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Estimation of Hedging Effectiveness using Variance Reduction and Risk-Return Approaches: Evidence from National Stock Exchange of India

KAPIL GUPTA AND MANDEEP KAUR

Abstract : Present study estimates the hedging effectiveness using variance reduction framework and risk-return framework using near month contracts of three benchmark indices (NIFTY50, NIFTYIT and BANKNIFTY) traded at National Stock Exchange of India (NSE) for the sample period June, 2000 to March 31, 2016. The study uses nine models for estimating optimal hedge ratio, of which six are constant hedging models and three are time-varying hedging models. Results suggest simpler constant hedging model for estimating optimal hedge ratio instead of using more complicated time-varying hedging models.

Keywords: Hedging effectiveness, optimal hedge ratio, equity futures market, GARCH, constant hedge ratio, time-varying hedge ratio.

Introduction

Hedging is considered to be a primary function of derivatives market and futures contracts have been widely used by investors in managing the price risk involved in underlying assets. Previously, futures market was mainly used for managing price risk in agricultural commodities only; however, more recently it is being used by different class of investors trading in equities, bonds, currencies and other financial securities.

An analysis of hedging literature suggests three different hedging theories i.e. conventional hedging theory, working's hedging theory and portfolio hedging theory. The conventional / naive hedging theory assumes that the price movement in cash and futures markets is perfectly correlated and the investor is a risk averter. Hence, it suggests that the optimal hedge ratio is to have an equal number of futures contracts as spot exposures, but in the inverse direction. However, this theory fails to cater basis risk. Contradicting the naïve hedging theory, Working (1953) proposed that hedger acts as a speculator and not as a risk avoider with the objective of maximizing profits by speculating basis. However, this theory failed to leave its mark since hedgers cannot always maximize wealth at any level of risk. Therefore, Johnson (1960) and Stein (1961) came out with a portfolio approach to hedging that was further extended and quantified by Ederington (1979). An important contribution of the portfolio approach

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is the concept of the Minimum-Variance Hedge Ratio (MVHR), i.e., the hedge ratio that minimizes the risk of the hedged position (Ederington, 1979).

The minimum-variance hedge ratio / OLS hedge ratio suggested by Ederington has been popularly used due to its simplicity to compute and understand. However, it suffers from two limitations. Firstly, it ignores the time-varying nature of financial time series and secondly, it computes constant hedge ratio. Therefore, in order to address this issue, various econometric models like GARCH, EGARCH, TARCH, etc, have been proposed in literature which helps in estimating time-varying hedge ratios. Henceforth, voluminous literature (Myers, 1991; Park and Switzer, 1995; Aggarwal and Demaskey, 1997; Moschini and Myers, 2002; Harris and Shen, 2003; Pattarin and Ferretti, 2004; Kofman and McGlenchy, 2005; Floros and Vougas, 2006; Bhadur and Durai, 2007; Lee and Yoder, 2007, Yang and Lai, 2009, Salles, 2013 and Hou and Li, 2013) has appreciated time-varying hedge ratios over constant hedge ratios.

Although numerous studies claim superior performance of time-varying hedge ratios and despite a significant advancement in econometrics, a strand of literature observes that constant hedge ratios still dominate time-varying hedge ratios and therefore, argues that econometric sophistication does not help to improve hedging effectiveness (Maharaj et al. (2008) and Wang et al. (2015)). Especially, the superiority of Ederington's OLS hedge ratio over time-varying hedge ratio is prominent in literature (Lien et al (2002), Moosa (2003), Lien (2005), Maharaj et al. (2008), Bhargava and Malhotra (2008), Rao and Thakur (2008) and Awang et al. (2014)).

Furthermore, Ederington (1979) suggested a measure of hedging effectiveness, based upon portfolio theory approach to hedging proposed by Johnson (1960) and Stein (1961), according to which hedging effectiveness is measured as proportionate reduction in standard deviation of returns from hedged portfolio and a hedge ratio that gives highest hedging effectiveness is popularly known as Minimum-variance hedge ratio. Ederington's measure of hedging effectiveness has been widely appreciated in the literature (Park and Switzer (1995), Holmes (1995), Lypny and Powella (1998), Chen et al. (2002), Yang and Allen (2004), Floros and Vougas (2004, 2006), Bhargava (2007), Bhaduri and Durai (2007), Men and Men (2008), Gupta and Singh (2009), Pradhan (2011), Hou and Li (2013)) mainly due to its simplicity to compute and understand).

Furthermore, despite huge popularity of Ederington's measure of hedging effectiveness, a strand of literature criticizes it on the ground that it focuses solely on variance reduction and ignores any changes in portfolio returns. In other words, hedging is viewed as comprising of minimization of risk only, whereas, on the contrary, Sutcliffe (1993), Penning and Meulenberg (1997) and Brailsford et al., (2001) suggest that hedging should comprise of both risk reduction as well as return maximization. Therefore, in order to overcome this limitation, few models have been proposed in the literature (Howard and D'Antonio (1984), Chang and Shanker (1987), Lindahl

(1991), Hsin et al. (1994), etc.) which takes into consideration changes in expected return on hedged as well as unhedged portfolio in addition to risk minimization. For, instance, Howard and D'Antonio (1984) suggested a risk-return measure of hedging effectiveness based upon Sharpe's measure.

Apart from the above discussed issues on optimal hedge ratio and hedging effectiveness, it is observed that futures trading is not only popular in developed markets of the world, but is equally popular in emerging markets like India, which is evident from the fact that Indian equity futures consistently rank amongst the top five markets of the world for the last decade. However, to the best of our knowledge, in Indian context only few attempts have been made to examine hedging effectiveness (Bhaduri and Durai, 2007; Rao and Thakur, 2008; Gupta and Singh, 2009, Pradhan, 2011, Haq and Rao, 2013, Kumar and Pandey, 2013, Malhotra, 2015). These studies have primarily focused on examining a superior methodology for determining optimal hedge ratio, using variance reduction framework as a measure for examining hedging effectiveness. Therefore, present study is an attempt to examine the hedging effectiveness in a risk-return framework as suggested by Howard and D'Antonio (1984), in addition to estimating hedging effectiveness based upon measure proposed by Ederington (1979) and optimal hedge ratios using nine econometric models. Also, an attempt has been made to study the impact of financial crisis on optimal hedge ratio and hedging effectiveness.

Database and Research Methodology

As far as present study is concerned, scope of this study is restricted to equity futures contracts. The sample size of the study comprises of three indices i.e. NIFTY, NIFTYIT and BANKNIFTY which has been selected on the basis of their consistent trading history and high liquidity. The data has been collected for near month for all three indices comprising sample size of study from official website of the National Stock Exchange of India (NSE) i.e. www.nseindia.com. The period of the study is from inception date of respective indices till March 31, 2016 as presented below:

Table 1: Sample size and sample period of study

Symbol	Period of study	Number of Observations		
		Pre-Crisis	Post-Crisis	Total
NIFTY50	June 12, 2000 – March 31, 2016	1898	2042	3940
NIFTYIT Previously (CNXIT)	August 29, 2003 – March 31, 2016	1092	2042	3134
BANKNIFTY	June 13, 2005 – March 31, 2016	638	2042	2680

Unit-root Test

The very first step in any econometric investigation of a time series is to examine whether the time series under examination contains unit roots, if yes, then it should be transformed for further examination. Therefore, stationarity of three indices understudy has been tested by using the Augmented Dickey Fuller (ADF) test and it has been observed that the prices (both futures prices and cash prices) are non-stationery, whereas, natural log of first difference of prices (i.e. $\ln(p_t / p_{t-1})$) is stationery (The estimated results are not reported in the paper, but, can be provided on demand). Thus, returns of futures contracts and cash market are considered for estimating hedge ratio.

Estimation of Optimal Hedge Ratio

Appreciating the stationary and stable long-run relationship between cash and futures market, nine econometrical procedures have been undertaken, which addresses various economic as well as statistical issues involved in estimating an optimal hedge ratio and an efficient hedge ratio would be one, which can help hedgers to minimize portfolio variance to lowest level.

Naïve Hedge Ratio

Traditionally, cash and futures market was presumed to be perfectly correlated and therefore, in order to obtain a perfect hedge, equal number of futures contracts was required. Hence, it suggests an optimal hedge ratio of one. However, since this methodology ignored basis risk, which is considered vital to the estimation of optimal hedge ratio, therefore, this theory failed to mark its presence in the literature.

Ederington's OLS Hedge Ratio

Ederington (1979) suggested minimum variance hedge ratio, which presumes strong and stable long run relationship between two markets and works efficiently when futures market returns are unbiased predictor of cash market returns. Equation (4.1) explains the procedure suggested by Ederington (1979), which is estimated by regressing cash market returns on futures market return and consequently, hedging effectiveness will depend upon the coefficient of R^2. In equation (4.1), $R_{s,t}$ is cash market returns, $R_{f,t}$ is futures market returns, α_o is intercept term and α_t is error term.

$$R_{s,t} = \alpha_0 + \beta_1 R_{f,t} + \varepsilon_t \qquad (4.1)$$

ARMA-OLS Hedge Ratio

In addition to containing unit roots, cash and futures market returns, being financial time-series are significantly autocorrelated, which suggests that successive stock and/or futures returns are not random, rather due to mean reversion, volatility clustering, information asymmetry or inefficient microstructure system Fama, 1970 and 1991 and Dimson and Mussavian (1998)) are function of previous information set(s). Therefore, if stock returns are autocorrelated then avoidance of it may bias the estimated hedge ratio. Hence, in order to minimize the bias in estimated Hedge Ratio, equation (4.1) has been modified to equation (4.2) to include autoregressive terms (Order of autoregression has been determined on the basis of Schwartz criteria. The Schwartz criterion uses a function of the residual sum of squares together with a penalty for large number of parameters. Specifically, the Schwartz information criterion minimizes the expression: T * log (RSS) + K * (log T), where T is the number of observations, RSS is the sum of the squared residuals and K is the number of regressors. Lagged terms provide an explanation of the short-run deviations from the long-run equilibrium for the two test equations) of cash market returns that may provide better results, hence improved R^2. In equation (4.2), $R_{s,t}$ is cash market returns, $R_{f,t}$ is(are) futures market returns, $R_{s,t-i}$ is autoregressive term(s) whose order varies between i to p determined as per Schwartz Information Criteria (SIC), α_o is intercept term and α_t is error term.

$$R_{s,t} = \alpha_0 + \sum_{i=1}^{p} \alpha_i R_{s,t-i} + \beta_1 R_{f,t} + \varepsilon_t \text{.......... ....} \quad (4.2)$$

Modified OLS

It is observed that futures prices is an unbiased predictor of cash prices and basis as an error correction term, corrects the deviation between current spot price from its equilibrium price. Therefore, equation (4.2) has been further improved by Gupta and Singh, 2009 by including first lag of both futures return and basis as presented in equation (4.3), where $R_{f,t-1}$ represents lagged futures return and ($R_{f,t-1}$ - $R_{s,t-1}$) represents lagged basis.

$$R_{s,t} = \alpha_0 + \sum_{i=1}^{p} \alpha_i R_{s,t-i} + \beta_1 R_{f,t} + \beta_2 R_{f,t-1} + \beta_3 \left(R_{f,t-1} - R_{s,t-1}\right) + \varepsilon_t \quad .(4.3)$$

GARCH Hedge Ratio

In equation (4.1), (4.2) and (4.3), if the variance of error term is constant (Langrage Multiplier Test whose null hypothesis states that variance of error term is homoscedastic. Therefore rejection of null hypothesis will ask researcher to apply appropriate model out of GARCH family), the hedge ratio estimated through Ordinary Least Square (OLS) method will be valid, however, vast amount of academic literature (Engle (1982), Bollerslev (1987), Myers (1991), Park and Switzer (1995), Floros and Vougas (2004). Pattarin and Ferretti (2004)). has evidenced that stock returns are heteroscedastic in nature which implies that that stock returns observes volatility clustering. Therefore, Autoregressive Conditional Heteroscedasticity model (ARCH) ((Engle (1982)) generalized by Bollerslev (1986) called GARCH (p,q) in which conditional variance depends not only upon the squared residuals of the mean equation but also on its own past values, is given by equation (4.4).

$$h_t = \omega + \sum_{i=1}^{p} \alpha_i \varepsilon_{t-i}^2 + \sum_{j=1}^{p} \beta_j h_{t-j} + \upsilon_t \quad \text{.......... ....} \quad .(4.4)$$

Where, h_t is the conditional volatility, $á_i$ is the coefficient of ARCH term with order i to p and âj is the coefficient of GARCH term with order j to q. The conditional volatility as defined in equation (4.4) is determined by three effects namely the intercept term (ω), the ARCH term ($\alpha_i \varepsilon^2_{t-i}$) and the forecasted volatility from the previous period called GARCH component ($\alpha_j h_{t-j}$). Parameters ω and α should be higher than 0 and ω_j should be positive in order to ensure conditional variance (h_t) to be non negative. Besides this, it is necessary that $\alpha_i+\beta_j<1$, which secures covariance stationarity of conditional variance. Therefore, if variance of error term in equation (4.2) is not constant, equation (4.4) would be attached to equation (4.2), hence, the estimation of hedge ratio (β_1) would be subject to the nature of index return's volatility.

EGARCH Hedge Ratio

Nelson (1991) by taking into account the asymmetric relationship between conditional volatility and conditional mean, proposed an Exponential GARCH (EGARCH) model, which is based upon the logarithmic expression of conditional volatility in cash and futures market returns. Therefore, if the stock returns are asymmetric and the interaction between old and new information observes leverage effect, EGARCH model (i.e. equation (4.5)) may help to estimate an improved hedge ratio as compared to that estimated through GARCH process in equation (4.5)

$$h_t = \gamma_1 + \gamma_2 \left| \frac{\varepsilon^2_{t-1}}{h_{t-1}} \right| + \gamma_3 \frac{\varepsilon^2_{t-1}}{h_{t-1}} + \gamma_4 h_{t-1} \quad \text{.......... ....} \quad .(4.5)$$

TARCH Hedge Ratio

Equation (4.5) reports the leverage relationship between old and new information but in the speculative markets besides the leverage effect, it has been observed that traders react heterogeneously to positive and negative news. Therefore, it would be more appropriate (if conditional volatility behaves differently to positive and negative news) to segregate the impact of both positive and negative news, which can be done by specifying the variance equation in TARCH (Threshold Autoregressive Conditional Heteroscedasticity) framework and then estimate the optimal hedge ratio in the mean equation.

Equation (4.6) lays down the variance equation of TARCH model where, equation (4.5) is modified to include $\varepsilon^2_{t-i}\xi_{t-i}$, which is a dummy for negative news having value 1 if there is negative news and 0 otherwise. Therefore, appropriate GARCH methodology would be able to capture the stylized behaviour of conditional volatility of cash market returns hence the estimated hedge ratio will be statistically robust.

$$h_t = \omega + \sum_{i=1}^{p} \alpha_i \varepsilon_{t-i}^2 + \sum_{i=1}^{p} \alpha_k \varepsilon_{t-1}^2 \xi_{t-i} + \sum_{j=1}^{p} \beta_j h_{t-j} + \upsilon_t \qquad (4.6)$$

where,

a) $\xi_{t-i} = 1$, if $\varepsilon_{t-i} < 0$

b) $\xi_{t-i} = 0$, if $\varepsilon_{t-i} > 0$

The estimation of hedge ratio through OLS, GARCH or EGARCH process may provide better estimate of the hedge ratio but optimality of hedge ratio will still be doubtful because both markets observes significant lead-lag relationship in terms of volatility spillover and information dissemination. Therefore, estimating an optimal hedge ratio by regressing only the cash market returns on lagged returns of both futures and cash market may be biased because other way round is also true as volatility spillover is bidirectional and continuous. Therefore, in the present case, either Vector Autoregression Model (VAR) (when both markets observe causal relationship) or Vector Error Correction Methodology (VECM) (when both markets are cointegrated) may provide efficient speculative forecasts, hence, robust hedge ratio may be estimated.

VAR and VECM Hedge Ratio

VAR model simultaneously regress the lagged returns of both variables, whereas, VECM in addition to lagged returns also considers the error correction term (if both series are cointegrated). Hence both methodologies estimate the optimal hedge ratio by considering theoretical relationship between two markets (i.e. lead-lag in short-run and cointegration in long-run), which confirms the volatility spillover between two markets through arbitrage process. Equations (4.7) and (4.8) specify the estimation process of VAR methodology and equations (4.9) and (4.10) stimulate the estimation procedure of VECM. The hedge ratio on the basis of VAR and VECM will be computed as $\sigma_{s,f} / \sigma^2 f$ where $\sigma_{s,f} = \mathrm{cov}(\varepsilon_{ft}, \varepsilon_{st})$ and $\sigma^2 f = \mathrm{var}(\varepsilon_{ft})$.

$$R_{s,t} = \sum_{i=1}^{M} \alpha_i R_{s,t-i} + \sum_{j=1}^{N} \beta_j R_{f,t-j} + \varepsilon_{st} \qquad (4.7)$$

$$R_{f,t} = \sum_{k=1}^{O} \alpha_k R_{s,t-k} + \sum_{l=1}^{P} \beta_1 R_{s,t-1} + \varepsilon_{ft} \qquad (4.8)$$

$$R_{f,t} = \alpha_{0f} + \sum_{i=1}^{p} \alpha_{if} (F_{t-i} - S_{t-i}) + \sum_{j=1}^{q} \beta_f R_{f,t-j} + \sum_{k=1}^{m} \beta_f R_{s,t-k} + \varepsilon_{ft} \qquad (4.9)$$

$$R_{s,t} = \alpha_{0s} + \sum_{i=1}^{p} \alpha_{is} (F_{t-i} - S_{t-i}) + \sum_{l=1}^{n} \beta_s R_{s,t-l} + \sum_{h=1}^{o} \beta_s R_{f,t-h} + \varepsilon_{st} \qquad (4.10)$$

Therefore, in the present study, optimal hedge ratio is estimated through OLS, GARCH, EGARCH, TARCH, VAR and VECM procedures, which may be constant or time-varying depending upon the property of the series understudy.

Estimation of Hedging Effectiveness

The above mentioned statistical procedure suggest the optimal hedge ratio(s), however, the effectiveness of these estimated optimal hedge ratio(s) shall have to be computed based upon two criterions. One, variance reduction criterion suggested by Ederington (1979) and second, risk-return criterion suggested by Howard and D'Antonio (1984). The hedge ratio that gives the highest hedging effectiveness in each of the two methods would be proposed as efficient hedge ratio.

Variance-Reduction Framework

As proposed by Ederington (1979), hedging effectiveness shall be measured as percentage decline in portfolio variance as shown in equation (4.11), where Var (U) and Var (H) represents variance of un-hedged and hedged portfolios respectively. σ_s and σ_f are standard deviation of the cash and futures returns respectively, $\sigma_{s,f}$ represents the covariability of the cash and futures returns and h* is the optimal hedge ratio.

$$\text{Hedge effectiveness } \frac{\text{Var (U)} - \text{Var (H)}}{\text{Var (U)}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots(4.11)$$

$$\text{Var (U)} = \alpha_s^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(4.12)$$

$$\text{Var (H)} = \sigma_s^2 + h^{*2}\sigma_f^2 - 2h^*\sigma_{s,f} \ldots\ldots\ldots\ldots\ldots\ldots(4.13)$$

Risk-Return Framework

As already mentioned in section I, the variance reduction measure of hedging effectiveness gained huge popularity in the academic literature. However, this method does not take into account the return on hedged and unhedged portfolio(s). Therefore, Howard and D'Antonio (1984), suggested a measure of hedging effectiveness (λ) that incorporates the return component, Eq. (4.14) specifies the estimation of hedging effectiveness which is measured as ratio of slope of risk-return relative from hedged portfolio and risk-return relative from unhedged portfolio.

$$\text{HE} = \theta \Big/ \frac{\overline{r_s} - i}{\sigma_s} \ldots\ldots\ldots\ldots\ldots\ldots\ldots(4.14)$$

Where, $\theta = \dfrac{\overline{R}_p - i}{\sigma_p}$

$\overline{R}_p$ = expected return from hedged portfolio

σ_p = standard deviation of returns from hedged portfolio

i = risk-free rate of return

$\overline{r_s}$ = expected return from unhedged portfolio

σ_s = standard deviation of returns from unhedged portfolio

Results

The results relating to the summary statistics of futures and cash market returns has been presented in Table 2. It suggests that the returns of both futures and cash markets are significantly skewed (negatively skewed in most of cases) and their coefficient of kurtosis is significantly different from three which implies that futures and cash market returns do not conform to normal distribution. The null hypothesis that futures and cash market returns follow normal distribution is further tested through Jarque-Bera test which is statistically significant, and rejects the null hypothesis for all index futures and cash market returns.

