ability to better track consumer spending patterns in real-time.** This may be the case once central banks issue digital currencies (CBDC),19 whose transactions they can track or if digital service providers are willing or required to share their data with the government. If so, this can help inform which sectors are suffering the largest consumption declines, based on payment transaction records, and, therefore, where best to target government assistance to firms. Where granular payments data would allow a government to see not only transaction values, but also a breakdown of transaction volumes and prices in different sectors, this could also help quickly identify where production bottlenecks are occurring (i.e., from the observation of high inflation in specific product categories). Such collection and disclosure of data would, however, depend on country's information" and privacy laws.

Payments and transfers by households

Contactless "**digital payments for P2P transfers and for purchases in stores could help maintain social distancing and reduce the potential spread of COVID-19.** Existing modalities for digital payments (debit/credit cards, internet banking, mobile wallets, digital payment apps, Unified Payments Interface service, Unstructured Supplementary Service Data, and bank prepaid cards, mobile) have been increasingly used by households around the world. As an example, a

recent survey of Indian households indicates the rising use of transactions conducted using digital payments during the COVID-19 crisis."

Some "governments are currently providing incentives to pay for goods or services digitally, through mobile money or e-wallets. For example, Uganda has cut mobile money transfer fees, Egypt, Liberia, and Myanmar have increased transaction size limits, while authorities in Bangladesh, Cameroon, the Democratic Republic of Congo, Ghana, Kenya, Mozambique, Pakistan, Rwanda, Senegal, and Zambia have taken both sets of measures (cutting mobile transfer fees and raising transaction size limits) in response to the pandemic.26 As the reliance on the online provision of goods and services increases during the pandemic, there will be a greater need for digital methods of payments that are compatible with online use."

Digital "forms of payment, including mobile money and digital currencies, can facilitate the processing of remittances in times of crisis. This is especially the case when traditional forms of remittances require physical queuing. For instance, in the Pacific, the United Nations Capital Development Fund is working with mobile network operators to temporarily waive fees for mobile remittances, to help maintain the flow of remittances that is a key source of income for many Pacific island economies."

The "digitization of P2G payments, aside from its social distancing benefits, has the scope to raise tax revenues. Digital payment of taxes could improve the visibility of tax payments, which can help combat tax evasion and corruption. For example, digitization schemes for the mobile payment of municipal taxes in Senegal, raised tax revenues by a factor of seven within three months. Higher tax revenues can be particularly important during the ongoing pandemic given the large fiscal expenditure needs most governments will face."

Results and Discussion

Digital "payments are a source of sending and receiving monetary payments in economy which acts as an economic booster as this encourages money flow with more ease. Digital payment applications allow an individual to make their transaction happen round the clock across the world without making their pockets heavy. There was an use of digital payment services" post pandemic by "Indian people such as businessman's as well as by households but the wave of Covid-19 has increased the use of digital applications in economy especially at towns and village level. Now-a-days most of the small businessman's, shopkeepers even those who earn their livelihood through selling of their items using hand carts or hawkers. Every citizen is now conscious about their health and safety hence prefers digital transaction instead of cash payments. Having trade through digital applications is much safer than physical exchange of money which involves touch to notes by numerous hands in circular. The people at towns and villages carry their QR code of

their digital wallet at their shops or on their carts which makes easy to pay the amount of money in exchange of items purchased or services consumed. This on the other hand attracts more e-customers to pay right from their bank accounts or digital wallets while making any kind of purchase not having stress of cash crunch in market. For small businessman's digital payment simultaneously acts as a direct deposit into their bank accounts by not standing in a long queue at deposit desk in bank which saves their time and enhances their scope of business. The happening of Covid-19 has enhanced the use of digital money as well as understanding and knowledge about digital payments and its services that towns and village people does not carry before this in ratio what is experienced today. Instead of exchanging cash for their essentials they just make their payment through use of digital payments and small businessman's or shopkeepers are also now able to make the payment of their stock. Before the pandemic it was easy for shopkeepers or hawkers to buy their stock through real time cash payment after which only the wholesaler supplies their items. But now these hand cart users, hawkers or small shopkeepers can acquire their required stock through making payment digitally to their related wholesalers. Although there was an increase in usage of digital services after the happening of demonetization but this pandemic wave has encouraged people from towns and villages to use them in their routine. The present trend shows that there will be a continuous increase in adoption and use of digital payment applications as people are now getting aware and understanding its relevance."

Digital "services or digital payment applications is a great contributor to the development of Indian economy GDP as well as standards of society who were not much aware before or was facing trade related issues through using cash only in their routine."

Limitations of the Study

It is "possible that some or many people are not aware about digital payment as they may do not use android mobile phone or computer. The present study was conducted on the basis of some secondary data which might be fabricated in order to generate effective conclusion. The present report has several limitations such as the research is based upon secondary resources which can be further improved by use of primary data collection through first hand survey. However, the purpose of the study was to analyse the impact of COVID-19 on adoption of digital" payment services.

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Customer Service in Private Sector Banks in Tirunelveli District

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Abstract

Public and private sector banking is the lifeline of our nation. In today's world, it is increasingly impossible to function effectively and efficiently without proper banking system. A powerful banking system becomes the life blood of any economy in general and Indian economy in particular. This helps in synchronizing and harmonizing the necessary tone up required to rise the condition of our country's economic progress one of the important catalysts of any nation's growth are the banks. Banks. They help in providing financial support to small, medium and large scale industries when a banking system is efficient and smooth, it automatically paves way to rise the standards of the country.

Keywords - Customer, Service, Private, Banks.

Introduction

The financial system is the lifeline of the economy and the banking sector are the backbone of the financial sector. Banks are the rock bottom of any financial prospects which a country aspires to achieve. Customers provide the banks not only a sense of revenue but also the need for them to exploit the money of the customers to be used in a more effective manner. Many policy makers have made it a point to satisfy the needs of the customers so that an effective banking system can be arrived it. In order to make sure the bank progresses, it is necessary to have a key link up between the banks and the customers. This relationship is reciprocal and complimentary and therefore must be guarded and cherished. The three important revolutionary ideas, called LPG, have tremendously changed the outlook of any banking industry. With the increase of international banking players, there has been a stiff competition between the local and the foreign banks to expand and tap the customer base. The customers have now a variety of choices to choose between banks and services so that they can satisfy their financial and business demands through the banks of their preferences. This research paper discusses the methodology, objectives of the study, and profile and customer services in private banks in Tirunelveli district.

Literature review

The study titled "A study on Customer Services in State Bank of India, Sivakasi Branch, Sivakasi", undertaken by V. Raja Manikam in this study revealed that, the service initiatives which are centered upon the select SBI outlets across Tirunelveli district.

The research titled "Marketing of Banking Services in Theni" undertaken by R. Vasuki has empahsaised the need to modernize the banking transaction of the customers by bringing a change in the deposit system of the account holders by employing the use of cash deposit machines.

The project titled "A study on the Marketing of Banking Services with references to SBI, Sivakasi Branch" undertaken by G. Yogeshwaran in this study revealed that, the bank would be able to render services efficiently and effectively in the interest of the customers of this area as well as in the interest of the country as the whole.

There are many research projects regarding the depose mobilization impact of any particular services, lending pattern, marketing of services and so on. Customer services in private sector banks in Tirunelveli District is an untouched topic. So the researcher finds the research gap.

Methodology

The study focuses and relies on the data collected at the primary as well as the secondary levels at various banks. It is well known that the secondary data becomes an efficient back up to the primary data. That's one of the reasons as to why the primary data has been aimed to get collected from a series of a hundred customers through an interview schedule.

Analysis and discussion

The survey took into consideration the basic biological as well as the economic data from the customers, which included the names of the respondents, followed by his age and finally his annual income which is necessary to benchmark his choice of banks and the expectation of the services which are necessary to access the collected data. When analyzed the biological aspects pertaining to the question whether or not the customer is a male or a female, it revealed that close to 69 percent of the customers were males while the rest of the respondents which is 31 percent

are females. Of the data collected, six of these respondents had not reached the age of 21. The age of 23 respondents varied between 21 and 30. Close to 33 respondents belonged to the age from 31 to 40 years, 22 members were aged between 41 and 50 and there were 16 respondents who were more than 51 years old.

. The analysis of data also disclosed that educational level out of 100 respondents, 6 respondents are educated up to High school level, 12 respondents are at Diploma level, followed where the graduates comprised 37 people, post graduates were 26 and the rest of them were working professionals who numbered to 19.

The said analysis reveals the reflection of the respondents who were working people. Out of a total count of 100 respondents interviewed, 19 respondents (19%) are Businessmen, 40 respondents (40%) are salaried people, 20 respondents (20%) are professionals, 6 respondents (6%) are students and the remaining 15(15%) respondents are home makers. The following is the tabular presentation of the above findings on different profile variables.

Table 1: Profile of the sample manufacturing industries

S. No.	Profile variables	Number of respondents	Percentage to total
	Sex		
1	Men	69	69
2	women	31	31
	Total	100	100
	Age		
1	Below 20 Years	6	6
2	21-30 years	23	23
3	31-40 years	33	33
4	41-50 years	22	22
5	Above 51 years	16	16
	Total	100	100
	Educational level		
1	Until Higher Secondary	6	6
2	Diploma Holders	12	12
3	Under Graduation	37	37
4	Post Graduation	26	26
5	Professional	19	19
	Total	100	100
	Occupation		
1	Businessmen	19	19
2	Employee	40	40
3	Professional	20	20
4	Students	6	6
5	Housewife	15	15
	Total	100	100

Source: Primary data.

A significant revelation of the above table is that majority of the account holders (69%) are the male members. It makes it clear that large number of the respondents (33%) 31to 40 years. The scrutiny also unfolds that most of the (37%) respondents are Graduates. It further evidence that employees are the major customers (40%) having account with the bank.

Customer services in Private Banks

During preliminary study, the researcher identified major 15 services provided to their customers, namely, Safety Deposit, avail loan facility, Easy withdrawal facility, Safe Deposit Locker, Online Banking Services, Mobile banking services etc. During the survey the respondents were asked to express their extent by the banks providing customer services. The data gathered above pertains to the use of Safety Deposit ', five respondents stated the level of provision is 'Very Low', seven respondents stated 'Low', 34 respondents stated 'Normal', 41 respondents stated 'High', 13 respondents stated 'Very High'.

Then weights were assigned to different levels as with a single point given to the resultant answer as the lowest, double points were earmarked for the rank of low, triple points were allocated for points something meaning to be at the level of Normal, 4 and 5 points were given for the ranking of high and the highest. The answer arrived after computation of the resultant respondents were ascertained by multiplying the number of respondents stated in the level with the respective weight of the level. The weighted points for five level were: 5 points (5x1) for something which came under the category of being very low, 14 points (7x2) for the ones which were lower, 102 points (34x3) for something which was considered normal, and finally, 164 points (41x 4) were given for High, 65 points (13x5) for the highest.

The aggregate of weighted points for all five levels were calculated by adding together the points for each level and is considered as the level of services. To continue the above illustration, extent of services provided by the banks, namely, 'Safety Deposit' was worked out to 350 points (5+14+102+164+65). Similarly the level of services of 'Avail loan facility' was worked out to 298 points (9+28+156+80+25), 'Easy withdrawal facility' was 340 points (3+12+123+192+10), 'Safe Deposit Locker' was found as 380 points (2+6+51+276+45) and so on.

The weighted average points of level of services were calculated for each banking services which was accurately divided with the total number of all respondents. The weighted average points for 'Safety Deposit' was 3.50 (350/100), 'Avail loan facility' was 2.98 (298/100), 'Easy withdrawal facility' was 3.40 (340/100), 'Safe Deposit Locker' was 3.80 (380/100), 'Online Banking Services' was 3.22 (322/100), 'Mobile banking services' was 3.50 (350/100) and so on as depicted in the table given below.

Table 2: Customer Services

S. No.	Customer Services	Very Low (1)		Low (2)		Normal (3)		High (4)		Very High (5)		Total		Av. Pts
		No	Pts	No	Pts	No	Pts	No	Pts	No	Pts	No	Pts	
1	Safety Deposit	5	5	7	14	34	102	41	164	13	65	100	350	3.50
2	Avail loan facility	9	9	14	28	52	156	20	80	5	25	100	298	2.98
3	Easy withdrawal facility	3	3	6	12	41	123	48	192	2	10	100	340	3.40
4	Safe Deposit Locker	2	2	3	6	17	51	69	276	9	45	100	380	3.80
5	Online Banking Services	6	6	9	18	35	105	47	188	3	15	100	332	3.22
6	Mobile banking services	5	5	7	14	29	87	51	204	8	40	100	350	3.50
7	Savings Interest rate	11	11	24	48	52	156	10	40	3	15	100	270	2.70
8	Loan Interest rate	7	7	9	18	51	153	24	96	9	45	100	319	3.19
9	Safety of Transaction	2	2	5	10	33	99	57	228	3	15	100	354	3.54
10	ATM Services	2	2	4	8	30	90	59	236	5	25	100	361	3.61
11	Credit Card Services	3	3	7	14	54	162	29	116	7	35	100	330	3.30
12	Speed transaction on services	5	5	9	18	63	189	21	84	2	10	100	306	3.06
13	Providing Information facility	9	9	17	34	67	201	5	20	2	10	100	274	2.74
14	Overdrafts	15	15	17	34	47	141	11	44	10	50	100	284	2.84
15	Foreign currency exchange services	41	41	20	40	34	102	3	12	2	10	100	205	2.05

Source: Primary data.

Note: No. - Number of respondents; Pts. - Points; Av – Average.

It is vivid from table 2 that the private banks providing their customer services are in case of 'Safe Deposit Locker' (3.80), 'ATM Services'(3.61), 'Safety of Transaction' (3.54), Safety Deposit (3.50), ' Mobile banking services' (3.50) and so on.

Relationship between customer services and the variables in profiles chosen

The study tried to bring out a close connection between the chosen customer services and the variable changes in the profiles chosen for study.

H0: one can find no variations between the customer services offered and the variables in the profiles.

H1: There is a significant relationship between the customer services and the variation in profiles selected.

The one-way Anova Test was chosen to deduct the hypotheses both null and alternate. The test results are explicated in the table below by choosing F and P values along with the results.

Table 3: Relationship in terms of the customer services and the biological sexes

S. No	Independent variables	Dependent variable	Df	F-test	P-value	Result
1	Sex	Safety Deposit	1	3.141	.070	Accepted
2	Sex	Avail loan facility	1	0.039	.845	Accepted
3	Sex	Easy withdrawal facility	1	2.336	.130	Accepted
4	Sex	Safe Deposit Locker	1	1.627	.205	Accepted
5	Sex	Online Banking Services	1	2.388	.126	Accepted
6	Sex	Mobile banking services	1	0.012	.915	Accepted
7	Sex	Savings Interest rate	1	0.000	.993	Accepted
8	Sex	Loan Interest rate	1	2.152	.146	Accepted
9	Sex	Safety of Transaction	1	0.196	.659	Accepted
10	Sex	ATM Services	1	3.151	.079	Accepted
11	Sex	Credit Card Services	1	0.043	.836	Accepted
12	Sex	Speed transaction on services	1	0.002	.963	Accepted
13	Sex	Providing Information facility	1	0.597	.442	Accepted
14	Sex	Overdrafts	1	0.645	.424	Accepted
15	Sex	Foreign currency exchange services	1	0.102	.750	Accepted

Source: Taken from the primary sources

It becomes more clear from the analysis done above that the value of P is higher than 0.05 pertaining to the sexes (0.000) given as 5 taken as a level of significance, making the null hypothesis getting accepted. . The study concludes that there is an absence of relationship between the customer services offered and the classification based on the sex of the respondents.

Table 4: Relationship between Customer Services and Occupation

S. No	Independent variables	Dependent variable	Df	F-test	P-value	Result
1	Occupation	Safety Deposit	3	1.700	.172	Accepted
2	Occupation	Avail loan facility	3	0.409	.747	Accepted
3	Occupation	Easy withdrawal facility	3	1.189	.318	Accepted
4	Occupation	Safe Deposit Locker	3	1.074	.364	Accepted
5	Occupation	Online Banking Services	3	1.098	.354	Accepted
6	Occupation	Mobile banking services	3	1.423	.241	Accepted
7	Occupation	Savings Interest rate	3	0.617	.606	Accepted
8	Occupation	Loan Interest rate	3	0.379	.768	Accepted
9	Occupation	Safety of Transaction	3	0.144	.933	Accepted
10	Occupation	ATM Services	3	0.968	.411	Accepted
11	Occupation	Credit Card Services	3	0.813	.489	Accepted
12	Occupation	Speed transaction on services	3	2.355	.077	Accepted
13	Occupation	Providing Information facility	3	0.677	.568	Accepted
14	Occupation	Overdrafts	3	1.992	.120	Accepted
15	Occupation	Foreign currency exchange services	3	0.928	.430	Accepted

Source: Primary data.

The analysis makes it more evident that the P value is more than 0.05 in the context of the occupation of the respondents which is at (0.000) given at a 5 percent significance, on accepting the null hypothesis, it can be further concluded that there is no significant relationship between customer services and occupation in the study area.

Conclusion

Banks are an integral part of the financial system of all over the business world. Welfare of the banks is as essential as the welfare of a nation. Banks services are a product of the levels of satisfaction by the customers and the values are the results of the ones perceived by the customers in selecting a bank. The various deposits, loans and advances, general utility services provided by the bank promote the growth of not only the bank but also our nation.

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Using WSNs in Big Data System Management: Applications for Firms

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Abstract

It is vital to initially construct a data-gathering infrastructure before acquiring relevant knowledge from extensive data systems. Wireless sensor networks (WSN) stand as a significant data source among several possible data sources: diverse sensor nodes in the colossal scale network create a substantial quantity of data. Due to the limited capacities of the nodes, WSNs, unlike traditional wireless networks, have significant flaws in terms of data dependability and communication. Furthermore, when a high number of sensor nodes are compactly placed, a substantial percentage of sensed data is of little relevance, useless, and redundant. When building large data systems using WSN, Much research addresses the current challenges and provides strategies to overcome the limits. However, there is still no published article detailing this area of research. We offer an in-depth study that explores current research on integrating WSNs into extensive data systems to show the work in the literature. In line with the study's subjects and aims, potential requests and methodological difficulties of outlines and structure are given and examined. In conclusion, vulnerable themes are explored to discover possible study directions. Collecting, storing, processing, evaluating, then envisioning information are all processes that need to be put in order when building an extensive data system. A Research community focused on critical components of dealing with big data in current research on extensive data systems: specialized platforms, technologies, practical applications, standards, and best practices.