Furthermore, Table 3 reports the optimal hedge ratio(s) estimated through Naive, Ederington's Model, ARMA (p,q), Modified OLS, VAR, VECM, GARCH (p,q), EGARCH (p,q) and TGARCH (p,q) for near month contracts of all the three indices understudy. Two important observations can be seen. One, in case of all these indices, Ederington's OLS gives the lowest coefficient of hedge ratio. Second, hedge ratio(s) estimated through Ederington's model, ARMA (p,q), Modified OLS, VAR and VECM are constant hedge ratio(s) and their hedging coefficients are relatively smaller than the hedge ratio(s) estimated through time varying models i.e. GARCH, EGARCH and TGARCH. From the above observations, one conclusion can be drawn that the cost of hedging through constant hedge ratio are lower than time varying hedge ratios (Lower hedge ratio implies lower investment in futures contracts). Furthermore, these results remain consistent during pre-crisis as well as post-crisis period (Table 4), which implies that the state of market does not affect the hedging model to be used to estimate hedging effectiveness. However, a slight increase in the coefficients of hedge ratio for NIFTY and BANKNIFTY during post crisis period has been observed, whereas in case of NIFTYIT, coefficients of only time-varying hedge ratios have been increased.

Furthermore, Table 5 reports the hedging effectiveness in the form of variance reduction, proposed by Ederington (1979), after taking hedging position with the estimated optimal hedge ratio(s). An important observation is that constant hedging models (OLS, VAR and VECM) gives highest hedging effectiveness (These findings are consistent with the findings of Lien et al (2002), Moosa (2003), Lien (2005), Maharaj et al. (2008), Bhargava and Malhotra (2008), Rao and Thakur (2008) and Awang et al. (2014)), whereas, naive hedging model gives lowest hedging effectiveness. Moreover, there is no significant difference between the

Table 2: Descriptive statistics for NIFTY, NIFTYIT and BANKNIFTY

Contract	variables	Count	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
NIFTY	Futures Return	3939	0.000425	0.015731	-0.493672	12.83305	16029.05(0.00)
	Cash Return	3939	0.000427	0.015061	-0.296783	11.83627	12872.65(0.00)
	Basis	3940	25.02533	43.84938	1.049673	3.455654	757.6089(0.00)
NIFTYIT	Futures Return	3133	-9.20E-05	0.045839	-43.78679	2257.988	6.65E+08(0.00)
(previously	Cash Return	3133	-9.13E-05	0.045663	-43.98293	2271.964	6.73E+08(0.00)
CNXIT)	Basis	3134	8.270341	41.38112	-0.231291	59.98556	424078.3(0.00)
BANKNIFTY	Futures Return	2679	0.000559	0.020685	0.038455	7.632446	2396.083(0.00)
	Cash Return	2679	0.000556	0.020167	0.075152	7.537706	2300.967(0.00)
	Basis	2680	17.07549	38.06139	0.636343	4.800262	542.7752(0.00)

Table 3: Estimation of optimal hedge ratio

Contract	Naïve	OLS	ARMA OLS	Modified OLS	VAR	VECM	GARCH (1,1)	EGARCH (1,1)	TARCH (1,1)
NIFTY50	1	0.940	0.956	0.941	0.943	0.944	0.962	0.964	0.962
NIFTYIT(previously CNXIT)	1	0.993	0.998	0.996	0.996	0.996	1.00152	1.00157	1.00156
BANKNIFTY	1	0.966	0.979	0.967	0.967	0.968	0.982	0.986	0.984

Table 4: Estimation of optimal hedge ratio over pre and post crisis period

Contract	Period	Naïve	OLS	ARMA OLS	Modified OLS	VAR	VECM	GARCH (1,1)	EGARCH (1,1)	TARCH (1,1)
NIFTY50	Pre-crisis	1	0.919	0.941	0.921	0.923	0.925	0.936	0.931	0.935
	Post-crisis	1	0.959	0.966	0.958	0.959	0.960	0.977	0.978	0.981
NIFTYIT (previously CNXIT)	Pre-crisis	1	0.995	0.999	0.998	0.997	0.998	0.999	0.997	0.996
	Post-crisis	1	0.981	0.988	0.983	0.992	0.993	1.006	1.007	1.005
BANKNIFTY	Pre-crisis	1	0.953	0.976	0.959	0.957	0.962	0.982	0.985	0.982
	Post-crisis	1	0.970	0.980	0.969	0.970	0.970	0.982	0.986	0.985

Table 5: Hedging effectiveness (Ederington, 1979)

Contract	Naïve	OLS	ARMA OLS	Modified OLS	VAR	VECM	GARCH (1,1)	EGARCH (1,1)	TARCH (1,1)
NIFTY	96.06	96.45	96.42	96.45	96.45	96.45	96.40	96.39	96.40
NIFTYIT (previously CNXIT)	99.37	99.37	99.37	99.37	99.37	99.37	99.365	99.366	99.366
BANKNIFTY	98.03	98.15	98.13	98.15	98.15	98.15	98.13	98.11	98.12

hedging effectiveness by using the hedge ratio estimated through Ederington's model, ARMA (p,q), Modified OLS, VAR, VECM, GARCH (p,q), EGARCH (p,q) and TGARCH (p,q). These findings are consistent with the findings of Lien et al. (2002), Lien (2005), Maharaj et. al. (2008) and Gupta and Singh (2009) which suggest that knowledge of sophisticated econometrical procedures does not help to construct a better portfolio and improve hedging effectiveness. Moreover, the impact of financial crisis of 2008 on hedging effectiveness has been studied and results have been reported in Table 6 and it is interesting to note that OLS model dominates over other hedging models in obtaining highest hedging effectiveness, while remaining unaffected by the impact of financial crisis 2008. Another important observation is that there has been an increase in hedging effectiveness after the crisis of 2008, for all indices (except NIFTYIT post-crisis).

Furthermore, Table 7 reports the hedging effectiveness estimated using risk-return criteria proposed by Howard and D'Antonio (1984) that incorporates both risk and return components on hedged portfolio. It is observed that naïve hedge ratio gives highest hedging effectiveness for NIFTY, NIFTYIT and BANKNIFTY whereas, Ederington's OLS hedge ratio gives lowest hedging effectiveness. Furthermore, the impact of financial crisis on hedging effectiveness has been examined and results have been reported in Table 8. It is observed that Naïve hedge ratio gives highest hedging effectiveness (except NIFTYIT post-crisis), whereas Ederington's OLS gives lowest hedging effectiveness. Moreover, it is found that there has been an increase in hedging effectiveness during post crisis (except NIFTYIT post-crisis).

From these results, an important finding is that the result of optimal hedge ratio and hedging effectiveness for NIFTYIT has been consistently an exception to the results of other two indices. The reason for such an exception might be due to the fact that global financial crisis of 2008 adversely affected the business of Indian IT industry and sentiments of investors which is evident from two facts. First, the correlation coefficient of spot and futures price series for CNXIT declined in the post-crisis period (Table 10). Second, the average traded volume for CNXIT contracts show a declining trend after 2007 (Table 9) which might be due to negative sentiment among investors towards IT stocks.

Conclusion

The present study finds that hedge ratios estimated through constant hedging models [Ederington's model, VAR, VECM and ARMA (p,q)] are relatively smaller than the hedge ratios estimated through time varying models (GARCH, EGARCH and TGARCH). Secondly, after segregating the data series into pre and post crisis period, it is observed that hedge ratios during the post-crisis period are relatively higher than pre-crisis period, which implies that the cost of hedging has been increased after the financial crisis.

Table 6: Hedging effectiveness over pre and post crisis period (Ederington, 1979)

Contract	Period	Naïve	OLS	ARMA OLS	Modified OLS	VAR	VECM	GARCH (1,1)	EGARCH (1,1)	TARCH (1,1)
NIFTY50	Pre-crisis	93.805	94.547	94.489	94.547	94.545	94.543	94.512	94.531	94.519
	Post-crisis	97.873	98.052	98.047	98.052	98.052	98.052	98.016	98.016	98.001
NIFTYIT (previously CNXIT)	Pre-crisis	99.553	99.556	99.555	99.555	99.556	99.555	99.555	99.556	99.557
	Post-crisis	96.439	96.476	96.471	96.475	96.462	96.460	96.414	96.406	96.417
BANKNIFTY	Pre-crisis	95.930	96.182	96.115	96.179	96.178	96.171	96.084	96.064	96.085
	Post-crisis	98.508	98.606	98.595	98.606	98.606	98.606	98.588	98.576	98.582

Table 7: Hedging effectiveness (Howard and D'Antonio, 1984)

Contract	Naïve	OLS	ARMA OLS	Modified OLS	VAR	VECM	GARCH (1,1)	EGARCH (1,1)	TARCH (1,1)
NIFTY50	1.2538	1.2462	1.2483	1.2463	1.2470	1.2467	1.2490	1.2493	1. 2490
NIFTYIT (previously CNXIT)	1.2780	1.2771	1.2778	1.2775	1.2775	1.2775	1.2782	1.2782	1.2782
BANKNIFTY	1.1763	1.1733	1.1744	1.1734	1.1734	1.1735	1.1747	1.1751	1.1749

Table 8: Hedging effectiveness over pre and post crisis period (Howard and D'Antonio, 1984)

Contract	Period	Naïve	OLS	ARMA OLS	Modified OLS	VAR	VECM	GARCH (1,1)	EGARCH (1,1)	TARCH (1,1)
NIFTY50	Pre-crisis	1.1053	1.1013	1.1024	1.1014	1.1015	1.1016	1.1022	1.1019	1.1021
	Post-crisis	5.3292	5.2412	5.2552	5.2378	5.2393	5.2421	5.2802	5.2807	5.2881
NIFTYIT (previously CNXIT)	Pre-crisis	1.2899	1.2891	1.2897	1.2896	1.2894	1.2896	1.2897	1.2894	1.2893
	Post-crisis	1.2833	1.2807	1.2816	1.2810	1.2823	1.2824	1.2841	1.2843	1.2840
BANKNIFTY	Pre-crisis	1.0570	1.0557	1.0563	1.0559	1.0558	1.0559	1.0565	1.0566	1.0565
	Post-crisis	1.4237	1.4173	1.4194	1.4171	1.4172	1.4174	1.4199	1.4208	1.4204

Table 9: Descriptive statistics of futures contracts volume

Symbol	Period	Count	Mean	Minimum	Maximum	Std. Dev.
S&PCNXNIFTY	Pre	1898	135556.2	19	1338598	183077.1
	Post	2042	415608.1	14371	1343511	207469.5
NIFTYIT	Pre	1092	471.1612	0	3683	480.5841
	Post	2042	315.1019	1	3395	289.932
BANKNIFTY	Pre	638	2011.188	27	10453	1.409485
	Post	2042	73973.49	557	343417	46689.565

Furthermore, it is found that in a variance reduction framework, Ederington's OLS hedge ratio gives highest hedging effectiveness (except for NIFTYIT where VECM gives highest hedging effectiveness) whereas, Naïve hedge ratio gives the lowest hedging effectiveness. These findings are consistent with the findings of Collins (2000), Lien et al. (2002), Moosa (2003), Lien (2005), Bhargava (2007), Rao and Thakur (2008) and remain consistent when the data series is segregated into pre and post-crisis period. However when hedging effectiveness is computed in a risk-return framework, Naïve hedge ratio gives highest hedging effectiveness (except for CNXIT post crisis), whereas OLS gives lowest hedging effectiveness. Once again, the results obtained remains consistent when series is segregated into pre and post crisis period.

From the above findings few important implications can be drawn. Firstly, constant hedging models give highest hedging effectiveness whether estimated on the basis of variance-reduction criteria or risk-return criteria proposed by Howard and D'Antonio (1984). These findings are consistent with the findings of Maharaj et al. (2008), Gupta and Singh (2009) and Wang (2015)) who argue whether econometric sophistication really help to improve hedging effectiveness. However, on the contrary, these findings are inconsistent with numerous studies (Baillie and Myers (1991),), Myers (1991), Kroner and Sultan (1993), Park and Switzer (1995), Lypny and Powella (1998), Yang (2001), Kavussanos and Nomikos (2000), Moschini and Myers (2002), Floros and Vougas (2004), Yang and Allen (2004), Choudhry (2004), Kofman and McGlenchy (2005), Floros and Vougas (2006), Bhaduri and Durai (2007), Lee and Yoder (2007), Kumar et al. (2008), Srinivasan (2011), Hou and Li (2013)). which suggest that time-varying hedging models dominate constant hedging models. The reason for such anomaly may be attributed to the fact that hedging model to be used may be country specific (Hou and Li, 2013). Secondly, since both the measures of hedging effectiveness suggest different optimal hedging models, therefore, selection of right hedging model becomes vital for investor which depends upon his objective to hedge. Thirdly, there has been increase in estimates of both optimal hedge ratio and hedging effectiveness (except CNXIT) during post crisis period which implies an increase in the cost of hedging. The reason for increase in both these estimates can be due to increase in correlation coefficient computed over the post-crisis period (Table 10).

Table 10: Correlation coefficient of return series

Symbol	Period	Count	Correlation Coefficient
S&PCNXNIFTY	Pre-Crisis	1897	0.973
	Post-Crisis	2041	0.991
NIFTYIT	Pre-Crisis	1091	0.999
	Post-Crisis	2041	0.983
BANKNIFTY	Pre-Crisis	637	0.982
	Post-Crisis	2041	0.994

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Impact of Basel III on Profitability of Indian Banks with reference to Capital Adequacy Regulation

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Abstract: The enhanced Basel III Accord provides a comprehensive coverage of all types of risks that banks face and is a preemptive tool for occurrence of further global crisis. One of the most significant regulation of Basel III is Capital Adequacy ratio which shows the internal strength of bank to withstand losses and is directly proportional to resilience of banks to crisis situations. As far as the Indian Banking industry is concerned, besides being subjected to domestic regulations stipulated by the Reserve Bank of India, banks in India have to comply with international regulations as well. Though Indian banks remained resilient to the crisis to a large extent, yet there is a need to study the impact of Basel III regulation on profitability of Indian banks. The present study aims to study the probable impact of Capital Adequacy Ratio (CAR) on profitability of selected banks. This work also examines CAR values of public and private sector banks for 9 years and concludes that private sector banks are better placed in regard to implementation of CAR regulation of Basel III.

Key Words: Basel III, Capital Adequacy, Performance, Commercial Banks.

Introduction

Banking Sector holds an instrumental role in growth and development of economic system worldwide. There are certain instances in global banking scenario which are a testimony to the crucial role that banks play in stability of financial system of an economy. With the advent of globalization and liberalization, banks expose themselves to a number of risks which pushed risk management to the forefront of today's financial landscape. A significant landmark in the field of risk management has been introduced by Basel Committee on Banking Supervision (BCBS). Different Basel Accords issued over different time periods have proved to be path breaking in managing risks to which a bank exposes itself while performing its operations. The most recent development in context of guidelines which BCBS issues is advent of Basel III. It is a comprehensive set of reform measures developed to strengthen the regulation, supervision and risk management of banking sector. The earlier Basel Accords I and II propelled Basel Committee on Banking Supervision to revise its existing regulations of Capital Adequacy, Supervisory Review and Disclosures.

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Indian Banking Scenario

Indian Banking has undergone a paradigm shift since 1991 LPG reforms. The fast changing liberalized economic scenario exposes banks to tremendous competition not only from domestic market but also from foreign banks. Tremendous changes have taken place in the banking industry wherein banks have been innovating, improving and coming out with new types of the services to cater to the emerging needs of their customers. In the backdrop of all these developments, Basel III norms have emerged as a remedy which aimed at capital adequacy and promotes a comprehensive coverage of risks. While internationally accepted prudential norms have been adopted, with higher disclosures and transparency, Indian banking industry is gradually moving towards adopting the best practices in accounting, corporate governance and risk management. A major landmark in the similar direction is adherence of Indian banks to prudential Capital Adequacy regulation which indicates whether a bank has enough capital to absorb unexpected losses. It is required to maintain depositors' confidence and preventing the bank from bankruptcy.

Basel I Capital Accord

Basel I accord was introduced in 1988 and attempted to create a cushion against credit risk that a bank faces. The Accord directs banks to maintain a minimum capital adequacy of 8% against Risk Weighted Assets. The capital adequacy indicator of a bank, calculated in this way, should be at least 8%:

$$\frac{Capital}{RWA} \geq 8\ \%$$

Basel II Capital Accord

BASEL II was considered to be the resultant of pitfalls of Basel I. A new and comprehensive capital accord was proposed by Basel committee in June 2004 and was named as "A revised Framework on International Convergence of Capital Measurement and Capital Standards"(also called as Basel II).It intended to amend international standards that controlled how much capital banks need to hold to guard against the credit, market and operational risks that banks face. These rules sought to ensure that the greater the risk to which a bank is exposed, the greater the amount of capital the bank needs to hold to safeguard its solvency and economic stability.

Basel III

The drawbacks of Basel II and financial crisis of 2007-09 which proved Basel II incompetent for comprehensive management of risk paved the way for emergence of Basel III. Basel III is indeed a revolution in area of banking regulation. Drawing largely from existing Basel II, Basel III aims to build up a robust capital base for banks and ensure sound liquidity and leverage ratios so as to prevent occurrence of any future financial crisis, thereby ensuring the stability of financial system. BCBS released the Basel III framework entitled "Basel III: A Global Regulatory Framework for more Resilient Banks and Banking systems" in Dec 2010 (revised in June 2011). According to BCBS, Basel III proposals have two main objectives:

- To strengthen global capital and liquidity regulations with the goal of providing a more resilient banking sector
- To improve the banking sector's ability to absorb shocks arising from financial and economic stress.

The major recommendations under Basel III as suggested by BCBS are as follows:

1) Increased quantity and quality of capital: Basel III inculcates strong guidelines for improving the quantity and quality of capital, so as to improve the loss-absorption capacity of banks for their long term survival as well as for liquidation scenarios. Basel III retained the minimum capital adequacy ratio of 8%, the Tier I capital ratio increased to 6% with the equity component stipulated at 4.5%. There are two new concepts introduced by Basel III namely capital conversion buffer and countercyclical capital buffer (CCB). The capital conversion buffer ensures that banks are able to absorb losses without breach of the requirement of minimum capital, and are able to carry on business even when economy is facing a downturn without deleveraging. So while the 8% minimum capital requirement remains unchanged under Basel III, there is an added 2.5% as capital cushion buffer. The countercyclical capital buffer is a pre-emptive measure that requires banks to build up capital gradually as imbalances in the credit market develop. It may be in the range of 2.5% of risk weighted assets which could be imposed on banks during periods of excess credit growth.
2) Increased short term liquidity coverage: The Basel Committee lays down guidelines for strengthening of the liquidity framework by developing two minimum standards for quantifying funding liquidity; Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). The LCR standard aims at a bank having an adequate stock of unencumbered high quality liquid assets (HQLA) which consist of cash or assets that can be converted into cash at little or no loss of value in private markets to meet its liquidity requirements in a 30 calendar day. The two components of LCR are stock of HQLA and the total net cash flows over the next 30 calendar days. The NSFR is designed to encourage and incentivize banks to use stable sources to fund their activities. It helps to reduce dependence on short term wholesale funding during times of buoyant market liquidity and encourages better assessment of liquidity risk across all on- and off-balance sheet items.Net Stable Funding Ratio requires a minimum amount of stable sources of funding at a bank relative to the liquidity profiles of the assets, as well as the potential for contingent liquidity needs arising from off-balance sheet commitments, over a one-year horizon.

3) Reduced leverage through introduction of backstop leverage ratio: The newly introduced leverage ratio acts as a non- risk sensitive backstop measure to reduce the risk of buildup of excessive leverage in the institution and in the financial system as a whole. The leverage ratio requirement would hence set an all-encompassing floor to minimum capital requirements which would limit the potential erosive effects of gaming and model risk on capital against true risks. A 3% minimum Tier I leverage is recommended by Basel III. In India, banks are required to meet this norm from January 1, 2018.

4) Strengthening of provisioning norms: Another aspect of development by the Basel III reforms is in the field of provisioning norms; currently there is a standardized approach to provisioning in the banking system. It is a typical accounting approach, wherein if a loss is incurred, banks have to make a provision to cover it. Basel III sets a new parameter by introducing a move from "incurred loss approach" to "expected loss approach". The introduction of concept of Dynamic Provisioning sets forth as a solution to this regulation.

5) Enhanced disclosures: The third pillar of Basel III is market discipline, which involves more of disclosures. Disclosures made by banks are essential for market participants to make more informed decisions. Basel III further strengthens the disclosures, where banks are required to disclose on composition of the regulatory capital, Tier I and Tier II capital, approaches to measure the same and any adjustments to the regulatory capital.

6) Addressing systemic risk and interconnectedness: Basel III Accord lays down that excessive interconnectedness among systemically important banks can also transmit instability and shocks across the financial system and economy. Systemically important banks should have loss absorbing capacity beyond the minimum standards and a measure in this regard includes combinations of capital surcharges, contingent capital, and methodology comprising both of quantitative and qualitative indicators to assess the systemic importance of financial institutions at a global level. There is also a provision for a higher capital surcharge on systemically important banks.

Review of Literature

Shenoy, Mohane and Singh in their Working Paper no. 470 lay down that Indian banks face the challenge of complying with the stringent requirements of Basel III framework while maintaining growth and profitability. Banks will face challenge of increasing capital requirements due to increasing credit requirements for financing growth. It also implies a fiscal burden in economy if majority shareholding has to be retained by the Indian government. Jayadev (2013) investigated the practical aspect of implementation of Basel III in Indian banks. The additional capital to be raised is going to affect the cost of credit and is going to affect the profitability of banks and shareholder return in negative way. Indian banks appear to be quiet well capitalized at the time of global financial crisis of

2007-08 and addition of further capital in banks to meet the minimum CAR may lead to dip in GDP. Another concern described in the paper is raising of additional capital by public sector banks. Shah (2013) stated that Return on Equity (ROE) and profitability are likely to decline due to implementation of Basel III norms. The reasons stated for the said decline are gradual removal of some of the components of Tier-I capital, increase in the risk weight and higher cost of funds during the transition phase. Raghavan (2008) reviewed the relevance of Basel II norms for Indian banks. The study concluded that Basel II principles should be viewed more as a systematic up gradation of system, policies and resources which are necessary for survival in this competitive scenario rather than as regulatory guidelines to be complied with. Narasimhan and Goel (2013) analyzed the performance of the top public and private Indian banks for the period FY 2008 - 2012, the years since the last world recession. The paper demonstrated that the Indian banks exhibit stability in such times of crisis due to their capital structure and regulatory environment and also showed an increasing trend in the capital adequacy ratio in the years 2008-2012. Mahapatra (2012) explored Basel III norms and its implications on Indian Banks. The study highlighted that Basel III has some micro-prudential and macro prudential elements which will help in making the banking sector strong and resilient. The implications of Basel III will be on the capital, liquidity and profitability of the Indian banks. Initially cost would be high but its long-term benefits would be immense.

The study stated that the primary challenge is to certify the uniform implementation of Basel III norms across banks and jurisdictions and investigated in depth the challenges to be faced by the banks while implementing these norms. Dhanda and Rani (2011) examined Capital Adequacy Ratios (CAR) of different categories of scheduled commercial banks in India and also ascertained the impact of application of Basel II norms on Capital Adequacy Ratio (CAR) for the period 1998-99 to 2008-09. However, the impact of Basel II on CAR of banks was studied for the financial year 2008-09 only. The finding was that Basel II norms had not adversely affected the CAR of banks in India. So, application of Basel II norms has not adversely affected the CAR of banks in India. Barthwal (2013) investigated the salient features of Basel III and its implications on Indian Banks. It concluded that an additional capital of Rs.5 lakh crore shall be required for meeting Capital Adequacy norms and its implementation will make the Indian banks stronger, stable and sound. Balasubranim (2014) examined the issues and challenges to be faced by the Indian banking sector while implementing the Basel III norms. The research revealed that it would be an issue for the banks to raise funds from the capital market, banks have to adopt the advanced approaches of risk management and recognize the losses on account of NPAs. The researcher concluded that public sector banks may take more time in implementing Basel III guidelines in comparison to private sector banks. The study found that it would be a challenge for the banks to identify the losses on account of NPAs according to the guidelines of Basel and they have to move to the new and updated risk management models. Tripathy and Singh (2015) carried out a research study to examine the preparedness of Indian Public Sector Banks (PSBs) to implement Basel III Accord and to see if Indian PSBs have capital adequacy for Basel III Accord implementation. The researchers concluded that Indian PSBs have capital adequacy and the stipulated norms under Basel III Accord can be complied by Indian PSBs fairly well within given timelines by Reserve Bank of India.

Research Gap

Most of the existing studies in the similar field have analyzed the concept of Basel norms and amount of CRAR required for adherence of Basel norms. Moreover the literature reviewed is confined to a shorter time period which can bring a rosy picture of impact of CAR on performance of Indian banks. Majority of studies available in the same field aim to conclude that capital required for implementation of Basel norms is a challenge for public sector banks in India. Some studies also concluded that Indian banks are well placed in context of Capital Adequacy. However scanty literature is available of the impact of CAR on profitability of Indian banks.

The present work aims to study the most probable impact of Capital Adequacy ratios as stipulated by Basel III on profitability of Indian banks for 9 years. The broad spectrum of data would definitely help to get more authentic results and findings. The study includes both public and private sector banks which will help to compare the profitability and CAR across two categories of banks.

Objectives

- To investigate the impact of CAR on profitability of selected public and private sector banks in India.
- To make a comparative study of CAR values of selected public and private sector banks.

Research Methodology

This study is trying to unveil the relationship between one of the most relevant pillars of Basel III ie Capital Adequacy Ratio (CAR), and profitability of banks. Profitability analysis is captured through three most acceptable profitability parameters -Return on Assets (ROA), Return on Equity (ROE), Net Interest Margin (NIM). Geometric Mean is used as a measure of Central Tendency for finding out average of CAR, ROA, ROE and NIM because the data collected is in Percentage form and Geometric Mean is most appropriate for working with percentages. To establish the relationship between independent variables i.e. CAR ratio and dependent variables (i.e. ROA, ROE, NIM and NPA), linear regression analysis is used and Linearity was confirmed by using a Scatter Diagram for the variables. The study is conducted for a period of 9 years, i.e., from 2008 to 2016. 9.

Sample Selection Criteria

The sample banks are selected on the basis of total income of banks as per Annual report for Financial Year 2016. Top 5 public and top 5 private banks are identified for the purpose of present work. Public Sector Banks include SBI, PNB, Bank of Baroda, Canara Bank, Bank of India. The Private Sector Banks include: HDFC Bank, ICICI Bank, Axis Bank, Kotak Mahindra Bank Ltd, and Yes Bank Ltd.

Sources of Data Collection

The study is based on secondary data where a major portion of data is extracted from 'Statistical tables relating to banks in India, annual publication of RBI' (Table 1).

Table 1: Details of CAR, RoA, RoE and NIM of 5 Public Sector Banks from 2008-2016

Year	CAR	RoA	RoE	NIM
2008	13.0343	1.035193	17.43171386	2.537902671
2009	13.8806	1.200033	20.14280818	2.617043317
2010	13.6459	1.068893	18.56158355	2.476379518
2011	13.2239	1.080596	18.96313775	2.812914258
2012	13.3388	0.976566	16.90710833	2.672058575
2013	12.4463	0.847391	14.01252404	2.489085739
2014	11.3277	0.612102	10.3465271	2.378384253
2015	11.5924	0.482771	8.243273904	2.236758488
2016	12.1018	-0.478	-8.962	2.086839676

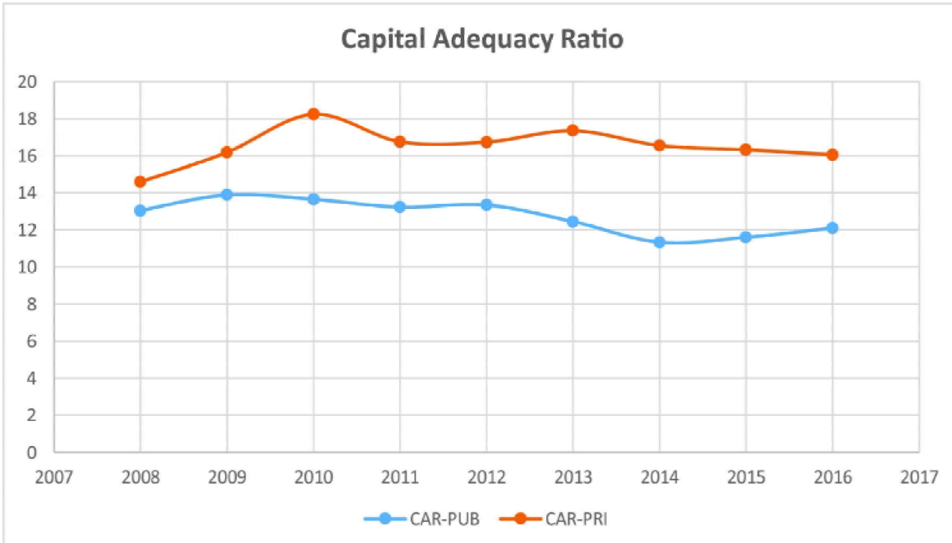
Source: Reserve Bank of India statistical tables relating to banks in India, www.dbie.org.in, and author's own calculations. Geometric Mean is used as a measure of central tendency for all variables except for 2016 wherein ROA and ROE for public sector banks was negative, so Arithmetic Mean was used there.

Table 2: Details of CAR, RoA, RoE and NIM of 5 Private Sector Banks from 2008-2016

Year	CAR	RoA	RoE	NIM
2008	14.5902	1.25437	15.0496	3.14682
2009	16.1775	1.24224	13.1229	3.30333
2010	18.2451	1.54801	14.6261	3.33474
2011	16.7482	1.58557	15.687	3.27978
2012	16.7301	1.6655	17.0372	3.17273
2013	17.3497	1.73239	18.0406	3.30393
2014	16.5441	1.78976	17.8222	3.39397
2015	16.3124	1.8767	17.203	3.5093
2016	16.0507	1.59807	15.0317	3.63233

Source: Reserve Bank of India statistical tables relating to banks in India, www.dbie.org.in, and author's own calculations. Geometric Mean is used as a measure of central tendency for all variables.

Chart 1: Capital Adequacy Ratio of Public and Private Sector banks for 9 years



Both the public and private sector banks comply to CAR regulation of Basel III. Private Sector banks have more CAR in comparison to public sector banks during the period of study.

Analysis of Data

The analysis of data was carried under two broad classifications of Public and Private sector Banks wherein impact of CAR has been discussed separately for each of the profitability parameter namely ROA, ROE and NIM for public and private sector banks. The results are as follows:

A) Public Sector Banks (PubSBs)

1) Relationship between Capital Adequacy Ratio and Return on Assets

Table 3: Regression results for relationship between CAR and RoA

Regression Results between CAR (Pub) and RoA (Pub)

Particulars	Co-efficient (b)	Standard Error SE(b)	Standardised Coefficient SE (β)	p-value
Intercept	-3.943	2.101		0.103
CAR (Pub)	0.369	0.165	0.647	0.06

R square is .418. Thereby, 41.8 % of variation in RoA gets explained by CAR. Beta value of CAR is .647 indicating a positive relationship between the two. Therefore, Estimated Equation takes the form:

RoA = -3.943 + .369 CAR

2) Relationship between Capital Adequacy Ratio and Return on Equity

Table 4: Regression results for relationship between CAR and RoE

Regression Results between CAR (Pub) and RoE (Pub)

Particulars	Co-efficient (b)	Standard Error SE(b)	Standardised Coefficient SE (β)	p-value
Intercept	-69.321	37.066		0.104
CAR (Pub)	6.454	2.905	0.643	0.062

Here, also, R square is .414, leading to explanation of changes in RoE to extent of 41.4 % by this model. The Beta is .643, again, a depiction of positive association of the two. Further, Estimated Equation is as :

RoE = -69.321 + 6.454 CAR.

3) Relationship between Capital Adequacy Ratio and Net Interest Margin

Table 5: Regression results for relationship between CAR and NIM

Regression Results between CAR (Pub) and NIM (Pub)

Particulars	Co-efficient (b)	Standard Error SE(b)	Standardised Coefficient SE (β)	p-value
Intercept	0.326	0.85	0.713	
CAR (Pub)	0.169	0.067	0.692	0.039

Next, Coefficient of Determination is .479, paving way for determination of 47.9 % of changes in NIM by the model. The Beta is .692 which indicates a satisfactory positive association of the two. So, Estimated Equation becomes:

NIM = .326 + .169 CAR

B) Private Sector Banks (PvtSBs)

1) Relationship between Capital Adequacy Ratio and Return on Assets

Table 6: Regression results for relationship between CAR and RoA

Regression Results between CAR (Pvt) and RoA (Pvt)

Particulars	Co-efficient (b)	Standard Error SE(b)	Standardised Coefficient SE (β)	p-value
Intercept	-0.028	1.239		0.983
CAR (Pvt)	0.098	0.075	0.443	0.233

Unlike above, R square is .196 which indicates that 19.6 % of variation in RoA gets explained by the model. Further, Beta is .443, evidencing a moderate positive relationship of the two. The Estimated Equation becomes:

RoA = -.028 + .098 CAR

2) Relationship between Capital Adequacy Ratio and Return on Equity

Table 7: Regression results for relationship between CAR and RoE

Regression Results between CAR (Pvt) and RoE (Pvt)

Particulars	Co-efficient (b)	Standard Error SE(b)	Standardised Coefficient SE (β)	p-value
Intercept	10.62	10.29		0.336
CAR (Pvt)	0.323	0.622	0.193	0.619

The results depicted are shocking as CAR explained only 3.7 % (R Square = .037) of the changes. Here, Beta is .193. Therefore, Regression Equation is:

RoE = 10.62 + .323 CAR

3) Relationship between Capital Adequacy Ratio and Net Interest Margin

Table 8: Regression results for relationship between CAR and NIM

Regression Results between CAR (Pvt) and NIM (Pvt)

Particulars	Co-efficient (b)	Standard Error SE(b)	Standardised Coefficient SE (β)	p-value
Intercept	3.076	0.964		0.015
CAR (Pvt)	0.016	0.058	0.104	0.791

In case of NIM, also the results are quiet shocking as variation to extent of only 1.1 % was explained by the model as R square is .011. Therefore, Mathematically, Regression Line assumes

NIM = 3.076 + .016 CAR.

Conclusion

- Both the public and private sector banks comply to CAR regulation of Basel III. Private sector banks are better placed in comparison to public sector banks during the period of study. In total span of 9 years, there was not even a single instance of CAR falling below the stipulated guideline.
- Among Public Sector Banks, best association was seen between CAR and NIM as the model was able to determine nearly half of the variation in analogy to ROA and ROE. But, in case of Private Sector Banks, scenario has drastically changed as the CAR became a non – fitting predictor here. This clearly implies that Basel III CAR guideline is not affecting profitability of private banks to a great extent.
- Since private sector banks have maintained high CAR in comparison to public sector banks which implies that maintaining excess capital over and above the stipulated guideline is not contributing for increasing profitability of banks. The guideline of maintaining excess Capital in proportion to Risk Weighted Assets is more related to providing stability of banking system in India. The increased quality and quantity of capital

seems to be a conflicting factor between growth and financial stability for Indian economy.

- Another reason which explains insignificant relationship between strengthening of capital requirement and profitability of banks is RBI's stipulation of conservative approach by not permitting banks to take high risk. Risk and returns go hand in hand in case of all business ventures. RBI has already created a conglomerate cell which closely looks at the bank and its subsidiaries, the nature of their businesses, and the kind of risks they are taking. While this would improve the banking sector's ability to absorb shocks and prevent the banks from taking excessive risk it would definitely reduce the return on equity.
- The most probable impact of maintaining a sound CAR can lead to an improvement in asset position of bank since holding of extra capital buffers will provide a relief for banks in situation of crisis but is not in line with more returns, profits and dividend.

Limitations of the Study

In this study, the relationship of CAR is established with bank performance considering all other factors as constant however, in the practical sense, there may be many other factors like the bank's book size, government policies, reputation, marketing strategies and macroeconomic conditions which affect the performance of banks. So this study can be extended to include the effect of all these variables for a better practical approach.

Further, data for this study is taken from the public domain, which is published data by the Reserve Bank of India (RBI) at various points of time, so any possible omission in published data can be a source of error in the outcome of the study.

The time period considered for this study is 2008 to 2016; however, for a better approach, the data for an extended period of time can be considered.

Scope for Further Research

This research studies the impact of capital adequacy on profitability of banks and can be further extended to study the impact of Basel III regulations in totality comprising of all parameters of capital adequacy, liquidity, capital buffers and leverage on performance of banks. Further research can be extended to measure 360 degree performance of banks which will provide a comprehensive view of impact of implementation of Basel III guidelines in India. Another major extension of this work can be to study the impact of Tier I and Tier II capital separately on profitability of banks.

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Mediation Impact of Employee Engagement on the relationship between Human Capital Dimensions and Performance

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Abstract: This study was intended to gauge the interlinkage between human capital, employee engagement and performance. A-priori framework of human capital was proposed based on review of literature. In-role job performance and extra-role job performance were considered as human capital outcomes. Mediating effect of employee engagement on these human capital outcomes was assessed. Primary survey was conducted consisting of 35 organizations resulting into total sample size of 406 respondents. Results of the study indicated new dimensions of human capital lead to employee engagement, organizational citizenship behaviour, and in-role job performance, in which employee engagement has partially mediating effect on in-role job performance and conscientiousness.

Keywords: Human Capital, Employee Engagement, Performance, Mediation

Human Capital

Human capital represents the knowledge, skills, and abilities (KSAs) employees possess that bring economic value to firms (Flamholtz, 1981). While human capital theory was originally developed to study the economic value of education (Schultz, 1961), it is now an integral part of the strategic human resource management literature that focuses on how investments in human resource management activities influence organizational performance (Youndt, 1996). On comparison between human capital and other forms of capital viz. financial and physical capital, Becker (2008) noted that all forms of capital yield outputs over a period of time. He explained that the uniqueness of human capital lies in the fact that people cannot be separated from their knowledge, skills, health or values in the way they can be separated from financial and physical assets (Becker, 2008).

Management thinkers and researchers have focussed on different components of human capital. Numerous studies have used different constituents of human capital, (Kaplan, 1996) suggested that human

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capital basically comprises of employee capability, employee satisfaction, and employee sustainability. Employee capability includes individual competencies, soft skills, and an individual's investments in their human capital (Dulewicz & Herbert, 1999; Mayo, 2000). Employee satisfaction refers primarily to an employee's emotional or affective state and sustainability refers primarily to retention of employee (Moon, 2006). Congruent to Kaplan and Norton (1996), Bontis (1998) perceived the level of ideal competence, employees' satisfaction, employees' co-operation, and succession training plans as major indicators of human capital. Alternatively, Gimeno et al., (1997) predicated similar industry experience, relevant work experience and level of education as the main elements of human capital. Hatch and Dyer (2004) stated the level of education, technical test while selection, training, employees' work participation, problem solving skills, and employees' commitment as key factors of human capital. Skaggs and Youndt (2004) asserted employee skills, level of education and professional tenure as important components of human capital. In fact in most of the studies, education and organization tenure is being used as proxies of HC (Ng & Feldman, 2010).