Keywords - WSN; Big Data; Infrastructure; Data Processing

Introduction

In today's environment, several tools and technologies which may be leveraged to accomplish these features. As a result, data-concentrated requests currently remain present created to be used. It addresses how technology is changing to meet the demands of extensive data systems (specifically, the computing infrastructure for the data deluge that includes granular computing, cloud computing, neighborhood-inspired computing, and quantum computing). Seven ideologies for using big data structures remain identified and described. It also provided a broad introduction to large data schemes, concentrating on four multiple data worth chain stages. They break down the technological hurdles in data production, collecting, storage, and analysis into discrete phases in their survey.

Furthermore, Oussous has released a new extensive data survey that targets new data approaches and platforms. For selecting the greatest combination of technologies based on technological demands and application requirements. According to the research stated above, data gathering is the initial stage in developing an extensive data system. Wireless sensor networks, among the various data-generating sources accessible, are drawing numerous studies in the field of ecological observing. The WSNs comprise a massive sensor node that monitors and records environmental variables, with sensor data being gathered at a sink node. Temperatures, sounds, pollution levels, humidity, winds, besides other ecological factors, are measured with WSN. However, a single node's low capacity and a short wireless link make relaying sensors data sink nodes. Nonetheless, large data systems benefit from excellent data aggregation and in-network processing. As a result, research projects linking WSN and extensive data systems must be analyzed to overcome WSN's shortcomings and improve organizational routine.

Fig.1 shows the simple organization of a WSN-based large data scheme as an example. The receiving node receives the data from the sensor nodes and transmits it to temporary storage for subsequent data aggregation, displayed in Fig.1. Aggregated data may then be processed by the extensive data framework consuming the primary store after this phase. Big data platforms and apps manage transformed data. Furthermore, there are technical problems in 3D subsurface sensor networks and wireless video sensors networks for extensive data. The investigation and description of wireless multimedia sensor networks and standard WSN are underway. Halde outlined the difficulties and problems of data collecting with WSNs in a detailed survey. During the examination of large information in WSN, scientists concentrated on energy usage besides the diversity of WSN. Harb addressed WSN data management concerns by proposing several techniques of collectioning the data, accumulation, association, solidity, and calculation and demonstrating viable and viable application scenarios. The combine, privacy, system integration, interaction, and architectural challenges are all explored. IoT data facilitates context-sensitive calculations, such as ubiquitous and ubiquitous calculations in relations of information use.

Fig.1- A WSN-based big data system
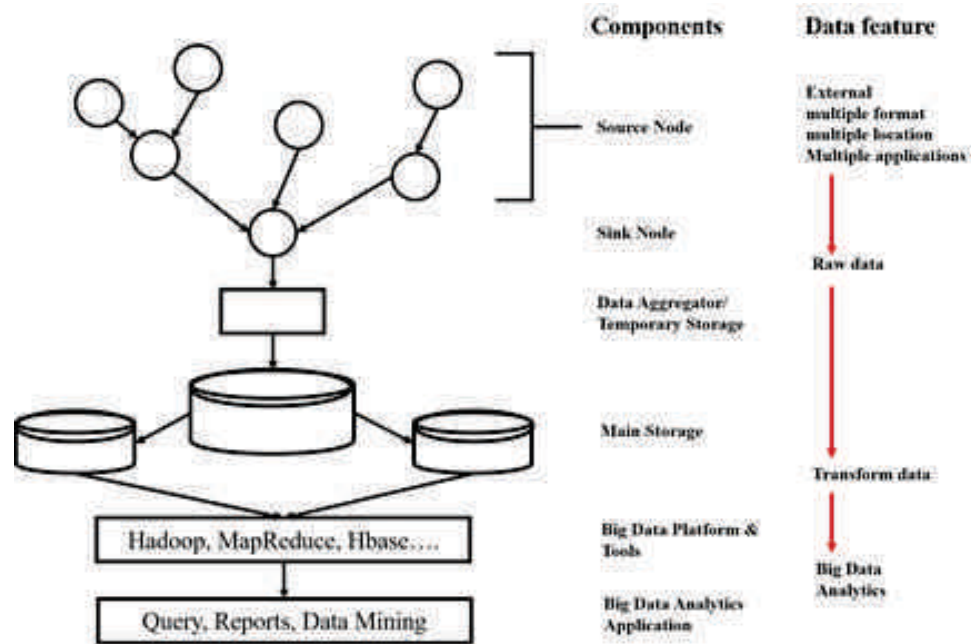
Sources- www.mdpi.com

As a result, there is a need to scrutinize significant data challenges from an external acumen and WSN perspective. Sezer achieves this goal by introducing open topics and providing IoT insights aimed at extensive information. In addition, the wireless large data structure is presented that processes large amounts of data in wireless networks. Rather than defining the system as a whole, the authors focused on wireless infrastructures such as data transmission, data-driven network optimization, and new applications in a layered design. They also looked at three potential applications, as shown in Figure 2: Drones/uncrewed aerial vehicles (UAVs), smart grids, and the Internet of Things (IoT).

To fill this void in the literature, we review a study announcing WSN as the foundation of big data. a

Fig. 2: Wireless big data system protocol layering
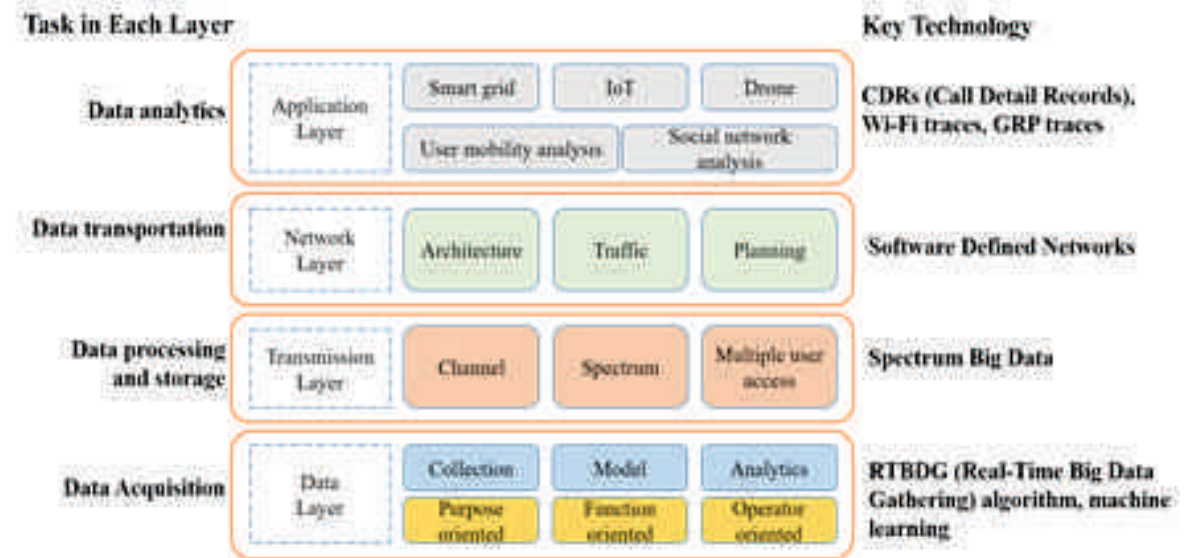
Source- www.mdpi.com/1424-8220

Recent research covering WSN and big data concurrently was chosen to examine the advances in the field. While many of the current research papers are related to large data schemes, We did not list them all because we are primarily interested in integrated systems. Section 2 explains the potential use of WSN-based big data systems based on this selection method.

Review of Literature

Before looking at related work, that is critical to understand what big data applications WSNs can design and deploy. It makes sense to analyze big data applications before solving their technical problems because WSN is typically designed to meet application-specific criteria. Using WSN may help in the following monitoring applications: intelligent grids, human body monitoring, and environmental monitoring. Smart sensor grids can be used in large data schemes to manage dynamism consumption in smart grids. These systems use intelligent networking applications such as power monitoring, demand-side power management, and distributed storage coordination. There are also suggestions for exploiting the vast amounts of data collected by

sensors and devices. In addition, practical advice and practices of smart grids are presented. The author Poon focuses on properly handling data and getting necessary data from a large data scheme (Poon, 2015). Because the intelligent grid aims for dependability and low latency, streaming processing to the fog architecture for real-time applications on a stylish stand is being investigated. The following example is human body monitoring: the wireless body network (WBAN). Extensive data systems are proposed to gather large amounts of medical and health data via the body's sensory network. The activity recognition application must contain the following functions for building body sensor networks: selection and selection of parts, categorization, software platform support, and sensor and user authentication. The main phases of this typical activity recognition technique are categorized and depicted in Figure3. Du proposes a workable WBAN significant data architecture that employs MapReduce for real-time processing of extensive data than Hadoop/HBase to keep analyzing WBAN's important information(Du, Y.; Hu, F.; Wang L, July 2015). Yuan offers other intriguing use of observing irregular heart rate situations using a ZigBee and a big data analysis-based pulse monitoring system (Yuan, 2016). Two ways have been presented to prevent missing the pulse signal: (1) methods of continuous dynamic monitoring of heart rate based on photoelectric energy and (2) comprehensive approaches to interference. The training model constructed by big data is presented using these two strategies to increase physical training levels and create training schedules.