Apart from cognitive ability, knowledge, skills, expertise (these are named as wisdom capital and knowledge capital in the proposed framework) other constituents of human capital are social capital and knowledge capital. Human capital is type of an investment not in the form of money or physical resources but also in the form of human relations. Lin (2002) defines human capital as investment of social relations with expected returns in the market place. Human capital connects the current and future resources that are connected through network of relationships (Bourdieu, 1986). According to Bourdieu definition, human capital has two vital parts i.e., quality of resources and social relationships with the help of which one can obtain accessibility to the resources by their relationships and resource quality. Human capital can also be defined as group or collective working of individual's in organization for common purpose as stated by Fukuyama (1996), who defined the human capital as the ability of people to work together for common purposes in groups and organizations.

Knowledge has been recognized as a valuable resource and has a focus of significant attention in the human capital literature, in particular the issues of knowledge generation, leverage, transfer, and integration (Wright et al., 2001; Nonaka, 1994; Sveiby, 1997).Conditions under which people are prepared to share and act upon their knowledge is a major component of human capital management (Stiles & Kulvisaechana). Traditionally, there has been focus on developing individual knowledge through training and providing incentives to apply that knowledge (Wright et al., 2001). But much of human capital literature is concerned with the sharing of knowledge, making it accessible, and transferable (Stiles & Kulvisaechana, Human capital advances through three overlapping evolutionary stages involving changes in the relative influence of three fundamental aspects or components of human consciousness. Aurobindo (1970) termed these three components as physical, vital, and mental. These three components co-exist and play a role in all stages of growth and development. Consciousness is eternal and indeed a continuum which is beyond mind (Kalam & Tiwari, 2009). Human awareness and experience is taken beyond blind faith and toil to a higher place of spiritual certainty and purposeful effort. There are many paths for human unfoldment and to divinity. Human development at different levels leads to human perfection through the spiritual connection (Pe, 2013). Pe (2013) has suggested tools and strategies to attain quality of life without sacrificing wealth and professional life through different spiritual techniques in which he has combined eastern wisdom and western practicality. Two more dimensions on consciousness and spirituality were added to represent human capital development at higher levels. Consciousness capital scale was developed based on the planes of consciousness suggested by Bailey (1951) and spiritual capital scale was constructed based on literature and content analysis.

Employee Engagement

The concept of employee engagement was first introduced by Kahn (1990) who described it as the harnessing of people's selves to their work, such that they fully invest their physical, cognitive, and emotional resources in their work roles. Many studies have used variables like experienced meaningfulness of the job, work-role-fit, co-worker relations, psychological safety, supportive supervisory relations, group norms, self-assessment, and work-role security as the important drivers of employee engagement (Kumar & Singh, 2013).

Meta analysis by Halbesleben's (2010), showed engagement is positively associated with commitment, health, turnover intention, and performance. Empirical evidence from various research studies suggests that the presence of high levels of employee engagement is also thought to enhance job performance, task performance, and organizational citizenship behaviors, productivity, discretionary effort, affective commitment, continuance commitment, levels of psychological climate, and customer service (Christian et al., 2011; Rich et al., 2010; Richman, 2006).

The job demands resources (JDR) model (Bakker & Demerouti, 2008; Bakker et al., 2014) is the most widely cited theoretical model of work engagement. JDR theory delineates how job resources (e.g., autonomy, feedback, supervisor support) and personal resources (e.g., self efficacy, optimism, and resilience) directly influence work engagement, which in turn influences important outcomes such as in role performance, extra role performance, creativity, and financial returns.

Performance

Evidence of the significant and positive returns on human capital investment increase in sales volume (Bartel, 1994), substantial gains on productivity, profitability, and stock market performance (Hansson et al., 2004; Tamkin et al., 2004), and improved product quality (Holzer et al., 1993). Empirical evidence suggesting the positive impact that human capital has upon firm growth Cooper et al., (1994), Westhead and Cowling (1995), McPherson (1996), and Wasilczuk (2000).

There can be numerous measures of performance. However for the purpose of this study to capture performance dimension both in-role job performance and extra-role job performance were included as human capital outcomes in this study. Organizational citizenship behavior (OCB) refers to the individual contributions in the workplace that go beyond role requirements as stipulated in the job agreement (Organ & Ryan, 1995). OCB also known as extra role behaviors are beyond the stated job requirements of an individual and not recognized by the reward system (Katz, 1964; Katz & Kahn, 1978). OCB is increasingly becoming important for the business in view of the recent changes in the business environment specifically flatter organization, changing job demands, and market pressures. In-role job performance refers to performing job duties as prescribed in the job description. These are work related performance, performing assigned duties and tasks, and on the job performance.

Using, meta-analysis structure equation modelling, Ng and Feldman (2010) have explained how human capital factors promotes both in-role and extra-role job performance through their effect on cognitive ability and conscientiousness.

Taking a representative sample of 55 empirical studies, Newbert (2007) assessed the impact of various resources on firm's performance. Only two of the 26 resources i.e. human capital and knowledge are examined in more than 5 percent of the total articles. Further, only 33 percent of empirical studies supported positive association of human capital with firm's performance. In one of the earlier work on empirical assessment of relationship between OCB and performance, Karambayya (1989), found that employees working in high-performing organizational units engaged in more OCBs than employees working in low performing units.

Based on a sample of 297 responses from one division of a large UK organization (Alfes et. al., 2015) developed and tested a moderated mediation model linking perceived human resource management practices to organizational citizenship behavior and turnover intentions. They posited that the relationship between HRM practices and behavioral outcomes may be better explained by employee engagement as mediating variable. They tested hypotheses that perceived HRM practices are positively related to employee engagement and employee engagement mediates the relationship between perceived HRM practices and OCB.

Objectives

The main purpose of this study was to develop human capital framework and its linkage with behavioural and performance outcomes. Objectives of the present study are as follows:

- To find out the interrelationship between various constituents of human capital.
- To develop new holistic framework of human capital.
- To assess the relationship (if any) between human capital and in-role job performance.
- To assess the relationship (if any) between human capital and organizational citizenship behaviour (extra-role performance).
- To assess the relationship (if any) between human capital and employee engagement.

Hypotheses

To achieve the above stated objectives, following major null (Ho) and alternative (HA) hypotheses have been formulated:

Ho_1: Human Capital and its dimensions have no causal effect on In-role job performance.

HA_1: Human Capital and its dimensions have causal effect on In-role job performance.

Ho_2: Human Capital and its dimensions have no causal effect on organizational citizenship behaviours (extra-role performance).

HA_2: Human Capital and its dimensions have causal effect on organizational citizenship behaviours (extra-role performance).

Ho_3: Employee engagement do not mediate the effect of human capital on its consequences.

HA_3: Employee engagement mediates the effect of human capital on its consequences.

Research Methods

Data Collection

For the purpose of the study, both primary and secondary data sources were used. Primary data to test the hypotheses were collected by self-administered questionnaire constituting total sample of 406 employees of select organizations.

Organizations operating in Delhi and National Capital Region (NCR) from manufacturing sector (i.e., Automobile, Steel, Oil & Gas, and Engineering industry) and service sector (i.e., Banking, IT, Consulting, and Telecommunications) was the total population of the study from which samples were drawn to make inferences. Companies were selected from the various industries, public as well as private sector through stratified random sampling technique. Stratum was decided on the basis of type of industry from each sector. Companies were selected from five industries (Automobile, Banking, Information Technology, Consulting, and Manufacturing) both from public and private sector. Data were collected from total 28 public and 7 private sector companies.

Sample was selected from 35 organizations from manufacturing and service sector. Manufacturing sector contributes to 24.8 percent in Gross Domestic Product (GDP) and service sector contributes around 57 percent in GDP (Planning commission 2015). Ratio of 25:57 or 1:2.2 based on the share of a sector in GDP, was taken as benchmark to decide sector composition in total sample. In this study, 289 responses were taken from service sector consisting of banking, consulting, and information technology industry and 117 responses were from manufacturing sector consisting of a steel company, oil & gas and two companies from automobile industry, leading to the ratio of 2.47:1, between service and manufacturing sector.

Data Analysis

Correlation and factor analysis, were used to process the data and to make meaningful inferences. Reliability for the constituents of human capital was gauged by Cronbach's alpha and spearman's-brown equal length split half coefficient. Confirmatory factor analysis was used to provide good fit to the data and to ensure construct validity of the various constituents of human capital. Structural Equation Modelling technique was used in the final stage of data analysis to establish the human capital model.

Item by item analysis was conducted to check reliability, perform exploratory factor analysis, and confirmatory factor analysis. The data were analysed through the various statistical software like Microsoft Excel, Statistical Package for Social Sciences (SPSS) (for univariate and multivariate analysis), and AMOS (for confirmatory factor analysis and structural equation modelling). Mendeley software was used for managing all references and citations.

Measures Used

As this study spanned many industries generalizable multi item scales (using a five-point Likert format) for each of constructs measuring attributes developed by previous research studies were used.

Items assessing human capital were developed by Youndt et al., (2004) based on the work of Schultz (1961) and contemporary strategic human resource management study (Snell & Dean, 1992). Social capital measure drawn by Youndt et al., (2004) based upon the core idea of social structure literature by Burt (1992) was used. Hierarchical structure of knowledge management that create human capital in an organization developed by Birasnav and Rangnekar (2010) was used to assess knowledge capital aspect of human capital. Employee Engagement (EE) scale developed by

Kumar (2014) to measure engagement level of an Social Capital Knowledge Management Enhancing Human Capital Consciousness Capital Spiritual Capital Organization Citizenship Behaviour In-role job performance Employee Engagement Human Capital Wisdom Capital employee working in an organization was used in the study. Five dimensions of organizational citizenship behaviour (OCB) proposed by Organ (1988) was used. At last, Employee performance of in-role behaviour (IRB) was assessed using scale established by Williams and Anderson (1991).

Proposed Framework

Based on the review of literature, five dimension of human capital was proposed for further empirical analysis. A-priori constructs consisting of wisdom capital, social capital, knowledge management enhancing human capital, consciousness capital, and spiritual capital were included in the proposed model. Human capital construct used in this study was adapted from Youndt et al., (2004) consisting of only five statements based on knowledge, skills, expertise, and creativity. The main aim of this study is to capture various dimensions of human capital which is traditionally being defined with limited number of variables. Based on review of literature and feedback from experts, it was renamed as "wisdom capital" after adding six more statements. These were on suitable education, training, work experience, organization specific development opportunities, knowledge about company, and regular interaction. Wisdom presupposes experience and experience implies presence of some cognitive base. Social interaction among people can give valuable insight about wisdom. Therefore, it was deemed fit to rename this dimension as wisdom capital.

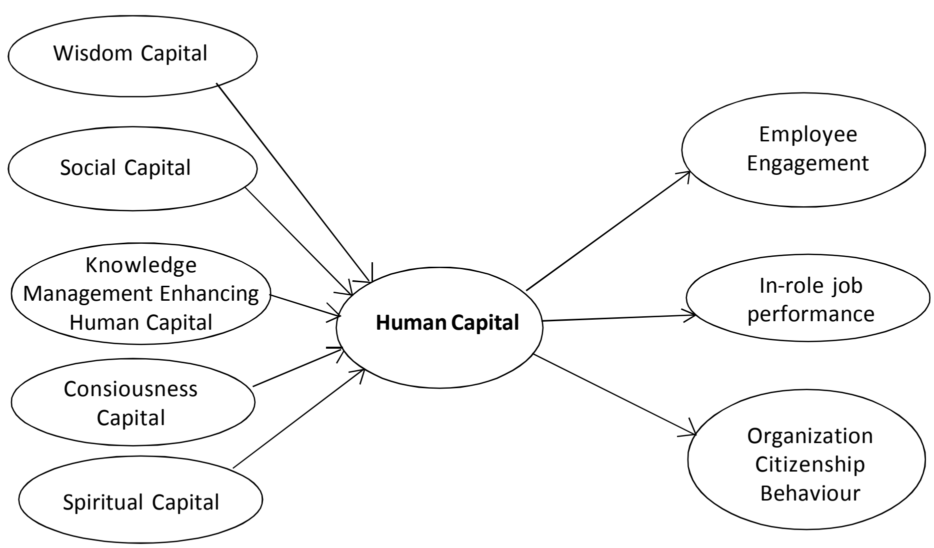

Figure 1: Hypothesized model of human capital

Analysis and Results

Cronbach's Alpha coefficient value coefficient value was greater than 0.6 for all measures except for In-role job performance (IRJP) for which it was 0.496. Two more variations of reliability coefficients, Spearman-Brown Coefficient, and Guttman Split Half Coefficient was computed for the measures. It was found that the value was more than 0.6 for IRJP scale. Hence, researcher decided to include this scale for further analysis. Cronbach's Alpha coefficient was in range of 0.652 to 0.882 except for IRJP scale (Table 1). In the subsequent analysis, these scales were further refined by using exploratory factor analysis and confirmatory factor analysis to accommodate this issue.

Table No. 1: Reliability analysis

Sl. No.	Measures	Cronbach Alpha	Spearman-Brown Coefficient	Guttman Split Half Coefficient
1.	Wisdom Capital	0.757	0.797	0.794
2.	Social Capital	0.652	0.580	0.577
3.	Human Capital Enhancing Knowledge Management	0.884	0.871	0.865
4.	Employee Engagement	0.913	0.928	0.927
5.	Organization Citizenship Behaviour	0.807	0.837	0.834
6.	In-role job performance	0.496	0.672	0.672
7.	Planes of Consciousness	0.837	0.853	0.853
8.	Spiritual Capital	0.744	0.796	0.796

Items for various dimensions were generated using deductive scale development approach. Then, these items were assessed by the researcher and experts so that the scale items adequately cover the entire domain of the construct. A formal evaluation of validity was conducted by assessing the construct validity of the instrument.

Convergent validity is the extent to which the scale correlates positively with other measure of the same construct. It was assessed by the size of the standardized factor loadings. Statistically significant standardized factor loadings estimate greater than 0.5 generally indicates convergent validity (Hair et. al., 2010). Discriminant validity was checked by comparing the average variance extracted with the square of the correlation estimates between the constructs. Nomological validity is the extent to which the scale correlates in theoretically predicted ways with measures of different but related constructs. This was done by including in-role job performance construct in the measurement model of human capital dimensions. The positive regression weight 0.940 and significant critical ratio value 10.98

of the relationship between human capital and IRJP confirmed the nomological validity of the human capital dimensions scale.

Exploratory Factor Analysis

Initially, exploratory factor analysis was conducted to provide a basis for specifying CFA model later on. Numbers of factors were retained using scree plot. The analysis was re-run several times by setting the factors to be extracted manually (Costello & Osborne, 2005). In all the cases, set of three numbers were extracted as the number of factors from scree test is identical to the a-priori factor structure. Finally the solution which provides the most desirable factor structure was picked up for further analysis (Yong & Pearce, 2013).

In most social science studies, the rule of 0.5/0.2 seems to be common (Matsunaga, 2011) to identify cross loadings. That is, an item is retained if its primary loading is greater than 0.5 and second highest factor loading is smaller than 0.2. Another approach is to focus on the difference between primary and secondary factor loadings and item is retained if the difference is sufficiently large usually 0.3 or more. The researcher has used this second approach to deal with cross loading items.

Both the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test results were appropriate for factor analysis (KMO measure 0.764 and for Bartlett's test $P<0.05$). Applying Kaiser's rule i.e., selection of factors for interpretation with Eigen values, greater than 1, twenty two factors were deemed important. Based on scree test results seven factors deemed to be important. Thus, it was decided to fix seven number of factors for extraction. Items having factor loading greater than 0.45 were considered in factor analysis. Ideally, communality value of an item on a factor should be atleast 0.4. Following varimax rotation twelve items were loaded high on factor 1 which reflects knowledge capital dimension. Four items were loaded high on factor 2 reflecting firm specific knowledge dimension. Five items were loaded high on factor 3 reflecting "wisdom capital" dimension. Five items were loaded on factor 4 named as "consciousness capital", four items loaded on factor 5 depicts "Internal locus of control". Three dimensions were loaded on factor 6 named as "organization specific development" and three statements were loaded high on factor 7 named as "higher purpose" dimension.

These explored dimensions are different from a-priori factor structure and explained cumulative variance of 40.32 in the data (Table 2).

Table No. 2: EFA results of human capital dimensions scale

Sl. No.	Dimensions and Factors	Items	Factor loadings	communality
		Knowledge Capital	Variance (%) 18.42	
1	KM19	Management formally seeks employees' opinion before taking most significant decisions.	0.677	0.54
2	SC8	I share ideas and discuss work related issues on social media like Facebook, Youtube, Linkedin, etc.	0.653	0.556
3	KM11	My organization considers me in important decisions.	0.608	0.448
4	KM16	Organization also receives feedback from us about their activities.	0.589	0.454
5	SC9	I share ideas and discuss work related issues on internet/mobile based applications like WhatsApp, etc.	0.571	0.448
6	KM2	I daily utilize knowledge resources such as research papers and magazines for my project.	0.563	0.476
7	KM4	Experts who possess missing knowledge invited for interactions in the company or in team.	0.492	0.348
8	KM3	Our superiors often share their work experiences in written manual with us.	0.476	0.501
9	KM12	Organization provides every one equal opportunity for development.	0.472	0.35
10	KM8	Organization allows me to take decisions freely.	0.47	0.449
11	KM1	We discuss openly the new developments of our work-related activities.	0.459	0.38
12	KM13	The support is given to acquire new knowledge in my organization.	0.451	0.344
		Firm Specific Knowledge and Skills	Variance (%) 6.19	
1	HC7	I feel creative and bright while working on my job.	0.624	0.608
2	HC4	I am well skilled professionally to accomplish my tasks successfully.	0.555	0.401
3	S5	I feel connected with my co-workers.	0.552	0.486
4	HC9	I have knowledge of my company's unique resources, processes, and systems.	0.455	0.416
		Wisdom Capital	Variance (%) 3.54	

Contd...

Contd...

1	S8	I see the big picture while working on a specific task.	0.6	0.463
2	SC2	I do share information with others and learn from each other.	0.587	0.455
3	HC3	I hold relevant work experience for accomplishing my tasks successfully.	0.546	0.452
4	HC1	I have suitable education for accomplishing my job successfully.	0.535	0.36
5	HC11	I regularly interact with clients/ employees/senior managers and understand their needs.	0.468	0.445
		Consciousness Capital		Variance (%) 3.35
1	C18	I can identify myself with consciousness and divinity.	0.646	0.496
2	C16	I am that I am.	0.586	0.51
3	C20	I am enlightened.	0.504	0.363
4	C10	Abstract intellectual energy leading to creativity and innovation governs me while I perform my job.	0.466	0.495
5	C14	I have high will aspect.	0.457	0.357
		Internal Locus of Control		Variance (%) 3.14
1	C6	Mostly I follow my own instincts.	0.653	0.499
2	C17	I am able to distinguish between abstract and concrete.	0.508	0.4
3	C15	I am aware of a heavenly body beyond myself.	0.498	0.3
4	C4	Sometimes I feel free from the constraints of time and space.	0.492	0.369
		Organization Specific Development		Variance (%) 2.91
1	HC8	My organization provides organization specific development that enables me to do my job successfully.	0.565	0.389
2	SC4	My company partners with customers to develop solutions.	0.555	0.436
3	KM14	Safety instructions to handle machines and materials and precautionary actions are conveyed to all employees.	0.47	0.383
		Higher Purpose		Variance (%) 2.78
1	S1	I understand the importance of higher purpose of my life.	0.636	0.544
2	C19	I am aware of higher self.	0.627	0.493
3	C1	I believe that my inner world is reflected in the outer world.	0.483	0.456
				Total Variance (%) 40.32

Exploratory factor analysis results for all the consequences considered in the study are shown in Table 3. Both Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (0.816) and Bartlett's test results were satisfactory (Sig.d"0.05) to run the factor analysis. Varimax rotation was used to get the rotated factor structure. Initially using eigen value criteria thirteen factors were extracted. Using scree plot results, it was decided six factors needs to be extracted. Based on this information researcher fixed six number of factors mentioned in Table 3. Eleven statements were loaded high on factor 1 related to "employee engagement". Three statements related to "conscientiousness" were loaded on factor 2. Four statements related to performance were loaded on factor 3 named as "in-role job performance". Four statements related to OCB were loaded on factor 4 named as "altruism". Four statements were loaded on factor 5 named as "courtesy" and lastly only two items were loaded on factor 6 named as "civic virtue".