Next, we'll look at some instances of monitoring the environment, for example, an extensive data system that tracks the air quality in the Industrial Area. The author Wu describe a research proposal of a big data system to analyze the quality of the air data acquired through WSNs (Wu, D, 2018). Two workshops are located in Norway as part of a big on-shore logistical facility for the area shipping sector.

Objective of the Study

The purpose of this paper is to show the efficiency of data analysis and visualization. By combining WSNs with big data platforms, the reading demonstrates an ability to screen employee security, in addition to the brilliance of objects to supply chain management. Moreover, a collaborative fire protection system that uses a robotic vehicle sensor message protocol with a human combat system agent is described as a possible monitoring application that enables fast communication and constant collaboration.

In the recommended scheme, a stationary WSN is liable for generating data, and a large data center oversees the operation of the entire system.

Fig. 3- Inferring activities from WBAN sensors using a typical activity identification technique
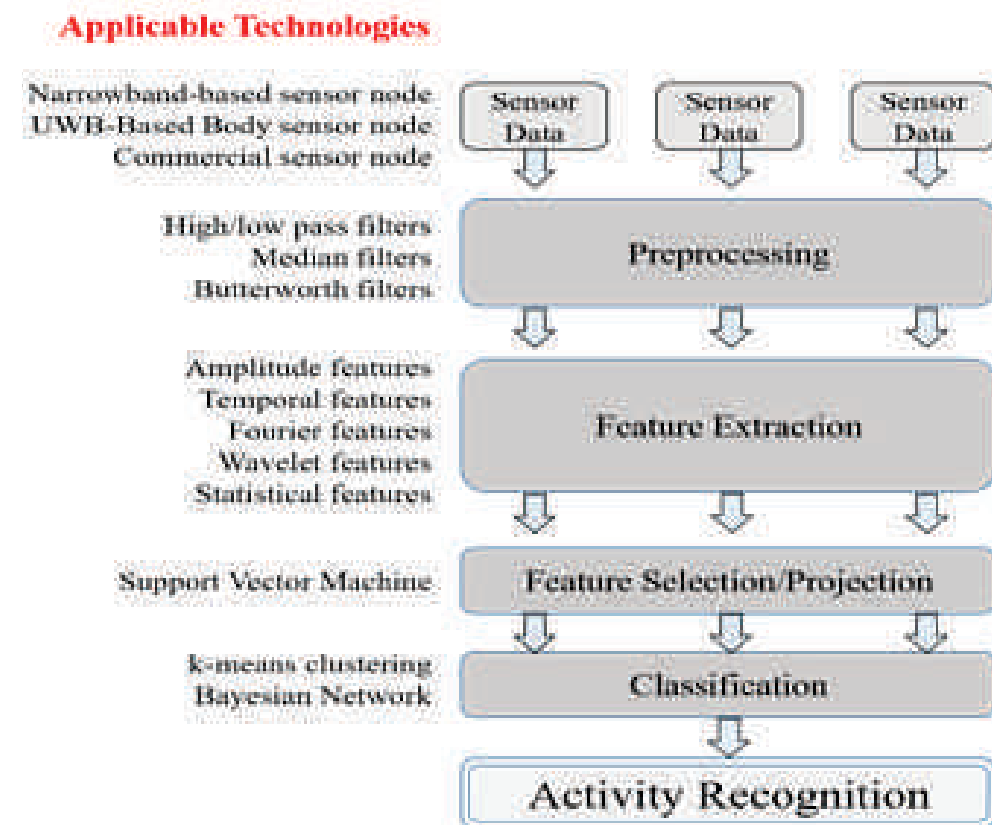
Source- www.mdpi.com

Finally, the big data system of smart cities is presented as a means of identifying practical answers of comparative government, the environments, also town facilities. The data is converted into a form that resembles an e-government service map in this research. Through the installation of geographic data infrastructure, services of e-government are recognized as contributing to greater proficiency and public satisfaction (SDI). As a result, it has been demonstrated; e-government is created by big data, then WSN increases e-services accessibility. It might also be used to solve the difficulties of managing limited resources. This brings us to the end of our application review. The technological approaches are presented in the next section.

Big Data Systems using WSN: Technical Approaches

Already diving into the details of relevant research, it's critical to know whom big data applications can be built and delivered using WSN. Because a WSNs is typically created to satisfy application-specific needs, it makes sense to examine large data applications before dealing with their technical difficulties. Smart grids, human body monitoring, and environmental monitoring are just a few of the monitoring applications that can benefit from WSNs. The clever sensor system is now used in large data schemes to manage power consumption in smart grids. These systems use smart grid applications, such as energy monitoring, energy management, distributed warehouse coordination, and the integration of renewable energy generators. Techniques for managing large data generated by sensors and meters are also presented. Furthermore, practical smart grid suggestions and practices are explored. Writers focus on managing data properly and getting the facts they need as of large data scheme. Since consistency and low latency remain two goals of the clever grid, the current handling of nebulous actual computing building in real-time requests on a classy platform is being explored.

Another example is the wireless body network (WBAN), which is used to monitor the human body. Big data systems collect large amounts of medical and health data through networks of body sensors. An activity recognition application should include the following capabilities for building body sensor networks: feature selection and selection, categorization, software platform support, and sensor and user authentication. Figure 3 shows and categorizes a typical activity recognition method. In fig. Figure 3 shows how VBAN sensor performance is inferred using a typical activity identification algorithm.

In the end, more data for urban professionals offers a way to identify positive resolutions for comparative government, the atmosphere, and metropolitan areas. From the study, information is converted toward the form equivalent to local mapping service (perhaps in documents or numbers). Since the adoption of multiple geographic locations, in-government services have been introduced to increase efficiency and social satisfaction (SDI). As a result, it has been shown that i-government is grounded to large information then WSNs have expanded use of it. It can also be used to solve complex object management problems. This brings us to the end of our review study.

WSN-based Big Data Systems: Technical Approaches

WSN Provides Big Data

Sensor data grows at an exponential pace. To deal with enormous data, traditional information systems for data processing, storage, and reporting are too costly. Furthermore, they are unable to meet the processing demands of actual activities. Moreover, the maximum of actions observed by normal times remains significant because of the small changes, resulting in data loss and communication power at the sensor node. It shows that much of the data is useless, useless, and useless. In WSN-based large data systems, unlike conventional WSN, they are important for capturing and exceeding huge amounts of information with minimal information latency. Furthermore, it is necessary to remove data redundancy and increase energy efficiency. The employment of in-network data processing techniques, as mentioned, is where big data systems and WSNs intersect. It would help the WSNs conserve their limited resources. Receiving fresh, non-repeatable, and consistent data can also reduce the amount of data volume on a larger data system. As a result, the volume would rapidly decline and gain value from this data.

The investigation difficulties for large data systems created on WSNs are being discussed. Boubiche divided the problems of large data in WSN into four categories: clustering, security, processing, and energy conservation. The recommended solutions for the issues are constructed to a link among large sensor information collection, gathering, besides energy ingesting difficulties. Djedouboum examined large information collecting problems for the extensive WSN, provided an information moving method to the circumstance of an extensive WSNs, then detailed big data gathering in a significant WSNs. A prototype architecture was provided for receiving, storing, and analyzing data produced by WSNs to monitor air contamination stages of the town.

Classification

Most research on WSN-based big data systems falls into two categories (Figure 4): networked system and data system. The first is related to a network system that feeds the sensor information to a large information scheme, and the second remains related to information handling. According to the study aim, each research field includes many subcategories. This article provides two network research objectives as well as a huge number of data research objectives.

Articles are considered to be articles that simultaneously explain in detail WSN applications and network protocols, as well as data processing technologies for big data systems. To ensure the quality and reliability of the data, the study used only peer-reviewed articles from journals and conferences. Studies published prior to 2014 were not reviewed. Based on these insertion and elimination principles, the search returned 70 articles.

Fig-4: Related work classification
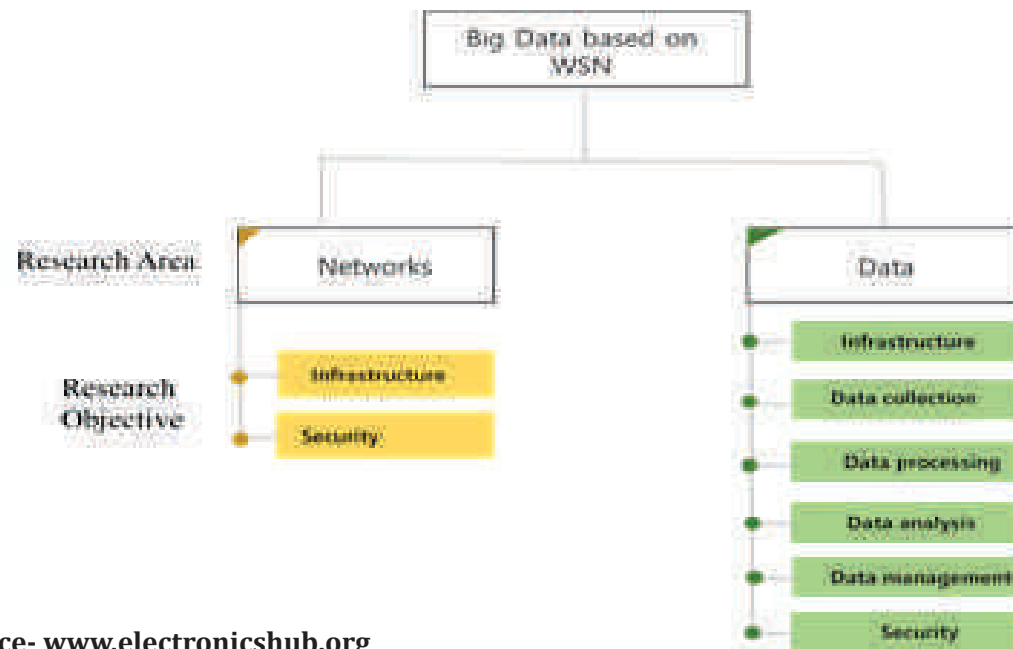
Source- www.electronicshub.org

Network System

Infrastructure

The majority of work in this field is done by developing network communiqué rules. There are four levels to the SVC4WSN: an extensive WSN, a gateway, a cloud center, and workers (viewed in Figure5). There are two key concerns in this architecture: congestion induced by large data and communication delay. To solve these problems, flexible and layered approaches of information handling then storing established on cloud computing remain projected.

The additional difficult challenge is addressed: collecting large data to tightly dispersed sensor networks by excellent energy proficiency. Through clustering, the technique may be utilized. Unlike most clustering schemes, the K-medoid clustering now six stages are presented for maintaining energy usage stable throughout time. Kannur offered a similar clustering-based method. Sink node mobility is chosen as an efficient method for managing large data gathering in their research.

Its goal is to minimize network jamming for increasing data transmission consistency and lower packet loss rates.

Fig-5: SVC4WSN's architecture.
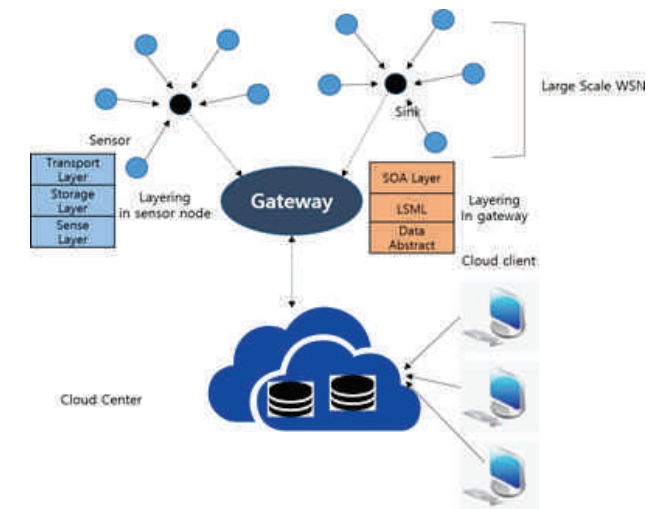
Source- www.researchgate.net

Besides collecting data, the data combination strategy of big data is also described using an information-centric network method, wherever information is accessed through name then stored to the system. The steps to form the framework are as follows: (1) use a self-adaptive low-power clustering layer protocol to establish a network and cluster communication nodes; (2) aggregate the collected data in collection header remembrance; (3) use aggregated the name grounded The routing technology recovers information then sends this to information centers. From since alternative perspective, another design for WSNs is to stop sensor nodes from consuming excessive power when the sensor data is highly redundant.

A novel routing protocol is suggested that assigns a dynamic priority based on quality-of-service (QoS) criteria and achieves load dispersion by incorporating.

Security

WSN conducts both data capture and data transmission during data collection, and it is critical that these two functions are completed in a safe way. To solve this issue, Zhou examines and compares different architectural solutions that attempt to offer proficiency and toughness in the face of interior cooperation then outside assault. It suggests a new design for capturing and transporting trusted large data. In addition, data collection in WSNs may be skewed or faked. As a result, secure communication is essential for sensitive and crucial data transmission. Because of its efficiency, symmetric cryptography is particularly suitable for WSN when considering node

limitations. Symmetric cryptography, on the other hand, should be used in conjunction with key management for distribution. Furthermore, large data safety concerns in heterogeneous WSNs are evaluated and explored.

Data System

While the network system at the WSN is concerned with delivering the discovered data, the data system is concerned with efficiently handling the data delivered through the WSN. Data systems have a wider range of research purposes than networked systems, including infrastructure, collection, processing, analysis, administration, and data security.

Modeling and Simulation

In research, evaluating and comparing performance is critical. Despite multiple platforms for big data and WSNs being presented, no combined and unified simulator. WSN reproduction hooked on large information simulator otherwise thorough testing mechanism seems feasible. Instead, developing an interface between two systems to share data to eliminate dependency is necessary for a long-term solution. Furthermore, as stated earlier, there is a need for a versatile and extensible assessment platform that can accommodate different types of WSN. In addition, because the assessment is largely based on modeling, further truthful traffic than fault modeling is essential for improving the reliability of the simulation.

Conclusion

We addressed practical investigation difficulties of large data systems constructed WSN in this study, in instances where WSN was considered one of the primary data sources. We discussed the potential of big data systems in WSN before going at the key contributions of each work. Following that, prior research was organized into categories based on the research field and goal. We emphasize on data collection then on-net processing, taking into account exclusive characteristics of the network characteristics. Lastly, the unresolved difficulties in this area of research are explored.

Recommendations for Firms

While the report covers a wide range of topics related to big data, including the four components of big data (volume, variety, velocity, and veracity), it also makes five key suggestions for companies looking to advance their big data strategy and get the most out of their corporate data. These are the five suggestions:

1. Outcomes that are centered on the customer

According to the study, organizations must concentrate their big data strategy on initiatives that would bring the greatest commercial value. For the most part, this implies beginning an analytics strategy with customer analytics in order to give better services to customers, which should result in higher customer retention. While this may seem self-evident, the obstacles in doing so are increasing every year as people become more computerized and aware of their options. As a consequence, businesses will need to understand their clients as people, which will need the use of new technology and complex analytics.

The ultimate objective is to not just get to know the customer, but also to connect in a manner that the consumer finds valuable, which might take the form of more timely, informed, or relevant interactions. For its part, big data analytics provides insights from big data that are becoming more crucial in these types of connections.

2. Big Data Blueprint for the Entire Organization

The plan for your big data strategy should include the overarching vision, strategy, and needs, not just for departments, but for the whole company. As a consequence, a clear, enterprise-wide understanding of how the company plans to utilize big data to enhance business goals should emerge.

It will enable the company to identify critical business issues to be addressed, business process requirements that define how big data will be utilized, as well as the architecture, data, tools, and hardware required to make the blueprint a reality.

It also serves as the foundation for creating a roadmap that will lead the business through the creation and execution of its big data strategy.

3. Begin with data that already exists

Enterprises must be realistic about what they can accomplish in the near term as the big data implementation takes off and gains traction. The simplest location to gain insights is from information that is already in the company for those who have already adopted a successful strategy that is producing economic value.

This allows an organization to make use of not just readily accessible data, but also existing talents and software. This has immediate advantages since it establishes a commercial case for expanding big data analytics to cover more complicated sources and kinds of data.

The most effective initiatives began by examining current data repositories and growing data warehouses to accommodate bigger amounts of data in order to get future insights.

4. Business Priorities and Investments in Skills

Businesses are being pushed to pick between an increasing variety of analytics tools as the industry grows, while also dealing with a significant scarcity of analytics talents in both the United States and Europe.

However, for the time being, firms will have to operate in the current market, which will need investing in equipment and talents. New job models for people with the right mix of analytical, functional, and IT abilities are expected to develop as a result of this process, according to the report.

Enterprises must concentrate on professional development and clear career advancement for individuals who currently have the capabilities in-house; leaders should make investing in these employees a major priority right now.

5. Measurable Results

Enterprises must guarantee that the justification for continued investment is based on verifiable business results in order to build a sustainable big data strategy and ensure that decision makers will continue to be interested and invest. To put it another way, company executives must be able to perceive the benefits.

Businesses may do this by assuring active participation and sponsorship from one or more corporate executives throughout the development of the first plan and subsequent executions. In this case, continual collaboration between the business and IT teams is also critical. This should guarantee that the commercial benefit of all big data analytics efforts is well recognized.

This document, as well as the research that surrounds it, has a wealth of information for firms contemplating their first big data implementations. It, like all other IT pieces in a firm, needs meticulous preparation before implementation.

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The Effects of Behavioural Factors on Personal Financial Planning in Aruppukottai Town, Tamilnadu

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Abstract

Personal Financial Planning has emerged as an essential subject matter for individuals and families as well as for the society and nation as a whole. This research is primarily based on the ground that many households of Aruppukottai have inadequate savings that is the replication of lack of financial planning. The present study aims to discover the factors influencing the behaviour on personal financial planning in Aruppukottai town. Though enormous studies are undertaken before, no study has related the saving attitude of people with personal financial planning. In this study, non-probability sampling method is used to gather statistical data from households of 520 individuals in Aruppukottai who are aged 20 and above. Structural equation modeling approach is applied to analyze the direct as well as mediating results of hypotheses of this present study. The results suggest that there is a significant association between financial literacy, financial planning, propensity to plan and future orientation. The savings attitude also have been determined to mediate this relationship to some extent. Amongst all proposed influential behavioural factors, family education holds the robust indirect effect on personal financial planning. The current study reveals some academic and practical contributions and also provides insights on personal financial planning in Aruppukottai town.