Table No. 3: EFA results of consequences of human capital

Sl.	Dimensions and factors	Items	Factor loadings	communality
		Employee Engagement	Variance (%)	21.842
1.	EE11	The work I do on this job is meaningful to me.	0.733	0.587
2.	EE18	I feel a sense of connectedness while performing my job.	0.675	0.512
3.	EE13	My work provides me with inner source of inspiration as if the work I am doing is my 'calling'.	0.669	0.509
4.	EE16	My job 'fits' how I see myself in the future.	0.652	0.537
5.	EE4	My job 'fits' how I see myself.	0.617	0.475
6.	EE1	My work adds a lot to the general purpose of my life.	0.612	0.421
7.	EE8	My job activities are significant to me.	0.594	0.507
8.	EE10	The work I do on this job helps me satisfy who I am.	0.583	0.429
9.	EE5	The work I do on this job is worthwhile.	0.562	0.552
10.	EE7	My job allows me to unleash my full potential.	0.555	0.531
11.	EE14	I feel that the work I do on my job is valuable.	0.537	0.484
		Conscientiousness Capital		Variance (%) 6.968
1	Perf3	I conscientiously perform tasks that are expected from me.	0.613	0.504

Contd...

Contd...

2	OCB10	I avoid consuming a lot of time complaining about trivial matters.	0.539	0.402
3	OCB12	I am willing to help colleagues solve work related problems.	0.507	0.451
		In role job performance	Variance (%) 4.425	
1	OCB17	I avoid hurting other people's right to shared resources (including clerical help, material etc.).	0.577	0.431
2	Perf4	I adequately complete all of my assigned duties.	0.56	0.488
3	EE3	My supervisor helps me solve work-related problems.	0.52	0.35
4	Perf2	I consistently meet the formal performance requirements of my job.	0.52	0.482
		Altruism	Variance (%) 3.86	
1	OCB11	I am willing to assist new colleagues to adjust to the work environment.	0.605	0.475
2	OCB13	I am willing to cover work assignments for colleagues when needed.	0.585	0.422
3	OCB15	I try hard to self study to increase the quality of work outputs.	0.517	0.35
4	OCB14	I perform only required tasks*	-0.502	0.425
		Courtesy	Variance (%) 3.508	
1	OCB18	I do not initiate actions before consulting with others that might be affected.	0.627	0.492
2	OCB20	I avoid focusing on what's wrong with his/her situation.	0.601	0.449
3	OCB16	I avoid taking action that hurt others.	0.504	0.37
4	EE12	My supervisor encourages employees to participate in important decisions.	0.503	0.474
		Civic Virtue	Variance (%) 3.238	
1	OCB2	I am willing to stand up to protect the reputation of the company.	0.565	0.478
2	EE22	I trust my supervisor.	0.536	0.514

* Reverse coded

In EFA, constructs need not to be defined on a-priori basis whereas, CFA is applied to test the extent to which a priori, theoretical pattern of factor loading on pre-specified constructs represent the actual data (Hair et. al., 2010). Fabrigar et al., (1999) suggested that if the sample size is sufficiently large, then EFA can be conducted on one half of the data providing the basis for specifying a CFA model. Hence, EFA was conducted in, to provide a basis for specifying a CFA model later on. Hence, it was decided to use EFA and CFA in conjunction with one another.

Before specifying a structural model it is necessary to develop and specify measurement model and check for its validity (Hair et. al, 2010). Identification of all the scale items and its assignment is represented diagrammatically in Fig. 2. Five dimensions of human capital as well as all five consequences were included in the full measurement model.

All model fit indices of the full measurement model has been reported in Table No. 4. These were within the benchmark criteria except for GFI value. Reliability and validity results of the constructs are given in Table 5. Composite reliability was greater than 0.7 for all the dimensions and consequences constructs. Average variance extracted was greater than 0.5 except for "Courtesy' dimension (Table 5).

Table No. 4: Model fit indices of the full measurement model

	χ^2/df	RMR	GFI	CFI	RMSEA	P-Close
Measurement Model	1.824	0.051	0.838	0.918	0.45	0.996
Threshold criteria	≤ 5	<0.08	≥ 0.9	≥ 0.9	<0.08	

Source: Table values calculated by using Structural Equation Modeling (SEM) software. Values are calculated on the basis of responses collected from respondents through questionnaire during survey.

In full measurement model all the constructs were considered exogenous and are correlated. From previous research and judgement, it is believed that knowledge capital, firm specific knowledge and skills, wisdom capital, consciousness capital, and higher purpose effect human capital, which in turns lead to employee engagement, conscientiousness, IRJP, altruism, and courtesy.

Table No. 5: Composite reliability, Average variance extracted, and Correlation matrix

Constructs	CR	AVE	KC	FSKS	WC	CC	HP	EE	Con	IRJP	Alt	Courtesy
KC	0.86	0.50	**0.711**									
FSKS	0.81	0.52	0.561	**0.718**								
WC	0.84	0.50	0.623	0.853	**0.706**							
CC	0.85	0.55	0.770	0.672	0.758	**0.739**						
HP	0.78	0.55	0.561	0.715	0.704	0.640	**0.744**					
EE	0.93	0.56	0.745	0.737	0.748	0.659	0.638	**0.747**				
Con	0.76	0.50	0.706	0.825	0.955	0.879	0.778	0.751	**0.707**			
IRJP	0.80	0.50	0.655	0.567	0.627	0.812	0.550	0.541	0.745	**0.704**		
Alt	0.78	0.53	0.544	0.784	0.890	0.675	0.718	0.703	0.852	0.619	**0.727**	
Courtesy	0.71	0.47	0.747	0.466	0.654	0.753	0.472	0.600	0.770	0.851	0.519	**0.682**

Source: Table values were calculated using Gaskin stats tool package

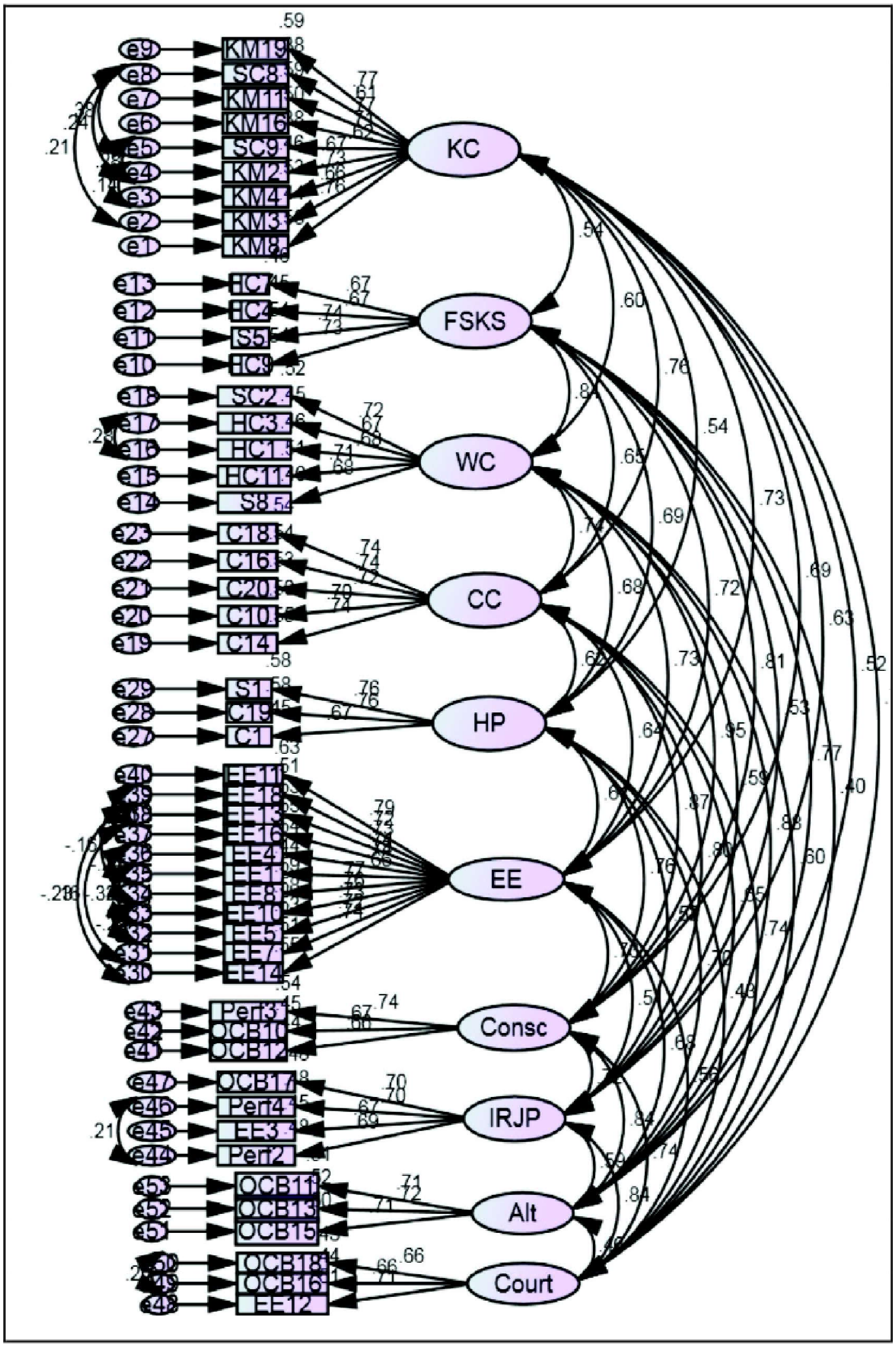

Figure 2: Full Measurement Model

Mediation Analysis: Taking Employee Engagement as Mediator Variable

Many studies have found in literature explained relationship between employee engagement and business outcomes (Harter et al., 2002; Halbesleben's, 2010; Kumar, 2014). Number of studies by Bakker & Demerouti (2008, 2014) delineates job resources and personal resources directly influence work engagement, which in turn influences important outcomes such as in-role job performance, extra-role performance, creativity, and financial returns. With the theoretical support found for the impact employee engagement has on performance of the employees, it was decided to include employee engagement as mediating variable in the structure model given in Fig. 3. To check the mediating effect of employee engagement between human capital and its consequences, direct and indirect effects were assessed. In Fig. 3, direct effects are shown by linking human capital and other consequences with a single arrow and indirect effects are shown by adding employee engagement as intervening variable between human capital and all the consequences. There can be three cases of mediation: full mediation, partial mediation, and no mediation (Hair et al., 2010). If the mediating construct (employee engagement in our case) fully explain the relationship between human capital and its outcomes, then it signify full mediation. If after involving employee engagement, there is still some relationship between human capital and its outcomes is not explained by EE, then it represents partial mediation. Mediation is not supported, when the relationship between constructs remain significant and unchanged, after including EE as additional predictor.

Researcher has used bootstrapping to test for mediation in the model. Bootstrapping results are given in Table 6. Following criteria were used for mediation analysis:

No Mediation

If Indirect effect > 0.05

Full Mediation

If Indirect effect < 0.05 and Direct effect is > 0.05

Partial Mediation

If Direct and Indirect effect <0.05

Accordingly, it was found that employee engagement does not mediate the relationship between human capital & altruism, and between human capital & courtesy. Partial mediation was found on the two paths i.e., human capital & conscientiousness and human capital & in-role job performance (Table 6).

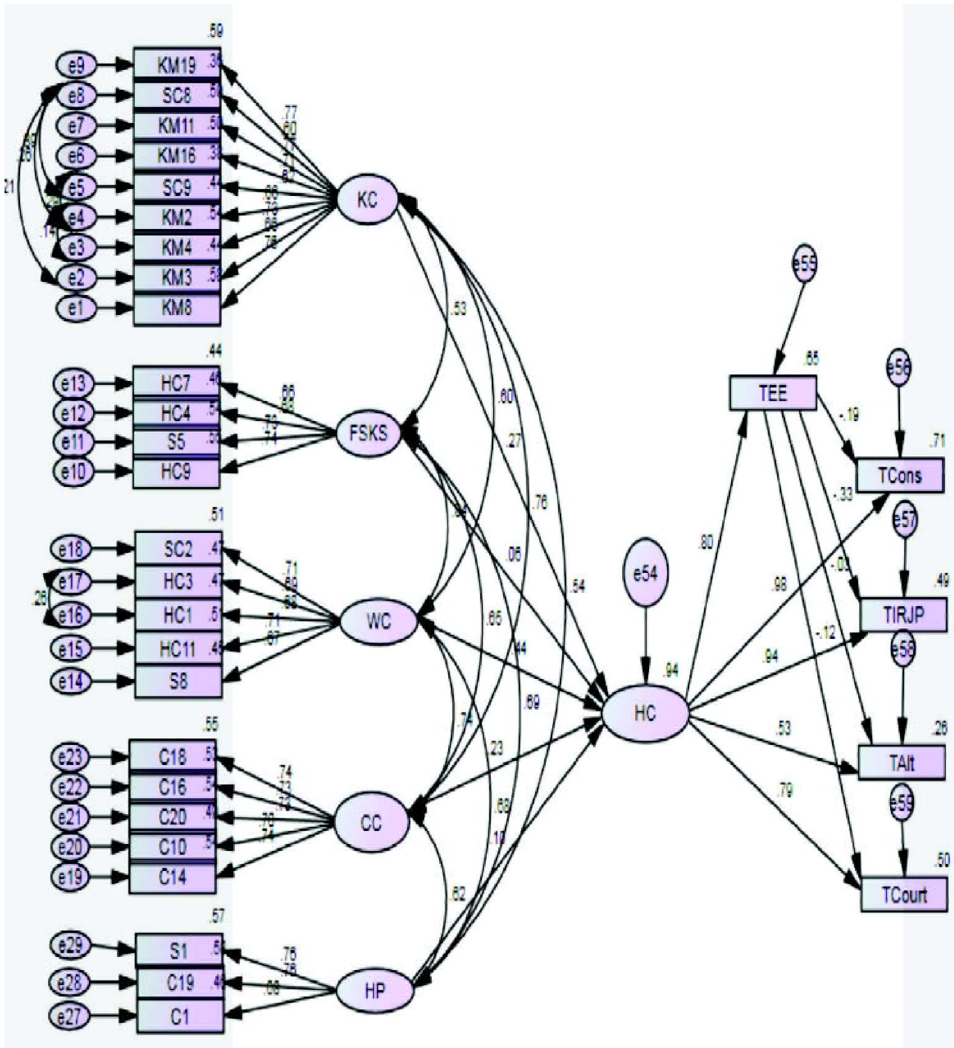

Figure 3: Mediating effect of employee engagement in model

Table 6: Direct and Indirect Effect

Relationship	Indirect Effect	Direct Effect	Decision
HC.EE.Con	-0.159(0.008)	0.996(0.002)	Partial Mediation
HC.EE.IRJP	-0.264(0.007)	0.935(0.012)	Partial Mediation
HC.EE.Alt	-0.039(0.756)	0.551(0.004)	No Mediation
HC.EE.Court	-0.090(0.387)	0.788(0.007)	No Mediation

Therefore, we can conclude that employee engagement partially mediates the relationship between in role job performance and one extra role performance measures i.e., conscientiousness.

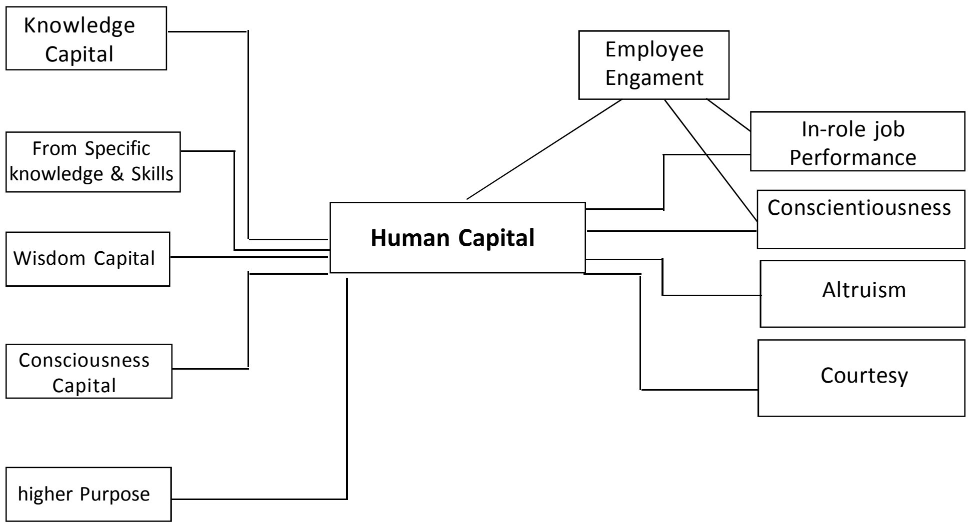

Figure 4: Simplified human capital model

Testing of Hypotheses

Null Hypothesis No. 1: Human Capital and its dimensions have no causal effect on In-role job performance

The significance of loading estimates indicates that four dimensions of human capital viz. wisdom capital, consciousness, and higher purpose are relevant in predicting in-role job performance along with other two consequences (employee engagement and organization citizenship behaviour) included in the model. Individual parameter estimate that represent paths between human capital and in-role job performance was examined to test this hypothesis. Standardized regression weight was positive and significant at 5 percent significance level (SRW=0.656, p=0.000). Many studies have emphasized the linkage between human capital and performance (Bartel, 1994; Skaggs & Youndt, 2004). As suggested by Ng & Feldman (2010), human capital factors namely education and organization tenure promotes both in-role and extra role job performance through their effect on cognitive ability and conscientiousness. This effect of human capital on extra-role performance was considered in next hypothesis.

Hypothesis No. 2: Human Capital and its dimensions have no causal effect on organizational citizenship behaviours

Exploratory factor analysis on human capital consequences scales resulted into three separate dimensions of organizational citizenship behaviour. First, dimension "conscientiousness" is related to task performance and focus on work. Second, helping colleagues in work related matter is reflected in "altruism" dimension. Third "courtesy" dimension entails showing politeness in one's actions by not initiating actions that hurt others and taking decisions in consultation with those who are affected.

Accordingly, to test the effect of human capital on organizational citizenship behaviour, three sub-hypotheses were tested using structural equation modelling in which it was stated that human capital is not positively related to conscientiousness, altruism, and courtesy dimension. All the path coefficients for these paths were greater than zero and significant at 5 percent significance level. Thus, the stated hypotheses were rejected and it was found that human capital is positively related to conscientiousness, altruism, and courtesy dimensions.

This indicates that knowledge capital, wisdom capital, consciousness capital, and higher purpose have positive impact on three extra role job behaviours. This finding is consistent with the study of Alfes et al., (2015), in which they linked perceived human resource management practices to organizational citizenship behaviour and turnover intentions. They further hypothesized that perceived HRM practices are positively related to employee engagement and employee engagement mediates the relationship between HRM practices and organizational citizenship behaviour. This relationship was tested as separate hypothesis as mentioned below.

Hypothesis No. 3: Employee engagement does not mediate the effect of human capital on its consequences.

To test this hypothesis, employee engagement was included in the structural model as mediating variable. Bootstrapping method was used to test for mediation in the model. Both direct and indirect effect of employee engagement between human capital & conscientiousness and human capital & in-role job performance was significant in the structural model showing partial mediation. No mediating effect of employee engagement was found in the case of altruism and courtesy.

Hence, it was found that employee engagement partially mediates for relationship between human capital & conscientiousness and human capital & in-role job performance. Therefore, null hypothesis was rejected for conscientiousness and in-role job performance dimension and failed to reject in the case of other two dimensions. Research studies on employee engagement was found that work engagement influence important outcomes such as in-role job performance, extra-role performance, creativity, and financial returns (Bakker & Demerouti 2008, 2014); job and organization engagement mediates the relationship between job satisfaction, organizational commitment, intention to quit, and OCB.

Research Findings

- Knowledge Capital, firm specific knowledge and skills, wisdom capital, consciousness, and higher purpose are the major dimensions of Human Capital. These dimensions were identified using exploratory factor analysis results. Initially, seven dimensions were extracted. Internal locus of control and organization specific development dimensions were eliminated in subsequent confirmatory factor analysis due to under identification problem.