Keywords- Financial Literacy, Financial Decision, Financial Planning, Savings Behaviour, Personal Finance, Retirement Planning, Family Education, Aruppukottai.

I. Introduction

As the whole economic system gradually recovers from the recent financial turbulence, healthy spending and saving habits of people have emerged a subject of growing importance for corporations, regulators and policy makers. Many aged individuals worried as because of rising healthcare expenses, meager savings and higher life expectancy rates. Our study expresses that numerous households of Aruppukottai are very much worrying about running out of money and also thinking about adequate funds to survive.

Personal financial planning is considered a powerful way to permit a more fruitful changeover into retirement. Personal financial planning is tough, less number of people adopt it and fewer consider about it still. Research has targeted on diverse domains of financial planning such as health, work, leisure and retirement. Consequently, individuals have to plan and save at an early stage so that to live a comfortable old age period with a lot of financial freedom. A key pillar in personal financial planning is family, especially children. This study observes some significant variables – "family education, materialism, financial literacy, future orientation and propensity to plan". The present study examines the behavioural factors that affects the self-control ability which in turn leading to the performance of personal financial planning behaviour. Furthermore, the association between behavioural variables and personal financial planning behaviour through savings attitude is supported by planned behaviour theory and future time perspective theory.

Objectives of the study

This study aims to achieve the objectives as follows:

1. To examine the behavioural factors that has an effect on personal financial planning among the households of Aruppukottai town.

2. To investigate the mediator role of savings attitude in the association of behavioural factors and personal financial planning.

Review of literature

Personal Financial Planning

Personal Financial Planning is not an obligatory one, it is a personal desire for one's future preparation. Unfortunately, maximum people are not mentally organized and prepared for this (Ng, Tay, Tan, & Lim, 2011). There are numerous explanations for making people staying aside from financial planning (DeVaney, 1995). Many assume that personal financial planning is needed only at some point of retirement. Nonetheless, even though they start to plan and save, it is still not sufficient (Martin, Guillemette, & Browning, 2016).

Saving Attitude

Parents play a vast role in instructing, educating and training the children for suitable behaviour in all facets of life including financial planning and its management. The outcomes of Ward, Wackman and Wartella (1977) determined that through proscriptive and prescriptive financial guidance, the saving attitude of children could be enhanced and developed.

Family Education

Generally, the financial behaviour and perspective of children is related to the attitude of parents. Attitudes are interpreters of a complete and comprehensive financial behaviour. The outcome of the study by Webley and Nyhus (2006) was that the behaviour of parents has an affiliation with the attitude of children than their behaviour.

Future Orientation

The future time perspective concept explored by Robinovich, Morton and Postmes (2010) exhibits that it affects a person's attitude towards a specific behaviour. People who determined the future as closer are possibly to be ready for saving and planning behaviour. Similarly, Jacobs-Lawson and Hershey (2005) investigated that people who score high in future time perspective are more organized and prepared to set their goals and subsequently, they are expert in developing a personal financial plan.

Financial Literacy

Some researches confirmed a high correlation among financial literacy and financial behaviours related to savings, wealth and portfolio as concluded by (Bernheim, 1995; Lusardi & Mitchell, 2011). But, as per the study results of (Adams & Rau, 2011; Xiao & O'Neil, 2016), the research is in paradox with earlier studies about the financial literacy results on personal financial planning.

Materialism

As per the study performed by Garoarsdottir and Dittmar (2012), materialistic individuals are not so great at money-management skills and they have a more tendency toward obsessive purchasing and spending. Hershey and Mowen (2000) also discovered that there is an indirect affiliation among respondents' financial readiness and materialism. Also, Payne, Yorgason and Dew (2014) exhibited the roundabout link between personal financial planning and materialism. It appears that the only association between materialism and future savings is through financial strain.

Propensity to Plan

Researches confirmed that financial plans that are properly well developed has an optimistic impact on self-control as per (Gollwitzer & Oettingen, 2007). It assists the person to be organized and well prepared before facing a task.

Relevant Theories

Theory of Planned Behaviour: Theory of Planned Behaviour is the improvement of the Reasoned Behaviour principle (Ajzen, 1991). This theory's objective is to "predict and recognize human behaviour. The planned behaviour theory states that the positive or negative attitude toward actual behaviour, perceived behavioural controls and subjective norms are the three elements affecting a person's intention.

Future Time Perspective Theory: The underlying characteristic of the psychological structure evolving from the "cognitive procedure is the time attitude which divides the human experience into past, present and the future". A person's cognitive skill to review both direct and long-term outcomes of job assignment in the future is described by the future time perspective theory as given by Andriessen, Phalet & Lens, 2006.

Conceptual Framework

This section exhibits the conceptual structure of the current research covering the personal financial planning issues in addition to it associations with saving attitude, family education, materialism, financial literacy, future orientation and propensity to plan. It incorporates the key constructs and variables, in an effort to have a direct or indirect impact on an individual's personal financial planning. The theory of planned behaviour and future time perspective theory are the two major supporters for this study's framework. The theory of planned behaviour highlights on factors that control behavioural choices. It supports a framework in probing financial planning behaviour through use of savings attitude and behavioural factors. In brief, an individual's personal financial plan is attained not only by saving money, but also by sacrificing pleasure (Future Time Perspective Theory). Also, attitude and behavioural elements too shape an individual's behaviour (Theory of Planned Behaviour).

Hypotheses

This study comprises 10 hypotheses. Hypotheses H1, H2, H3, H4 and H5 assess the direct association between family education, materialism, future orientation, financial literacy and propensity to plan with personal financial planning. Hypotheses H6, H7, H8, H9 and H10 propose the mediating role of savings attitude in the direct association between personal financial planning and the proposed behavioural variables.

H1: There is a significant association between personal financial planning and family education.

H2: There is a significant association between personal financial planning and future orientation.

H3: There is a significant association between personal financial planning and financial literacy.

H4: There is a significant association between personal financial planning and materialism.

H5: There is a significant association between personal financial planning and propensity to plan.

H6: Savings attitude significantly mediates the association between personal financial planning and family education.

H7: Saving attitude significantly mediates the association between personal financial planning and future orientation.

H8: Saving attitude significantly mediates the association between personal financial planning and financial literacy.

H9: Saving attitude significantly mediates the association between personal financial planning and materialism.

H10: Saving attitude significantly mediates the association between personal financial planning and propensity to plan.

Research Methodology

In this study, the survey method was designed using convenience-quota of non-probability sampling technique. The target population of this study is the households of Aruppukottai town. With a sample size of about 520 households of Aruppukottai, a questionnaire survey was conducted. Consequently, questionnaires were circulated to the respondents at several locations with the following criteria:

- Only one member, desirably the head of the family from each family was accountable for responding to the questionnaire; and
- All working adults who are of 20 years age and above were involved in the survey.

The questions were closed ended questions and were framed in 6-point Likert-scale format (strongly disagree to strongly agree). Partial Least Squares (PLS-SEM) was employed to assess the hypothesized association between research variables.

Characteristics of Respondents

Respondents' characteristics were represented in Table 1. In this present study, majority of the respondents were male (55.6%), while female respondents were 44.4%. Also, majority (38.7%) of the respondents were in the age category of 31 to 40 years and over half (64%) of the respondents were married. In terms of education level, 54.2% respondents were under graduates. 55% respondents were employed in private sectors. Close to half of the respondents fall under the monthly salary bracket of Rs.15,000 – Rs.25,000 (42.9%).

Table 1: Respondents – Demographic Profile

Variables	Items	Frequency	Percentage (%)
Gender	Male	289	55.6
	Female	231	44.4
Level of Education	High School / Diploma	150	28.9
	UG	282	54.2
	PG	88	16.9
Occupation	Government employee	114	22.0
	Private employee	286	55.0
	Self-employed	61	11.7
	Professional	59	11.3
Age	20 – 30 years	104	20.0
	31 – 40 years	201	38.7
	41 – 50 years	134	25.7
	51 – 60 years	68	13.1
	Above 60 years	13	2.5
Marital Status	Single	145	27.9
	Married	333	64.0
	Divorced / Widowed	42	8.1
Monthly Income	Below Rs.15,000	172	33.1
	Rs.15,000 – Rs.25,000	223	42.9
	Rs.25,000 – Rs.30,000	76	14.6
	Above Rs.30,000	49	9.4

Table 2: Descriptive Analysis

Variables	Mean	Standard Deviation	Skewness	Kurtosis
Personal Financial planning	4.1628	0.96479	-0.732	-0.404
Savings attitude	4.1602	0.8965	-0.995	0.611
Family education	4.0054	0.93444	-0.528	-0.04
Materialism	4.1269	1.08267	-0.922	-0.293
Propensity to plan	4.0981	0.98325	-0.626	-0.192
Future orientation	4.1298	0.91251	-0.653	0.123

The above table displays the descriptive analysis results and the normal distribution of variables. The skewness and kurtosis of variables are in the range of acceptance (±3).

Path Coefficients

When we look at the relative significance of exogenous driver constructs for Personal Financial Planning (PFP), we identified that savings attitude (Sav.Att) of households was the important construct, which in turn followed by financial literacy (Fin.Lit) and propensity to plan (Prop.Plan). Family education (Fam.Edu), materialism (Mat) and future orientation (Fut.Ori)had little bearing. Nevertheless, family education (Fam.Edu) was of muchvital for savings attitude. The study showed thatfinancial literacy (Fin.Lit) and propensity to plan (Prop.Plan) were also imperative for savings attitude. The association between savings attitude (Sav.Att) and materialism (Mat) had a negative, weak path coefficient..