- Employee engagement, conscientiousness, in-role job performance, altruism, courtesy, and civic virtue found to be five separate dimensions of human capital consequence based on factor analysis results. All the statements related to these consequences were greater than 0.5. Civic virtue dimension was deleted in confirmatory factor analysis due to under identification problem.
- Conscientiousness, altruism, and courtesy are the prominent dimensions of organizational citizenship behaviour. These dimensions were identified in factor analysis and retained in confirmatory factor analysis.
- Employee engagement has partial mediating effect between human capital and in-role job performance. Both direct and indirect effect was significant as p value was less than 0.05 in both the cases.
- Employee engagement has partial mediating effect between human capital and conscientiousness. Significant direct and indirect effect showing that employee engagement partially intervene the relationship between human capital and conscientiousness.

Implications

Research outcomes on the basis of review of literature and empirical analysis have contributed to the theoretical advancement and management application in the area of human capital in many ways as mentioned below:

- Some prominent indicators of human capital viz. knowledge, firm specific human capital, social capital, and organization support were already present in the existing literature. Consciousness and spiritual capital was proposed as important dimensions of human capital. Based on factor analysis results it was found that consciousness capital and higher purpose are the important dimensions of human capital, which is comparatively less explored in the existing literature. All these dimensions need to be emphasized for effective development, deployment, and measurement of human capital.
- Employee engagement, conscientiousness, IRJP, altruism, and, courtesy are important human capital consequences. Human capital and its dimensions lead to these consequences in organizations.
- Many studies have explained employee engagement as mediating variable between human capital/HR practices and performance. In this study, it was found that employee engagement partially mediates the relationship between in-role job performance of employees and conscientiousness (a significant form of extra-role behaviour).
- Human capital and its key dimensions have significant impact on employee engagement, in-role job performance of employees and extra-role job behaviours. Key drivers of extra-role job behaviour and conscientiousness, altruism, and courtesy.

- Managers should make effort in strengthening human capital dimension which lead to improvement in employee engagement level, better in-role and extra-role job performance.
- To improve the performance culture in the organization both in-role job performances as well as extra-role job behaviour are important to the organization. Managers should try to recognize and strengthen these behaviours separately. Conscientiousness, altruism, and courtesy are the major drivers of extra role behaviours and should be strengthened through behavioural training programs and workshops.
- Employee engagement has partially mediating impact between human capital and performance of employees. Thus, managers should focus simultaneously on building human capital by focusing on its key dimensions and having employee engagement activities. Employee engagement can be done by work redesigning in which meaningful work should be assigned to employees, significant and valuable tasks should be assigned, and autonomy should be given to perform these tasks. This should be dome in such a manner that it helps employees to unleash their full potential.

Recommendations

- Findings from this study can be used to design experimental studies on human capital to assess the impact of identified dimensions of human capital on individual as well as organizational outcomes. In this study, it was found that human capital is positively related to consciousness, in-role job performance, altruism, and courtesy (SRW>0.5 with p value <0.05. Experimental studies, may attempt to identify the impact of human capital at individual, unit, and organization level separately.
- Organizations should focus on improving human capital dimensions to improve in-role as well as extra-role job performance.
- Organizations should give focus on employee engagement activities which strengthen the relationship between human capital and performance. This is consistent with the results of research by Harter et al., (2002) and Kumar and Singh (2013). Significant direct and indirect effect of employee engagement on human capital & conscientiousness and human capital & IRJP signified partial mediation. Therefore, improvement in employee engagement level lead to stronger relationship between human capital and intra & extra role performance by the employees.

Conclusion

Research outcomes of this study are briefly concluded in following points:

- Due to multidimensional nature of human capital, it is necessary to identify and capture its different dimensions.

- Human capital and its dimensions i.e. knowledge capital, firm specific knowledge and sharing, wisdom capital, consciousness, and higher purpose lead to employee engagement, in-role job performance, conscientiousness, altruism, and courtesy in the organization.
- Employee engagement has partially mediating effect on the relationship between human capital and one extra role job behaviour (i.e. conscientiousness) & in-role job performance.

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Impact of Organisational Culture Paradigm on Workplace Sustainability

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Abstract: The purpose of this paper is to examine the impact of organisational culture paradigm on workplace sustainability of five service sector companies namely, TCS, HCL, Infosys, Reliance and Wipro for the period 2013-2015. The study reveals that revenue is highly related to women programmes then attrition and injury at the workplace. The injury at the workplace is significantly and positively related to attrition. The findings also show that cultural attributes are a significant part of ethical business practices and help them to drive financial performance.

Keywords: Organisational culture, Workplace sustainability, Service sector companies, Women workforce, Award & reward

Introduction

Today organisation is on the threshold for promoting an organisational culture at every level. An organisation with synergetic culture maintains assertive management with the help of systems and procedures. Participative culture encourages the use of personalised relationship, exchange of benefits and assertiveness, and discourages the use of asserting negative sanctions to facilitate the success of the organisation (Tripathi and Tripathi, 2009).

The challenge is how to achieve both safety and operational improvements to provide harmonised workplace culture. Constructive team culture was associated with more positive work attitude, higher service quality, and less turnover. More positive team climate is associated with more positive individual work attitude (Glisson and James, 2002). Firms can easily differentiate each other by creating a supportive culture among employees. Firms with higher levels of trust embedded in the organisational culture are more likely to outperform (Nold III, 2012). Culture emboldens organisation and adds new horizons to further growth. Relentless hard work and commitment to achieve organisation goals are a true testimony of employees. Motivated and encouraged employees leave no stone unturned to provide best of their efforts.

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Talent and expertise of employees ensure the gainful utility of available resources. Diagnosing talents in employees and improving them is the key responsibility of employers. Organisation immense unflinching efforts behind each and every employee enhance their career development. It includes boosting employees' career by providing a social platform; assigning them new projects; delegating more authority and responsibility; and preparing them for an effective leadership role with the help of succession planning. Confident and trained employee provides world class solution to customers.

For employee's health and safety, the organisation must provide medical insurance and organise various camps. Increasing rate of injury and attrition demonstrate that employees want to quit the company for better opportunities, future growth and advancement. Retention of employees in organisation becomes mandatory which help companies to save time and cost of the company. Indeed, rewarding deserving employees regularly for team collaboration, innovation and excellence in projects help to increase retention. Organisational culture profoundly impacts innovative culture (Sharifirad and Ataei, 2012).

Increasing the participation of women has been proved successful for an organisation. Thus, companies need to introduce and implement various women empowerment initiatives. Companies must come forward to understand basic requirements of women. Providing adequate maternity leave, taking initiatives for gender equality, ensuring safety for women, and promoting leadership encourage women to perform better in the organisation. Understanding the needs of the employee, finding talent, career advancement, women empowerment, and health and safety initiatives help to reduce the attrition as well as the injury in the organisation. Firms that have a culture with the required attributes can obtain and sustain superior financial performance (Barney, 1986).

Organisational Culture

Organisational culture is the emerging concept in the field of management. The organisational culture theory has derived metaphorically from the idea of "cultivation of soil". Organisational culture as a pattern of shared basic assumptions, learned by a group, to solve the problems of external adaptation and internal integration (Schein, 2004). It is all about pervasive values, beliefs and attitude that characterise a company and guide its practices. Organisational culture is a system of shared assumptions, the inner most layer which guides how to handle everyday problems that have become self-evident, values represent what is good or bad, and belief is the most explicit of all layers including language and food, architecture and style etc., which governs how people behave in the organisation. These shared values have a strong influence on the people in the organisation and dictate how they dress, act, and perform their jobs. Every organisation develops and maintains a unique culture, which provides guidelines and boundaries for the behaviour of the members of the organisation. The following cultural paradigms have been taken up to compare the organisational culture and workplace sustainability of the companies:

Career Development: Learning is a lifelong process which is mandatory for employees' prosperous future. Organisation in-house support and skill development make employees a chief architect for their career. Career development programmes help individuals as well as organisations to explore skills and implement it in proper direction. Organisations consult professionals, and create networks to train employees for their career advancement.

Programs for Women: Attracting, retaining and empowering women aid companies to fulfil their commitment successfully. Programmes for women enable them to involve actively in the organisation for their goal accomplishment. The support and empowerment motivate women to perform better and ensure their active participation in the decision making. Apart from this, the company must provide safety measures for women that they can freely contribute to their work in an organisation.

Award and Reward: Companies must focus on award and reward which can be a source of motivation among employees. Reward and award motivate employees to repeat their positive behaviour. It helps to make employee's zeitgeist and their performance better. The Recognition of the outstanding behaviour of individuals and their appreciation is a great way to encourage all employees. Organisational culture is one of the key elements in both enhancing and inhibiting innovation (Valencia, Valle and Jimenez, 2010). Promoting group participation, innovation, creativity and decision making regularly fill zeal among employees.

Talent Retention: To gain competitive advantage organisations adopt numbers of unflinching efforts to hold skilled and competitive employees. Culture helps to maintain the work quality whereas climate emphasise on employer and employees relationship (Ali and Patnaik, 2014). Companies know very well that the employees who possess potential can actually make a difference for them. Talent retention helps companies to improve positive attitudes towards profit orientation.

Health and Safety: Every worker in an organisation possesses right to work in risk-free environment. So, the employer becomes responsible to provide a safe and sound workplace for employees. Good health of employees ensures a healthy environment and better performance in the organisation. Organising training programmes, health camps, and workshops lead to employees' safety and improve job knowledge and skills at all levels of the organisation.

Review of Literature

The organisational culture concept has become popular within the sustainability literature and provides an access point for human resources (Linnenluecke and Griffiths, 2010). Organisations that are narrowly focused on achieving economic outcomes alone miss out on sustainability innovations and business opportunities (Senge and Carstedt, 2001). Organisations will have to develop a sustainability-oriented organisational culture (Crane, 1995). Several scholars (Aragon-Correa & Sharma, 2003; Hart, 1995; Russo & Fouts, 1997) maintain the realisation of economic sustainability (i.e., the maximisation of profits, production and consumption) alone is not sufficient for the overall sustainability of corporations. The organisations dominated by an internal process culture will place greater emphasis on economic performance, growth and long-term profitability in their pursuit of corporate sustainability (Peteraf, 1993; Porter, 1985). Organisations should implement sustainability-oriented culture change for organisation enhancement (Halme, 1997).

Organisational culture motivates team work and innovation. Team work and innovation at workplace ascertain job satisfaction (Lund, 2003). Organisational culture positively impacts environment and knowledge management (Sanjaghi, Rezaeenour and Ojaghi 2014). According to Rashid, Sambasivan and Rahman (2004) organisational culture is associated with affective, cognitive and behavioural attitudes towards organisational change in behavioural studies. Employee's commitment generally motivates them to achieve organisational objectives whereas socialisation makes employees participative in an organisation. (Nazir, 2005) socialization is significantly associated person-culture fit, and employee commitment. On the other hand, (Taormina, 2008) indicate that socialisation helps to make employees familiar with an organisation which depends on leaders and founder's assumptions and beliefs.

Employee's performance and productivity are important aspects for all business units. In a simpler way, (Ojo, 2009) assess the impact of corporate culture on employee job performance as well as productivity. Based on assumptions, beliefs and artifacts in organisational culture influence organisation "effectiveness" (Amah, 2012) proved that corporate culture significantly influences organisational effectiveness.

Learned helplessness among employees generally affect organisations growth and it can be removed by the positive and participative work culture in an organisation. The organisational culture significantly removed learned helplessness (Saxena & Shah 2014). At the same time, it is signified that participative culture encourages the use of personalised relationship, exchange of benefits and assertiveness, and discourages the use of asserting expertise and negative sanctions to facilitate the success of the organisation (Tripathi and Tripathi, 2009). On the context of "innovation or imitation" organisational culture is the clear determinant of innovation (Naranjo, Jimenez and Valle, 2011). Adhocracy culture foster innovation and hierarchy culture promote imitation strategy.

Research Gap

Several scholars have studied the relationship between organisational culture and workplace sustainability from employees' perspective (Crane, 1995; Linnenluecke & Griffiths, 2010; Peteraf, 1993; Porter, 1985). On the contrary, this paper analyses the organisational culture and its impact on workplace sustainability (revenue, injury, women workforce participation, and attrition rate) from companies' perspective.

Research Questions

Following research questions arise:

1) How service sector companies contribute for their best organisational culture?
2) Which types of programs and initiative in the organisational culture they adopt?
3) Whether culture impact workplace sustainability i.e., revenue, injury, women workforce participation, and attrition rate?

Conceptual Framework of the Study

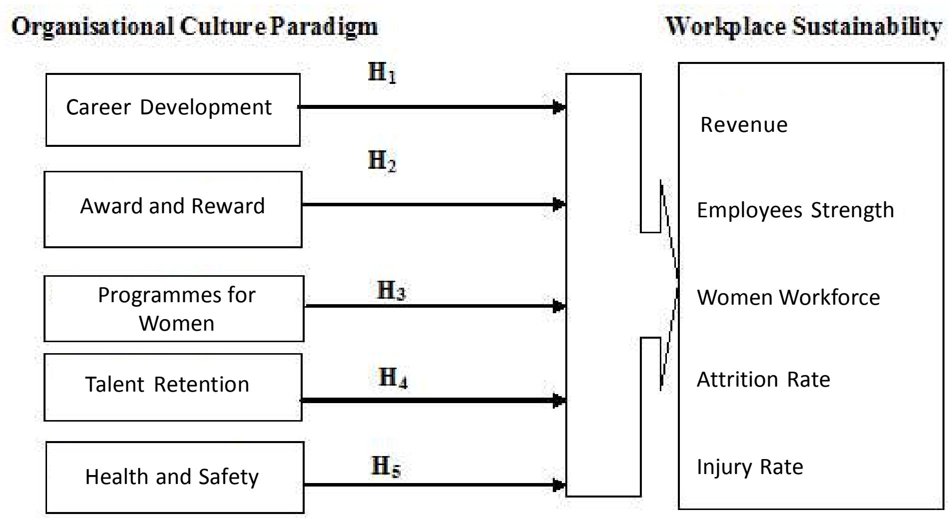

Figure 1: Conceptual framework of the study

Objectives of the Study

The paper has following objectives:

- To examine the extent of cultural practices adopted by service sector companies.
- To assess various cultural initiatives adopted by companies.
- To ascertain the impact of organisational culture paradigm on revenue, injury, women workforce participation, and attrition rate of companies.

Hypotheses

Following hypotheses were investigated:

H_1: There is a significant impact of career development on workplace sustainability.

H_2: There is a significant impact of award and reward on workplace sustainability.

H_3: There is a significant impact of women programmes on workplace sustainability.

H_4: There is a significant impact of talent retention on workplace sustainability.

H_5: There is a significant impact of health and safety on workplace sustainability.

Research Methodology

Research Design

The analysis of the existing paper is based on companies' performance in various cultural paradigms. The non-probability sampling method is used to choose the sample. The study formed its basis on companies listed in the Bombay Stock Exchange (BSE) of India. A sample of five service sector companies has been selected by using judgmental sampling method. For analysis percentage method, one-way ANOVA and Pearson Correlation method have been used. For the purpose of the study, five service sector Indian companies i.e. TCS, HCL, Wipro, Infosys and Reliance have been selected. The data is collected from the official websites of the respective companies for the year 2013-14 and 2014-15.

Discussion

Table 1: Common programmes and initiatives

	TCS	HCL	Wipro	Infosys	Reliance
Career development	3	2	3	3	3
Programs for women	3	3	5	2	5
Award and reward	7	4	3	9	1
Talent retention	4	2	4	6	3
Health and safety	2	4	10	3	3
Total	19	15	25	23	15

Table 1 represents the total number of programmes and the score of all five companies. All the four companies (TCS, Wipro, Infosys, and Reliance) have an equal number of programmes for career development. The programme score of remaining companies is on the varying level. Wipro with 25 scores is the highest scorer immediately followed by Infosys with a score of 23 followed by TCS with 19 scores. At last, both Reliance and HCL have an equal number of programmes. One-way ANOVA and Pearson correlation was applied to test whether the workplace sustainability influenced by organisational culture paradigm.

Table 2 : Career development on workplace sustainability

		Sum of Squares	df	Mean Square	F	Sig.
Revenue	Between Groups	220.839	1	220.839	1.715	.215
	Within Groups	1545.210	12	128.768		
	Total	1766.049	13			
Employee strength	Between Groups	262.527	1	262.527	4.592	.053
	Within Groups	686.063	12	57.172		
	Total	948.589	13			
Women workforce	Between Groups	.130	1	.130	.001	.977
	Within Groups	1790.843	12	149.237		
	Total	1790.972	13			
Attrition	Between Groups	8.297	1	8.297	.794	.391
	Within Groups	125.460	12	10.455		
	Total	133.757	13			
Injury rate	Between Groups	.000	1	.000.000	.567	.466
	Within Groups	.002	12			
	Total	.003	13			

In Table 2 results suggest insignificant mean difference between revenue (F= 1.71592, Sig. .215), women workforce (F= .001, Sig. <.977), attrition (F= .794, Sig. <.391) and injury rate (F= .567, Sig. <.466) except for employee strength, with respect to career development. The results partially support H_1 and stated that career development significantly influence employee strength (F= 4.592, Sig. <.053). Career-oriented employees are creating strategic value to the organisation and success in the global marketplace.

Table 3: Award and reward on workplace sustainability

		Sum of squares	df	Mean square	F	Sig.
Revenue	Between Groups	972.117	2	486.058	6.734	.012
	Within Groups	793.932	11	72.176		
	Total	1766.049	13			
Employee strength	Between Groups	536.014	2	268.007	7.146	.010
	Within Groups	412.575	11	37.507		
	Total	948.589	13			
Women workforce	Between Groups	779.612	2	389.806	4.240	.043
	Within Groups	1011.360	11	91.942		
	Total	1790.972	13			
Attrition	Between Groups	59.990	2	29.995	4.473	.038
	Within Groups	73.767	11	6.706		
	Total	133.757	13			
Injury rate	Between Groups	.002	2	.001	31.495	.000
	Within Groups	.000	11	.000		
	Total	.003	13			

From the Table 3, it can be stated that award and reward is significant for enhancement of workplace sustainability. However, companies put their maximum efforts in providing award and reward for the promotion of innovation, project allocation, and re-skilling employees. It has also found that mean differences of revenue, employee strength, women workforce, attrition and injury rate significantly differ with respect to award and reward. The results support the H_2 and indicate a significant relationship between award & reward and women workforce (F = 4.2, Sig. 0.043), suggesting that award and reward motivate women. Whereas, revenue (F= 6.7, Sig. < .012) and attrition (F= 4.473, Sig.< .038) are less significant.

Table 4: Women programs on workplace sustainability

		Sum of Squares	df	Mean Square	Sig.
Revenue	Between Groups	1766.049	4	441.512	.001
	Within Groups	.000	9	.000	
	Total	1766.049	13		
Employee strength	Between Groups	948.589	4	237.147	.001
	Within Groups	.000	9	.000	
	Total	948.589	13		
Women workforce	Between Groups	1790.972	4	447.743	.002
	Within Groups	.000	9	.000	
Total	1790.972	13			
Attrition	Between Groups	133.757	4	33.439	.001
	Within Groups	.000	9	.000	
	Total	133.757	13		
Injury rate	Between Groups	.003	4	.001	.000
	Within Groups	.000	9	.000	
	Total	.003	13		

The programs for women has significant impact on the workplace sustainability i.e. revenue (sig. <.001), employees strength (sig. <.001), women workforce (sig <.002), attrition (sig. <.001) and injury rate (Sig. <.000). Companies exclusively ensure maternity and security support for women**.** The mean differences support the H_3 indicating essentiality of women programs for workplace sustainability. The companies follow a unique articulation of maternity support, which creates an enabling environment for women's and motivate them to participate in the company.

Table 5 indicates that talent retention is an essential paradigm for workplace sustainability. The talent retention significantly associated with injury rate (F= 3.994, Sig. < .042) and employee strength ((F= 4.901, sig. < .042). Whereas, revenue (F= 64.613, sig. < .000), women workforce (F= 438.8, sig. < .000) and attrition are (F=99.517, sig. < .000) less prevalent. The results partially support the H_4 which indicate that every organisation is in competition to retain talent with risk-free environment.

Table 5: Talent retention on workplace sustainability

		Sum of squares	df	Mean square	F	Sig.
Revenue	Between Groups	1679.409	3	559.803	64.613	.000
	Within Groups	86.640	10	8.664		
	Total	1766.049	13			
Employee strength	Between Groups	564.589	3	188.196	4.901	.024
	Within Groups	384.000	10	38.400		
	Total	948.589	13			
Women workforce	Between Groups	1777.472	3	592.491	438.882	.000
	Within Groups	13.500	10	1.350		
	Total	1790.972	13			
Attrition	Between Groups	129.422	3	43.141	99.517	.000
	Within Groups	4.335	10	.434		
	Total	133.757	13			
Injury rate	Between Groups	.001	3	.000	3.994	.042
	Within Groups	.001	10	.000		
	Total	.003	13			

The companies have put their number of unflinching efforts on awareness, health camps, and insurance programmes to maintain work life balance of employee's. The means refer to the substantial differences in health and safety and workplace sustainability. The Table 6 predict that revenue ($F=5.566$, sig. .017), attrition ($F=11.345$, sig. $<.001$) and employee strength ($F= 66.352$, sig. $< .000$) are partially support the H_5. The results indicate that health and safety is significantly associated with workplace sustainability.

Table 6: Health and safety on workplace sustainability

		Sum of Squares	df	Mean Square	F	Sig.
Revenue	Between Groups	1104.549	3	368.183	5.566	.017
	Within Groups	661.500	10	66.150		
	Total	1766.049	13			
Employee strength	Between Groups	903.214	3	301.071	66.352	.000
	Within Groups	45.375	10	4.538		
	Total	948.589	13			
Women workforce	Between Groups	413.837	3	137.946	1.002	.432
	Within Groups	1377.135	10	137.714		
	Total	1790.972	13			
Attrition	Between Groups	103.382	3	34.461	11.345	.001
	Within Groups	30.375	10	3.038		
	Total	133.757	13			
Injury rate	Between Groups	.002	3	.001	9.692	.003
	Within Groups	.001	10	.000		
	Total	.003	13			

Table7: Pearson Correlations

		Revenue	Employee strength	Women workforce	Attrition	Injury rate
Revenue	Pearson Correlation	1	.111	.876**	-.973**	-.866**
	Sig. (2-tailed)		.705	.000	.000	.000
	N	14	14	14	14	14
Employee strength	Pearson Correlation	.111	1	.006	.079	-.395
	Sig. (2-tailed)	.705		.985	.789	.163
	N	14	14	14	14	14
Women workforce	Pearson Correlation	.876**	.006	1	-.825**	-.737**
	Sig. (2-tailed)	.000	.985		.000	.003
	N	14	14	14	14	14
Attrition	Pearson Correlation	-.973**	.079	-.825**	1	.822**
	Sig. (2-tailed)	.000	.789	.000		.000
	N	14	14	14	14	14
Injury rate	Pearson	-.866**	-.395	-.737**	.822**	1
Correlation	Sig. (2-tailed)	.000	.163	.003	.000	
	N	14	14	14	14	14

** Correlation is significant at the 0.01 level (2-tailed)

The Pearson correlation in Table 7 shows that the bivariate relationships between revenue, employee strength, women workforce, attrition and injury rate are in the normal direction. The result contributes that revenue is highly related to women workforce and negatively to attrition and injury. For example, companies have executed a highest number of programmes for women. The companies have adopted gender equality initiative, promoting women's leadership roles, self-defence workshop with maternity and safety support measures for women. Most interestingly, injury at workplace is significantly and positively related to attrition. No substantial relationship was found between employee strength, revenue, women participation and attrition. On the other hand, injury rate is negatively related to revenue, employee strength and women workforce.

Findings and Suggestions

Organisational culture is the outcome of pervasive values, beliefs and attitude that differentiates the company and guides its practices. Culture helps organisations to identify and implement the human resource strategy. The companies have accepted the need for stress-free cultural environment. The stress-free environment makes employees more zeitgeists. The following suggestions can be drawn out for the companies' enhancement:

- Attrition has become a major concern for all organisations due to unfavorable working conditions. The award and reward motivate employees as well as reduces attrition at workplace. The award-winning also enhance confidence of potential employees with companies reputation.

- Talent retention is an essential paradigm for workplace sustainability. Companies should focus on qualitative programmes and their effective implementation for employee's stability. Employee retention can be promoted through engagement, team-building and community involvement.
- The programs for women significantly impact workplace sustainability. The revenue is highly related to women workforce and negatively to attrition and injury. The higher participation of women generates higher market return and superior profits (CS Gender Report, 2016). Companies must implement the effective initiatives for women stability.
- Health and safety should be strengthened to ensure stress-free and sound environment. The companies must adopt dynamic tactics to maintain healthy and safe environment. The adequate number of workshops, training and networking from other professionals helps to minimise injury in an organisation.
- Career development is a prevalent paradigm to enhance workplace sustainability. Career-oriented employees are creating strategic value for the organisations and success in the global marketplace. Instead of adopting numbers of programmes companies must follow a common social platform that helps to integrate and inspire employees to perform with zeal.

Conclusion

Career development significantly impacts employee's strength. The companies put their maximum efforts in providing award and reward for the promotion of innovation, project allocation, and re-skilling among employees. The revenue is highly related to women workforce and negatively to attrition and injury. Further, this study is useful to stakeholders as well as for companies itself. This paper concludes that award/reward, programmes for women and talent retention are principal players compared to other paradigms. On an average, every company follows an adequate number of programmes in every aspect and demonstrates good performance in all paradigms. The revenue is highly related to women workforce and negatively to attrition and injury. Injuries at workplace significantly and positively affect attrition. The minimisation of injury helps to gain competitive advantage.

Direction for Future Research

The present study is based on secondary data. Therefore, it is proposed that further studies can be conducted on primary data. The existing study covered relatively small sample size. The further research can be conducted with a large sample from different sectors to evaluate organisational culture widely.

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An Assessment of Satisfaction from Selected Retail Store Attributes vis-à-vis Behavioural Intentions of Retail Shoppers

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Abstract: The main objective of the research was to study selected store attributes and its influence on shoppers' satisfaction and post-purchase behaviour to help retailers to better suitably modify their retail strategies. An attempt was made to study the influences of selected store attributes viz., accessibility of the retail store; range of the products; sales promotional schemes offered; behaviour of staff; store layout; store ambience; store atmosphere, and physical facilities of the retail store on the shoppers' satisfaction and the resultant intention of the shoppers' to recommend the retail store to other shoppers. The collected data were analyzed using descriptive statistics and chi-square test was applied to test the hypotheses formulated in the research study, and Structural Equation Model [SEM] was also developed to study, and showcase the linkages between shoppers' experience and the resultant satisfaction and or dissatisfaction related to store attributes and intention to recommend the retail store to others.

Key Terms: Retail, Store Attributes, Retail Shoppers' Satisfaction.

Introduction

The growth of organized retail industry in India is likely to entail large number of new jobs; income generation resultant into improved standard of living. The growing middle class is an important factor contributing to the growth of retail in India. According to estimate, 91 Million households will become part of 'Middle Class' by the year 2030, the 570 million people are expected to live in cities, nearly twice the current population of the United States. India's consumption level is set to reach US$ 1.5 Trillion from the current level of US$ 750 Billion by the year 2020 (Deloitte Indian Retail Market Report, 2013). India has the youngest population profile in

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the whole world and this global Indian households is expected to reach 9.5 million with their spending power of 14.1 Trillion rupees by the year 2025 (Farrell and Beinhocker, 2007). There exists a relationship between retail shoppers' beliefs about the retail store attributes with satisfaction and intention of retail shoppers to recommend the store to others. This research study was conducted to identify the linkages between actual experiences of the retail shoppers vis-à-vis satisfaction of retail shoppers considering the store attributes in the selected cities of the State of Gujarat.

Review of Literature

The retailing business is greatly affected by the patronage behavioural orientations of retail shoppers. Store attributes refer to the underlying components of a store image dimensions viz., merchandise; physical facilities; services; atmospherics etc. (Assael, 1992; Wong and Yu, 2003). Kotler (1973) too had concluded that store attributes related to a retail store can be grouped in terms of 'Store Atmospherics' and Store Location respectively. According to Bitner (1982), the physical environment creates an image and influences individual behaviour of retail shopper in retail stores. Newman and Foxall (2003) had confirmed the importance of store layout as a determinant of consumer behaviour. Erdem et al. (1999) had examined the linkages between consumer values and store attributes to conclude that branding is an important marketing tool in retailing.

Herpen and Pieters (2000) had identified that the attribute-approach captures customers' perception of assortment variety better than the product-based approach. Popkowski et al. (2001) concluded that the importance of various store attributes varies according to store format and customer base.

The researcher has used conceptual model that demonstrates the relationship of selected store attributes with overall satisfaction and resultant intension to recommend the retail store to other shoppers (Figure 1).

Research Methodology

The key objective of this research study based on descriptive research design was to examine the linkages between retail shoppers' experiences versus retail shoppers' satisfaction. The researchers have selected 08 store attributes that were examined using item-analysis approach viz., accessibility; sales promotional schemes; ambience of the retail store; store atmosphere; institutional factors of the retail store, the behaviour of sales staff, the range of products in the retail store, and the infrastructure facilities of the retail store respectively.

The primary data were collected using statistically validated structured non-disguised questionnaire supported with Mall Intercept Interviews from total number of 1500 retail shoppers that were conveniently drawn by applying non-probability sampling method from amongst selected retails stores/shopping malls as located in the selected cities viz; 280 retail shoppers from Vadodara city; 475 from Ahmedabad city; 400 from Surat city, and 250 retail shoppers from Rajkot city of the Gujarat State, India. The reliability of research instrument was measured and the Cronbach's Alpha (Cronbach Alpha, 1951) score on selected constructs of store attributes was found as ranging from 0.700 to 0.870 which showed the internal reliability of the scale, and reflected the degree of cohesiveness amongst the selected items was considered for the purpose of data collection (Malhotra, 2007 and Nunnally, 1981).

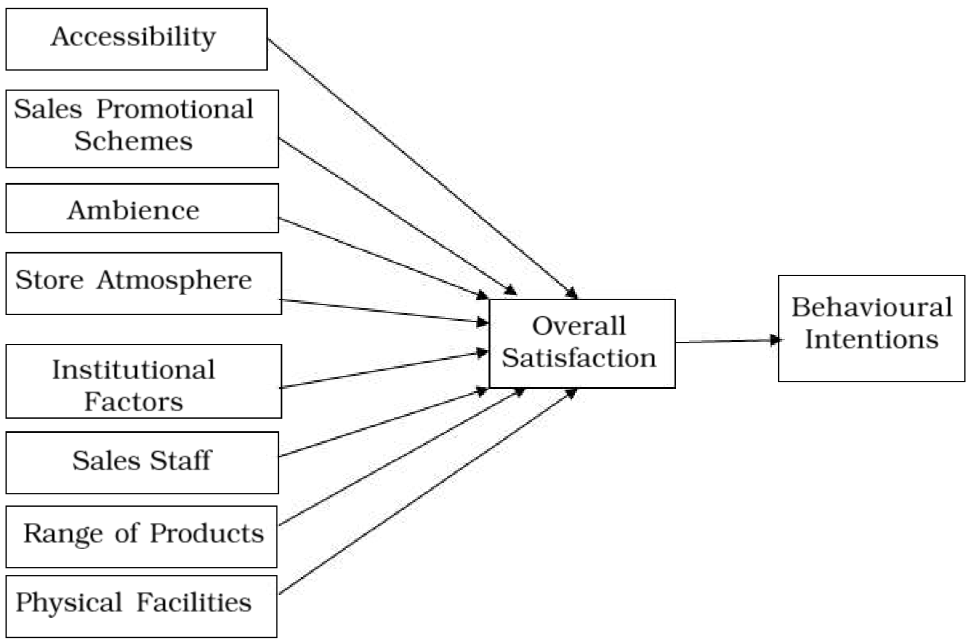

Figure 1: Proposed theoretical model of shopping orientations and store attributes on patronage behaviour and overall Satisfaction of the retail shoppers

Analysis and Interpretation

The collected primary data were analysed with the help of SPSS 15.0 using descriptive statistics and chi-square test and Structural Equation Model [SEM] (using AMOS 18.0) was also developed to study and examine the linkages between retail shoppers' actual experiences and the resultant satisfaction related ti store attributes and intention to recommend the retail store to other retail shoppers. The application of statistical tools applied to bring out results of data analysis mainly revealed following.

Demographic Profile

As given in the Table 1, for the selected demographic criteria, considering their age groups revealed that in the age group of 16 to 40 years, 53 percent retail shoppers were from Baroda; 43 percent from Surat; 36 percent were from Rajkot, and 80 percent retail shoppers were from Ahmedabad respectively. Similarly, in the age group of 41 to 59 years, 36 percent retail shoppers were from Baroda; 42 percent were from Surat; 48 percent were from Rajkot, and 2 percent retail shoppers were from Ahmedabad respectively. Further, in case of Gender of retail shoppers, it was found that 70 percent retail shoppers were male and 30 percent of them were females. Overall, 33 percent retail shoppers were found as unmarried and remaining 67 percent were married.

In terms of educational qualification, 43 per cent retail shoppers in Baroda and Ahmedabad as well as 38 percent in case of Surat, and 30 percent in Rajkot were Post-Graduates.

In case of the annual family income of selected retail shoppers, 32 percent of retail shoppers' in Baroda were having annual family income of less than Rupees 4 lakhs, followed by 36 percent retail shoppers in Surat as well as 47 percent retail shoppers in the Rajkot, and 19 percent retail shoppers in the Ahmedabad respectively [Table 1].

Results

In this research study, the researchers have attempted to examine hypotheses concerning to the actual experience of the retail shoppers considering the selected 08 store attributes vis-à-vis retail shoppers' demographic variables by applying Chi-Square that revealed following.

Hypothesis: 01: Actual experience of selected retail shoppers' on selected store attribute of "Accessibility" vis-à-vis retail shoppers selected background variables viz., age; gender; marital status; occupation; rducational qualifications, and Income is Independent.

The null hypothesis was rejected as the selected demographic variables of retail shoppers viz., age, gender; marital status, occupation, educational qualifications, and income were found as significantly associated ('p' value < 0.05) with selected items concerning the selected store attribute of "accessibility" except in case of one the item i.e. "It is convenient for me to go for shopping at any time in the retail store" with regard to "age" items as the result was found as insignificant.

Hypothesis: 02: The actual experience of selected retail shoppers' on selected store attribute of "Ambience of the Retail Store" vis-à-vis retail shoppers' selected background variables viz., age; gender; marital status; occupation; educational qualifications, and income is independent.

The null hypothesis was rejected as the selected demographic variables of retail shoppers viz., age, gender; marital status, occupation, educational qualifications and income were found as significantly related ('p' value < 0.05) with selected items concerning the selected retail store attributes of "Ambience of the Retail Store" except six items for which insignificant results with the selected demographic variable "gender" were obtained viz., "The infrastructure of the retail store is properly maintained"; "The retail store has an attractive look"; "The retail store has an attractive interior"; There is plenty of room to walk around in the retail store"; "The sufficient information on signboards is displayed in the retail store", and "The retail store has enough checkout points' respectively.

Table 1: Demographic profile of the selected retail shoppers

Sl.No	Background variables		Number and Percentages of Retail Shoppers				Total
			Vadodara	Surat	Rajkot	Ahmedabad	
	Gender	Males	170 (60.7)	306 (65.1)	175 (63.6)	404 (85.1)	1055 (70.3)
		Females	110 (39.3)	164 (34.9)	100 (36.4)	71 (14.9)	445 (29.7)
2	Age Group	16-40	149 (53.2)	204 (43.4)	101.0 (36.7)	382 (80.4)	836 (55.7)
		41-59	102 (36.4)	200 (42.6)	133.0 (48.4)	11 (2.3)	446 (29.7)
		60 & above	29 (10.4)	66 (14.0)	41.0 (14.9)	82 (17.3)	218 (14.5)
3	Educational Qualifications	Less than graduation	47 (16.8)	90 (19.1)	82 (29.8)	82 (17.3)	301(20.1)
		Graduation	80 (28.6)	142 (30.2)	77 (28.0)	187 (39.4)	486 (32.4)
		Post Graduation	121 (43.2)	183 (38.9)	85 (30.9)	206 (43.4)	595 (39.7)
		Professional Degree	32 (11.4)	55 (11.7)	31 (11.3)	0 (0)	118 (7.9)
4	Occupation	Housewife	52 (18.6)	65 (13.8)	53 (19.3)	0 (0)	170 (11.3)
		Businessman/Woman	64 (22.9)	51 (10.9)	38 (13.8)	0 (0)	153 (10.2)
		Self-employed	34 (12.1)	167 (35.5)	127 (46.2)	144 (30.3)	472 (31.5)
		Service	91 (32.5)	135 (28.7)	56 (20.4)	129 (27.2)	411 (27.4)
		Professional	39 (13.9)	52 (11.1)	1 (0.4)	202 (42.5)	294 (19.6)
5	Annual Family Income	Less than *4 lakhs	90 (32.1)	173 (36.8)	129 (46.9)	90 (18.9)	482 (32.1)
		4 to 8 lakhs	89 (31.8)	157 (33.4)	87 (31.6)	303 (63.8)	636 (42.4)
		8 to 12 lakhs	86 (30.7)	129 (27.4)	59 (21.5)	82 (17.3)	356 (23.7)
		More than 12 lakhs	15 (5.4)	11 (2.3)	0 (0.0)	0 (0.0)	26 (1.7)

The insignificant results were obtained also for relationship between the items viz., "The sufficient information on signboards is displayed in the retail store vis-à-vis "Age" of the retail shopper as well as for items viz., "The retail store has an attractive interior"; "There is plenty of room to walk around in the retail store"; "The sufficient information on signboards is displayed in the retail store" vis-a-vis "Marital Status", and for item "The retail store has an attractive interior" vis-a-vis "Income" as the selected demographic variable of the retail shoppers.

Hypothesis: 03: The Actual Experience of selected retail shoppers' on selected store attribute of "Atmosphere of the Retail Store" vis-à-vis retail shoppers' selected background variables viz., age; gender; marital status; occupation; educational qualifications, and income is independent.

The null hypothesis was rejected as the demographic variables viz., age, gender; marital status, occupation, educational qualifications and income of retail shoppers' were found as significantly related ('p' value < 0.05) with selected item "Store Atmosphere of the Retail Store" except the item of "The environment of the retail store motivates me for shopping" vis-à-vis "gender" of the retail shoppers which was found as insignificant.

Hypothesis: 04: The Actual Experience of selected retail shoppers' on selected store attribute of "Range of Products in the Retail Store" vis-à-vis retail shoppers' selected background variables viz., age; gender; marital status; Occupation; educational qualifications, and income is independent.

The researcher had found significant results on each of the selected items ('p' value < 0.05) compared with selected retail shoppers' actual experiences vis-à-vis their selected background variables viz., age, gender; marital status, occupation, educational qualifications as well as income, and the null hypothesis was therefore rejected.

Hypothesis: 05: The Actual Experience of selected retail shoppers' on selected store attribute of "Facilities in the Retail Store" vis-à-vis retail shoppers' selected background variables viz., age; gender; marital status; occupation; educational qualifications, and income is independent.

The examination of the relationship between selected retail shoppers' actual experiences on the facilities available in the retail store vis-à-vis retail shoppers' background variables ,and the null hypothesis was rejected as the significant results were obtained in case of all of the selected items except four items viz., "the retail store refunds price of products once sold"; "the retail store accept a credit card"; "the retail store has a resting area" and "the retail store has a provision for physically challenged people". The items of "the retail store refunds price of products once sold"; "the retail store accept a credit card"; "the retail store has a resting area" were found insignificantly related with selected demographic variable of marital status of the retail shoppers. The item namely "the retail store has a resting area" was also found to be insignificantly related with "Gender" of the retail shoppers, and the item namely "the retail store has a provision for physically challenged people" too was found as insignificantly related to "Age" of the retail shoppers.