Table 3: Outcomes of the Structural Model Path Coefficients

Variables		Path Coefficient	t-values	Significance Level (p-value)
Fam.Edu	PFP	0.093	1.712	NS
Fam.Edu	Sav.Att	0.401	8.888	Significant
Fut.Ori	PFP	0.090	2.060	Significant
Fut.Ori	Sav.Att	0.097	2.580	Significant
Fin.Lit	PFP	0.125	3.319	Significant
Fin.Lit	Sav.Att	0.111	3.386	Significant
Mat	PFP	0.062	1.305	NS
Mat	Sav.Att	-0.089	2.323	Significant
Prop.Plan	PFP	0.100	1.970	Significant
Prop.Plan	Sav.Att	0.206	4.309	Significant
Sav.Att	PFP	0.369	6.551	Significant

p<.05 is significant; NS is not significant

Mediating Effect

"The study performed Preacher and Hayes (2004, 2008) to test the mediating effect and also Hair, Hult, Ringle and Sarstedt (2016) for indirect effect. This study was carried out to test the savings attitude role as a mediator in the projected framework. The straight effects of exogenous variables such as future orientation, propensity to plan and financial literacy on Personal Financial Planning was significant. The indirect association for family education and materialism tested with Personal financial planning determined that the two constructs had an indirect impact through

savings attitude on Personal financial planning. Variance accounted for (VAF) would be utilised to analyse how much the mediator variable absorbs the direct effect. The results depicted that the savings attitude mediate the association between financial literacy, future orientation and propensity to plan and with Personal financial planning partially".

Table 4: Outcomes of Mediating Testing

Relationship	Indirect Effect	SD	t-value (Indirect)	t-value (Direct)	LL	UL	VAF	Result
Fam.Edu → PFP	0.148	0.030	4.933	1.672	0.089	0.207		Indirect
Fut.Ori → PFP	0.036	0.015	2.400	2.069	0.06	0.065	0.286	Partial mediation
Fin.Lit → PFP	0.041	0.014	2.929	3.279	0.013	0.068	0.247	Partial mediation
Mat → PFP	-0.034	0.015	2.267	1.311	-0.062	-0.003		Indirect
Prop.Plan → PFP	0.076	0.020	3.800	1.965	0.037	0.115	0.432	Partial mediation

Conclusion

Taking into consideration the objectives of this current study and based on planned behaviour theory and time perspective theory, a theoretical model was evolved. The data analysis found that financial literacy, propensity to plan and future orientation have significant association with personal financial planning behaviour and savings attitude. However, materialism and family education do not have any impact directly on personal financial planning behaviour of households in Aruppukottai. As this study applied a part of the planned behaviour theory merely, for future studies, it is encouraged to study the impact of subjective norms and perceived behavioural control on personal financial planning. Additionally, in further studies, the application of mixed-method shall "explore the influential factors on personal financial planning. This study will be the first empirical study in an effort to evaluate the proposed associations in Aruppukottai town and the replication of this research using samples in future from other places shall be a very productive effort in ensuring a healthy conclusion of the findings".

One of the exemplary findings of this study is measuring personal financial planning behaviour. From the results, it is discovered that the validity and reliability of the personal financial planning behaviour scale is satisfactory. The outcomes also reveal that parents also have a consequential impact on their children's behaviour. The first financial lesson that the parents need to teach their children will be their savings patterns for the future and their strategical approach to tackle with financial issues. Alternately, financial advisors and financial planners should try to apprehend their niche market to administer their expert services on strategies and techniques of personal financial planning. The findings also characterize the significant role played by financial literacy in personal financial planning. It is more essential and mandate to encourage financial education amongst people and raise their consciousness and awareness at the national level. This is because it stimulates a broader culture and lifestyle of financial education and in turn persuades the overall population.

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The Why and How of Employer Branding

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Abstract

To understand what is meant by employer branding and how firms are engaging in it to reap various benefits. This paper examines existing theory to explore the concept of employer branding as it is practised in modern organisations. It takes an exploratory approach to assess existing studies and critically reflect on the impact of employer branding on employee behaviour. The paper discusses the benefits of employer branding practices for firms highlighting examples from studies conducted worldwide. This paper will offer insights to HR professionals encouraging them to realise and change their existing policies and practices to align them with the strategy for building employer branding. It will help HR professionals find better support among business leaders to initiate employer branding practices.

Keywords- Employer branding, HR Policies.

Introduction

The term employer brand was first used by Ambler and Barrow (1996), who described it as organisations that applied a marketing approach to recruitment. In the opinion of the researchers, such employer brands were poised to find it easier to find more candidates for their sales positions and retain them for longer that would ultimately aid them in helping their customers. This early definition of employer branding describes the concept well as a marketing strategy for the firm that enables it to project it as an excellent workplace. In a more recent definition of employer branding, the Chartered Institute of Personnel and Development defined it as "a set of attributes and qualities – often intangible – that makes an organisation distinctive, promises a particular kind of employment experience, and appeals to those people who will thrive and perform to their best in its culture" (CIPD, 2021). This definition too indicates how employer branding as a concept is heavily influenced by marketing principles that aim to build a positive perception among stakeholders, especially the employees, both current and future, about the organisation as a place of work.

Although its natural attractiveness as a concept and an established body of evidence supporting its benefits, the adoption of employer branding in Indian companies has remained limited to the top tier of employers. Its adoption by the medium and small companies is unknown as no surveys could be found that have explored the topic. Among the more well-known companies, a Randstad survey in 2021 reported that the top employer brands in India are Google, Amazon, Microsoft, Infosys, Tata Steel, Dell, IBM, Tata Consultancy Services, Wipro, and Sony (People Matters, 2021). Interestingly, this study noted that the concept of employer branding itself had suffered massive changes as employees now expect and demand work from home opportunities and work-life balance as critical aspects of HR policies that contribute to a strong employer brand. Understandably, employers who are not working towards employer branding and measuring it are likely to remain behind others in the war for talent.

With employer branding emerging as an essential concept differentiating the top tier of companies in India and existing research lagging in its ability to showcase benefits and uptake of this phenomenon among most companies, this paper has sought to fill this research gap.

Research Objectives

The main research objective is to explore recent literature to highlight the benefits of employer branding and its impact on the organisations' deliverables. Another research objective is to assess the best practices organisations around the world to gain insights into how firms can adopt and practice employer branding. The ultimate purpose of the research is to showcase how employers can work towards building employer brands that help them recruit and retain talent with greater ease and success.

Research Methodology

This study has conducted a literature review to identify findings from existing studies focused on employer branding in terms of its benefits and possible strategies for building an employer brand. To find relevant studies, databases of popular journals like Wiley, Emerald publications, Scopus, and Google Scholar were explored. It is important to stress that the literature review was limited to studies that matched the research objectives.

Literature Review:

The benefits of employer branding

Several studies have highlighted the benefits of employer branding. An analysis of the studies reflects that the benefits are direct advantages for the employers, preference of the job candidates, emerging trends from surveys, and the need to avoid negative connotations of not possessing a solid employer brand.

Easier recruitment and retention

Organisations with strong employer branding have become more attractive as employers for job candidates and existing employees (Collins and Kanar, 2013; Graham and Cascio, 2018; Kim and Legendre, 2021). Recruitment marketing that is a tool for finding candidates with greater ease in shorter times, is also found to improve with employer branding (Knox and Freeman, 2006; Backhaus, 2016; Clair, 2016; Murphy, 2016; Martic, 2018; CIPD, 2021).

While also helping find more candidates for vacant positions, strong employer brands find their attrition rates to reduce, helping curtail the need to recruit in the first place (Dineen and Allen, 2016). Even their absenteeism rates are found to go down, helping them improve their deliverables (De Stobbeleir et al., 2018).

The war for talent is more severe in specific sectors like the fast-moving consumer goods industry and the technology industry. Any form of ease in recruitment, retention, and attendance is bound to find the business leaders interested in ventures that help them promote their firms as employer brands. According to Dabirian, Paschen and Kietzmann (2019), employer branding has helped IT firms achieve lower recruitment costs and expenditure on retention initiatives. Ghielen et al. (2018) affirm that employer branding is connected to an improvement of the organisation's competitiveness that helps it win over talent. Many more studies have reported employer branding directly related to the retention (Born and Kang, 2015; Mosley, 2015; Tanwar and Prasad, 2016; Gilani and Cunningham, 2017; Mihalcea, 2017).

The benefits of employer branding are not limited to recruitment and retention. They even extend to the employee experience for the new generation of employees that expect more significant involvement in their firm's decision making and for leaders that allow them to have a voice in the management (Kellerman, 2012; Yadav, Kumar and Mishra, 2020). Strong employer brands can build better employee trust in their organisation associated with their employer, helping bridge the identified gap.

Improves Employee Engagement

A large body of evidence links employer branding with happier, more satisfied, and committed employees (Shuck, 2011; CIPD, 2017; Staniec and Kalińska-Kula, 2021). Employees who work for companies perceived as solid employer brands are vocal advocates of their firms, committed, and satisfied. As engaged employees are one of the foremost aims of an HR department, employer branding emerges as a critical determinator of their performance.

Recommended by Practitioners

Many private organisations have indicated the growing preference for employer branding in the recent past. As mentioned in the introduction, Randstad (2021) reported the top ten firms practising an active employer branding strategy. Earlier, LinkedIn (2016) shared that employer branding was emerging as a top priority among participating organisations in its survey, with 72% saying that it helps improve their recruitment. An HR consultancy, Career Arc (2017), also shared that 96% out of 1160 professionals who participated in its survey believe that employer branding has positively impacted their deliverables.

The Perspective of the Job Seekers

There are further benefits for job candidates. Career Arc (2017), who also studies job seekers' perception, reported that 20% believed that they would not like to work with a company not serious about its employer branding. Glassdoor (2020) is a website dedicated to employees and their views of companies. Hence, it is closely connected to employer branding; more than 70% of its users like to choose companies with a strong employer brand. It is essential to understand what was considered a strong employer brand. Companies that were quick and serious about their perception among employees and potential employees, liked to keep their websites up to date, shared anecdotes about their culture, and were conscious of the work environment were considered strong employer brands. As a result, the perspective of job seekers is an important consideration for employers looking to choose the best talent for their organisations.

Negative connotations of not being a strong employer brand

Talent Now (2018), a recruitment consulting firm, highlighted that it is possible for firms to earn a bad name or a negative employer brand. In such circumstances, more than half of the respondents to their survey were vocal about not agreeing to work with a negative employer brand. This finding is interesting because another result from the Talent Now survey was that 45% of employers do not even take any steps to rectify their negative branding. It is notable that the remaining employees, too, would not like to work for negative employer brands as their first choice. Moreover, the employers with negative brands who do not take any corrective action against their negative branding add to their difficulties as they reiterate the reasons behind their negative branding.

Contributes to Employee Voice

One of the benefits of employer branding is that it has forced employers to make their workplace practices and culture attractive to talent. In a way, employer branding helps create a job seekers' market where talent can choose which brands appeal to them and are likely to fulfil their

expectations (Chandler and Nemeth, 2020). Employer branding, therefore, has created a phenomenon where a part of the control for building workplaces has been transferred to the job candidates and the employees. This control has become more visible with the social media marketing and networking websites like LinkedIn and Glassdoor.

A Model of Employer Branding

Based on the above benefits of employer branding, the following model has emerged that helps assess the broad reach of the phenomenon and its impact on organisational deliverables.

The following model summarises the findings from various studies and illustrates why organisations should heed their employer branding. Apart from these reasons identified so far, other concerns are apparent on critical reflection. Employers will always have a perception among their stakeholders regardless of whether they choose to pursue employer branding actively or not. An organisation will have an employer brand, whether created through active efforts and strategy or emerged from a perception created through reviews shared on various social media websites. With several benefits identified for employer branding, not pursuing through an active strategy is a huge gap that needs the attention of all decision-makers.

Figure 1¬: Employer Branding Model
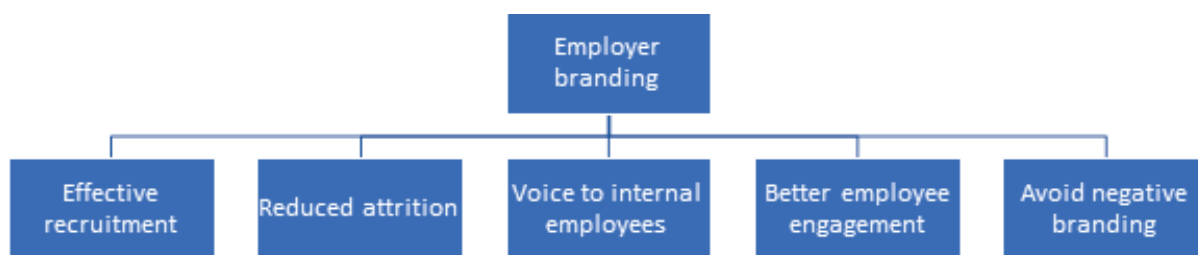
Source: Based on Author's Observations

Strategies to Build a Strong Employer Brand

With numerous benefits for building a strong employer brand, the question that arises is how can firms with limited resources achieve this goal? This section summarises insights from existing literature to suggest strategies for employers:

- Managers should begin by creating realistic job descriptions and providing a true-to-life assessment of what the employee will be expected to do (Biswas and Suar, 2016). Using generic, obsolete, and unrealistic job previews can create bad blood between the manager and the incumbent and lead them to leave the organisation feeling cheated.

- HR Practitioners should adopt practices that create a unique name for the organisation using policies and procedures tailored to their specific employees. For example, in a firm that employs young mothers, allowing a tie-up with creche or permitting babysitting services can help delight employees and create a positive perception among them.

- The firm's reward system must be perceived as a hygiene factor where salaries, benefits, and incentives have to be at par, if not higher, than other competitors. Even if rewards are not designed to act as motivators, they have the power to make employees dissatisfied and keep talented job candidates away from applying to vacancies.

- Unethical HR practices can erode trust and make employees feel let down in their employers (Tahir, 2021). HR practitioners should ensure that they never undermine their employees' trust and cause them to lose faith in their initiatives.

- HR practitioners have to align the three critical components of top leadership, team leadership and departmental goals, and organisational communications and marketing to build an employer branding strategy (Ahmed, Rafiq and Saad, 2003; Backhaus, 2016). This triumvirate is essential as the top leadership support and interest are vital in guiding the firm's resources towards building a strong employer brand. Team leadership determines the extent of alignment between talent and their expectations with the job and work culture. Lastly, the kind of communication sent out by the firm determines the alignment between its intended branding and the outcome. Therefore, all three components have to be in tandem with each other for an effective employer branding strategy.

- HR practitioners have to consider the employees' well-being as an important factor while designing policies (Raj, 2020). Unless employees feel the employer has their interests at heart while creating a policy that determines their work environment, they are unlikely to accept them.

- Employers also have to perceive ways to help employees identify with their organisation. Apart from trust in the employer, it is also believing in what the organisation stands for that can help build identification with the employer brand (Xie, Bagozzi and Meland, 2015). Once employees identify the organisational aims and objectives, they are more likely to act as advocates and potential sources of word of mouth publicity for the firm.

- Modern organisations have to invest in active marketing of the firm through their official websites, reports, press releases, and social media marketing (Sivertzen, Nilsen and Olafsen, 2013; Eger, Mičík and Řehoř, 2018). The millennial generation that is a large proportion of the workforce today is digital natives who find their reference points from the online marketing

(Turner, 2015). Active social media marketing can help promote the employer brand among this segment. Moreover, social media promotions can help reach out to passive job candidates (Clair, 2016).

Research Contribution

The findings of this study are valuable for researchers and practitioners alike. The researchers help identify gaps where employers are keen to only conduct employer branding in top-tier companies or the technology sector. At the same time, the concept can be applied to any firm. The benefits identified in the study help declare why HR practitioners should aim to build a strong employer brand so that they can attract talent and remain in a position where they get to choose the cream among the pool of candidates.

Though employer branding is a popular term, its meaning has come to denote various things to different stakeholders (Theurer et al., 2018). Studies like the present one can help illuminate the right path for employers, HR practitioners, and job candidates, helping them to build employer brands that attract the right kind of talent.

Conclusion

This study conducted a literature review to identify studies that have explored the benefits of employer branding for firms and advise how employers and HR practitioners can achieve a strong employer brand. The findings from the selected studies indicate that employer branding is a critical phenomenon for all firms as it helps them find talent faster, better, in more numbers, and retain it for longer. Moreover, selected employees feel more committed, trustful, and engaged with strong employer brands. Furthermore, companies that do not take active steps to build a strong employer brand still earn a branding though its scope remains out of their control.

Several recommendations have been suggested with these benefits that can help HR practitioners find ways of achieving a strong employer brand.

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1e. *Brief professional biography.*

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   4d. *For published conference proceedings: Surname, Initials (year of publication), 'Title of paper", in surname, initials (ed.), title of published proceeding which may include place and date (s) held, publisher, place of publication, page numbers. E.g. Jakkilinki,R., Georgievski, M. and Sharda, N. (2007)," Connecting Destinations with an Ontology-Based e-tourism planner", in Information and communication technologies in tourism 2007, Springer-Verlag, Vienna, pp. 12-32.*

4e. For unpublished conference proceedings:Surname, Initials (year), "title of paper" , paper presented at name of conference, date of conference, place of conference, available at: URL if freely available on the internet (accessed date). E.g. Aumueller, D. (2005), "Semantic Authoring and Retrieval within a wiki", paper presented at the European Semantic Web Conference (ESWC), 29 May-1 June, Heraklion, Create,available at: http://dbs.uni-leipzig.de/file/aumueller05wiksar.pdf (accessed 20 February 2007).

4f. For working papers: surnames, initials (year), "title of article". Working paper [number if available], institutionOr organization, place of organization, date.E.g.Moizer,P. (2003), "How published academic research can inform policy decisions: the case of mandatory rotation of audit appointments", working papers, Leeds University Business School, University of Leeds, Leeds, 28 march.

4g. For encyclopedia entries (with no author or editor): title of encyclopedia (year) "title of entry", volume, edition, title of encyclopedia, publisher, place of publication, pages. E.g. Encyclopedia Britannica (1926) "Psychology of Culture Contact", Vol.1, 13th Ed., Encyclopedia Britannica, London and New York, NY, pp.765-71. (For authorized entries please refer to book chapter guidelines above.)

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