Table Number 2: Ratio of perceived importance and overall satisfaction with the selected criteria of store attributes

Perceived Importance of Selected Store Attributes	Mean Score	Overall Satisfaction on Selected Store Attributes	Mean Score	Ratio
Perceived Importance of Accessibility of the Retail Store	3.57	Overall Satisfaction with Accessibility of the Retail Store	3.34	0.94
Perceived Importance of Range of the Products in the Retail Store	3.81	Overall Satisfaction with Range of the Products in the Retail Store	3.44	0.90
Perceived Importance of Sales Promotion Schemes offered in the Retail Store	3.93	Overall Satisfaction with Sales Promotion Schemes offered in the Retail Store	3.30	0.84
Perceived Importance of Behaviour of Staff of the Retail Store	3.70	Overall Satisfaction with Behaviour of Staff of the Retail Store	3.19	0.86
Perceived Importance of Store Layout/Ambience of the Retail Store	3.66	Overall Satisfaction with Store Layout/Ambience of the Retail Store	3.34	0.91
Perceived Importance of Physical Facilities in the Retail Store	3.70	Overall Satisfaction with Physical Facilities in the Retail Store	3.23	0.87
Perceived Importance of Atmosphere in the Retail Store	3.84	Overall Satisfaction with Atmosphere in the Retail Store	3.26	0.85
Perceived Importance of Institutional Factors	3.52	Overall Satisfaction with Institutional Factors	3.44	0.98

Hypothesis: 06: The actual experience of selected retail shoppers' on selected store attribute of "Staff of the Retail Store" vis-à-vis retail shoppers' selected background variables viz., age; gender; marital status; occupation; educational qualifications, and Income is independent.

The null hypothesis was rejected as the significant results were obtained in case of all the selected items of "Behaviour of Sales Staff" in the retail store vis-s-vis selected background variables of the retail shoppers except three items viz., "the sales staff of the retail store has the required information of the display of the products"; "the sales staff of retail store are polite and courteous"; and "the sales staff of retail store are well trained" respectively.

The insignificant result was obtained in the case of an item "The sales staff of the retail store has the required information of the display of the products" vis-a-vis "Marital Status" and also in case of an items "The sales staff of retail store are polite and courteous" and "the sales staff of retail store are well trained" with "Gender" of the retail shoppers respectively.

Hypothesis: 7: The actual experience of selected retail shoppers' on selected store attribute of "Promotional Schemes of the Retail Store" vis-à-vis retail shoppers' selected background variables viz., age; gender; marital status; occupation; educational qualifications, and income is independent.

The null hypothesis was rejected as the significant results were obtained in case of all the selected items except three items viz.,

"The retail store gives me discount schemes"; "I like to buy products offered to me by retail store on promotional, discounted schemes", and "I like to buy products at special events (For Example: Wednesday Bazaar at Big Bazaar)".

The insignificant result was obtained in the case of relationship of item "The retail store gives me discount schemes" with "Educational Qualifications", and also in case of the selected item "I like to buy products offered to me by retail store on promotional, discounted schemes" as well as in case of an item "I like to buy products at special events (For Example: Wednesday Bazaar at Big Bazaar)" with "Gender" of the retail shoppers and also in case of an item "I like to buy products at special events (For Example: Wednesday Bazaar at Big Bazaar)" with "Marital Status" of the retail shoppers respectively.

Hypothesis: 08: The Actual Experience of selected retail shoppers' on selected store attribute of "Institutional Factors" vis-à-vis retail shoppers' selected background variables viz., age; gender; marital status; occupation; educational qualifications, and income is independent.

The null hypothesis was rejected because the demographic variables of the retail shoppers viz., age, gender; marital status, occupation, educational qualifications and income were found as significantly related ('p' value $<$ 0.05) with selected items concerning the selected store attribute of Institutional Factors of the retail store except the item of "I receive birthday wishes on mobile from the retail store" considering "Income" of the retail shoppers. The other item included viz.; "The retail stores are crowded" compared with "Gender" of the selected retail shoppers of the Gujarat State.

The Table 2 inferred the results of the perceived importance of the retail store attributes by the retail shoppers as compared with the retail stores' ability in meeting their expectations defined as his or her overall satisfaction on selected store attributes on selected 08 retail store attributes. It clearly indicated that the ratio of the attribute of 'Institutional Factors' of the retail store 0.98 which was the highest among all 08 store attributes.

It meant that the institutional factors such as clientele, overall impression, store reputation, and retail store association were found as having high perceived importance amongst the selected retail shoppers in the retail store, and the retailers were able to meet these expectations successfully.

Another store attribute of the retail store that is the 'Store Layout/Ambience of the Retail Store" too was having the ratio of 0.91, and 'Range of the Products in the Retail Store' was also having the ratio of 0.90.

The level of overall satisfaction of retail shoppers' was determined by the proximity of the retail store. It can be deduced that the retail store should be strategically located in areas of the city so that retail shoppers can easily reach at the retail store.

The ambience of the retail store too needs to be inviting and comfortable as most of the buying/shopping decisions are made in the retail store. The retailers therefore need to make the store atmosphere of the retail store welcoming, attractive, and friendly to provide a visually interesting space to the retail shoppers.

Appropriate lighting, well painted walls, neatly stacked racks, attractive decor, friendly yet unobtrusive sales staff, and soothing/peppy music as the brand demands is few other things the retailer can look into to increase footfalls and drive increased retail store traffic.

The range of products in the retail store relates with assortment planning which allows the retailer to provide a more consistent product offering, most profitable mix of products, and pleasant shopping experience to the retail shoppers. Such a marketing strategy would help the retailers to increase sales, margin and inventory productivity. It would help them to avoid pricey mistakes by analyzing and projecting product assortment needs of the retail shoppers well in advance. The retailers can also identify new opportunities concerning changes to be made in offering of the product mix, potential cost reduction, and effects on the bottom line. The retailers also need to brand wise compare and analyze competitive product assortment of rival brands to gain valuable insights to modify and suitable alter their marketing strategy.

Structural Equation Modeling [SEM] Considering Store Attributes

The researchers had also developed a Structural Equation Model for showing the relationship between the selected store attributes and overall satisfaction using AMOS 18.0 Software as given in the figure number 02.

The values of 0.58 showed against the single sided arrow is the weight for influence of store attributes on intention of retail shoppers for recommendation to others through the mediating variable of overall satisfaction. It can be inferred that the retail shopper determines his or her level of satisfaction considering the selected store attributes having significant influence were viz., Institutional factors (0.26), Behaviour of staff (0.13), Store Ambience (0.13) and Accessibility (0.11) respectively.

Discussions and Managerial Implications of the Study

It was found that retail shoppers' in the State of Gujarat are increasingly value conscious and not merely price-driven. Recognizing this, retailers need to offer value in terms of vital criteria as identified through this study.

Considering the accessibility criteria of the retail store, the spatial convenience of the retail store is a multi-dimensional construct and the retail shoppers who visit the retail store does pay importance to access convenience, search convenience, possession convenience, and transaction convenience respectively. Based on the empirical evidence, that had emerged from this study, the retailers need to configure a retail strategy that relates to easier accessibility of the retail store as it has a high correlation with the choice of a retail stores in the selected cities of the Gujarat State.

In addition to a convenient location, the other equally important criteria that too need to be incorporated should include viz., the convenience incentive as provided by retailers' viz., longer operating hours and ample parking which can help to attract more retail shoppers to the retail stores.

The retailer by capitalizing on this aspect of accessibility of the retail store, retailers can become competitive as they can provide their retail shoppers the benefits of the access convenience concerning with the speed and ease with which retail shoppers' can reach to a retail store in least time for shopping. The retail shoppers' had also considered retail store attributes viz., accessible location, availability of parking, store operating hours, proximity to other stores, as well as telephone and access of Internet as it shall positively the choice of the retail shoppers to carry out shopping.

The institutional factors of the retail store too play a pivotal role as it connotes the overall image of the retail store. The retailers therefore also need to understand the fact that retail shoppers who visited the retail store will get influenced by the other shoppers, and clientele of the retail store.

The retailers should therefore focus on delivering an enriching customized excited shopping experience to these retail shoppers' who shall visit the store. Those retail shoppers who had visited the retail store that is the

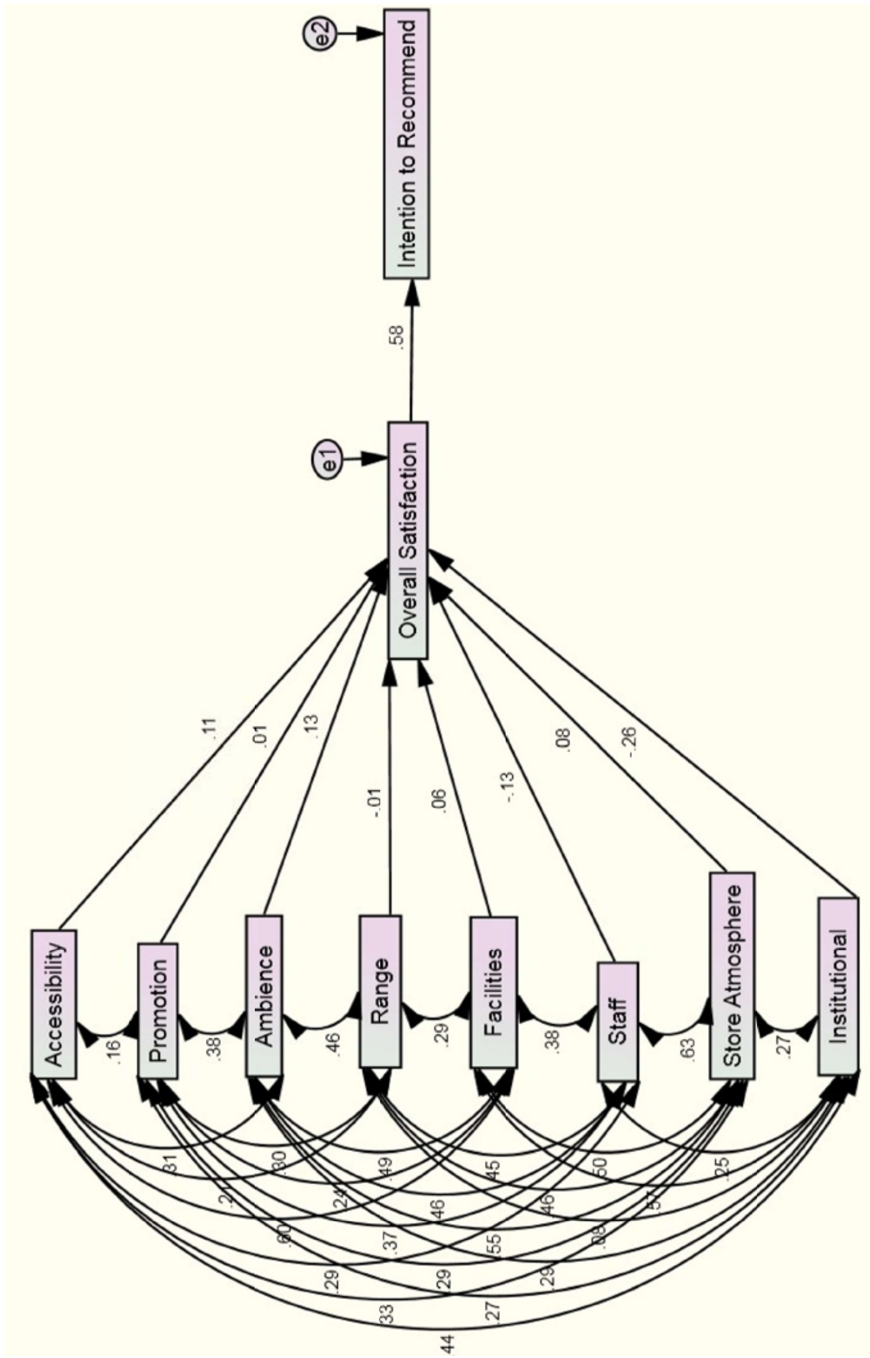

Figure 02: Structural Equation Modeling [SEM]

store clientele can also act as a motivating factor for the potential retail shoppers' to visit that particular retail store again and also in making them to shop again and again as the satisfied retail shopper is likely to become a brand ambassador and the positive word of mouth would be an outcome of the institutional factor of the retail store that will act as catalyst to attract also other retail shoppers to that particular retail store.

The efforts of the retailer to improve the institutional factors of the retail store will provide benefits to retail shoppers' in terms of consistent services, assurance, knowledge and courtesy, trust and confidence shown by staff ; good tangible facilities; empathy by caring and giving individualized attention to retail shoppers; prompt services; treating the retail shoppers with dignity and respect respectively.

This study had identified that appealing ambience of the retail store plays an important role in keeping the retail shoppers' engaged in the retail store. The retailer therefore need to improve the certain aspects of pleasantness in retail store's environment viz., color; music and crowding as it positively affects perception of the store image of the retail shoppers. The research study implied that the infrastructural facilities of the retail store made available, the appropriate placement of aisles and the attractiveness of the retail stores too can also plays a crucial role for making the retail shoppers feel at ease while moving around and browsing the products can enhance their shopping experiences.

Those retail shoppers who tend to favour and visit the retail store that is perceived as having a pleasant and moderately arousing atmosphere of the retail store can result in to increase his or her impulsive buying. These variables influences information processing that takes place during a retail store visit and subsequently influences the retail shoppers' judgment regarding the quality of the store and the store's image.

The staff behaviour of the retail store that is courteous, friendly and caring manner with their retail shoppers plays a significant role in providing an opportunity for socialization, and an avenue to cope with latest product trends. The sales personnel can also become a network between the retail shopper and the retail store as the sales staff will handle the service encounter which in turn defines his moments of truth in the retail store. This in turn shall help retailers for facilitating a better shopping experience, as the sales staff can now assimilate customer intelligence and deliver it to the marketers. It can also lead to increased sales per customer visit, based on relevant, targeted cross-selling and up-selling opportunities respectively.

The retail shopper will be able to get an enhanced shopping experience, delivered by a retailer through a more personalized and enriching service experience by trained and caring sales staff. The physical facilities in the retail store would also certainly result into increased footfalls in the retail stores but the absence of such factors will definitely make the retail shopper dissatisfied at the time of shopping. These factors are therefore very important in order to maintain and add to his or her satisfaction in the retail store.

The retailers should plan to bring out innovative change in the retail stores' infrastructural facilities by focusing on attractive design of their retail shops to attract more retail shoppers and motivated them for increased impulsive buying finally resultant into delivery of an enlightened, memorable, long term satisfying shopping experience. The retailer must strive for making all the products available in the retail store for the retail shoppers by maintaining proper product assortments to increase the convenience of retail shoppers for buying of small proportions resultant into induced shopping.

Limitations

This study has been undertaken using convenience sampling thus, it has limited applicability as respondents were contacted as retail shoppers when they visited selected shopping malls considered in this research study.

Though there may be other store attributes which affected the shopping experience and satisfaction of retail shoppers owing to the restricted scope of the research only selected eight variables were considered for the purpose of research. Due to the limitations of time and cost the scope of the study was restricted to selected cities and selected eight attributes only. Another limitation is that the biasness of retail shoppers in answering questions during mall intercept interviews may have affected the results. Though, this study has presented important and useful contributions in the measurement of overall reported experienced satisfaction of retail shoppers, due care need to be exercised while making use of its findings. The small sample size has restricted application of results to other groups of shoppers in other countries such as North America or Europe and other countries.

Conclusion

This study had identified the significance of selected 08 retail store attributes viz; accessibility, institutional factors, behaviour of sales staff and store ambience which creates a strong influence on the retail shoppers' overall satisfaction that positively influences his or her shopping activity and also his or her intention to recommend the retail store to other retail shoppers.

The study has identified the store attributes which can be helpful in delivering delighted shopping experiences to the retail shoppers. The research study had confirmed that retail store need to have an attractive look; the retail store should offer an attractive interior; there should exist plenty of room to walk around in the retail store; the sufficient information on signboards should be displayed in the retail store, and credible promotional and discount schemes need to be offered in the retail stores. The other criteria that were identified were viz., the provision of after sales services, escalator facilities, clean washroom/toilets, availability of resting area, and special arrangement for specially challenged people too need special consideration by the retailers respectively. The results of SEM identified most important store attributes having significant influence that included viz., institutional factors of the retail store, behaviour of the sales staff, retail store ambience, and accessibility of the retail store respectively. It is therefore being hoped that the results and implications of this research study shall be helpful to retailers in suitably segmenting, targeting and positioning their retail store for retail shoppers considering their lifestyles. It will also result in bringing increased footfalls of retail shoppers to retail stores and shall be able to inculcate repurchase intention in the minds of the retail shoppers in near future.

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Measuring Demonetization: A Path Towards Cashless India

Kritika Nagdev, Parul Kumar, Anupama Rajesh and Sunil Kumar

Abstract: The objective of the paper is to analyze the immediate impact of demonetization on the Indian economy along with analyzing the barriers in moving towards cashless economy and investigate the influence of demonetization towards cashless economy. Exploratory factor analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted on respondents followed by the Structural Equation Modeling and Path analysis suggested that IT enabled services, payment portals are the major gainers during this phase and traditional banking was negatively impacted by demonetization. Impact on social issues has also been observed as there is reduction in black money, more disclosure of income, more transparent business dealings, less holding of huge amounts of cash in hand and others.

Keywords: Confirmatory Factor Analysis; SEM; Scale; Cashless Economy; Black Money; Payment Portals, Social Issues

Introduction

On November 8, 2016, Honorable Narender Modi led government announced an historic move to invalidate more than 85% of cash in circulation of Indian economy. The two largest currency notes, Rs. 500 and Rs.1000, were “demonetized” with immediate effect, ceasing to be legal tender apart from a few specified purposes till a specific deadline. These notes were to be deposited in the banks by December 30, 2016, while restrictions were placed on cash withdrawals. The aim of the action was multi fold: counterfeiting terror funding, boosting cashless economy, supressing tax evasion and the most critical one being elimination of fake currency from circulation.

Media reports were predicting the pros and cons of the sudden event. Some of the predictions were that the unaccounted money would come into circulation and the share of the informal economy in India would shrink. The sustained crackdown on black money would compel Indians to hold their savings in physical assets such as gold and real estate, and instead increase the flow of savings into the market. It is further stated demonetization is step towards becoming a cashless economy and to encourage its citizens to adopt the digital payments system for their transactions. The government had also initiated the United Payments

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Interface (UPI) app for promoting cashless transaction using mobile phone. Besides alternate banking channels, online payment wallet companies like Paytm, PayUmoney, and MobiKwik got the momentary gain of demonetization. Despite of several advantages of demonetization, there are impeding challenges the economy has to deal with.

The UN report identified gaps in India's digital push, it states requirement of addressing determinants of country's cash dependence beyond technology adoption, which includes low financial inclusion, high informality, persistent gender inequality in access to finance, low financial literacy, low ICT infrastructure and large gaps in energy access. Former Prime Minister, Dr. Manmohan Singh, referred Demonetization as 'monumental mismanagement' by the government. Singh called „the scheme of demonetization, the way it had been implemented would hurt agricultural growth of the country, small industry, and all those people who are in the informal sectors of the economy.

The government's inability to deal with cash availability had hit the common man sternly as several banks and ATMs across the country dispensed little or no cash. Rural and semi- urban population were the major sufferers as almost their petty transactions are done through cash. Dana (2000) elaborates on the history of entrepreneurship in India and the efforts made by various government agencies to foster the growth of entrepreneurs. Further, by enforcing demonetization, Government of India has also bought a drive in trade and business, signaling into „less cash economy (Confederation of All India Traders (CAIT), 2016). Thus the consequences of demonetization were as follows:

Effect on Money Supply: Old 500 and 1000 Rupees notes being scrapped, and until the new 500 and 2000 rupees notes get circulated and made widely available in the market. The money supply was reducing in the short run. Till the period the black money does not re-enter the system the money supply would remain short. However gradually as the new notes get circulated in the market and the mismatch gets corrected, money supply would pick up.

Effect on Product and Services Demand: The overall demand was expected to be affected to a greater extent. The demand in following areas was impacted particularly: Consumer goods; Real Estate and Property; Gold and luxury goods; Automobiles (only to a certain extent). All these mentioned sectors faced major moderations in demand from the consumer side, owing to the significant amount of cash transactions involved in these sectors.

Effect on Banks: As directed by the Government, the 500 and 1000 rupee notes which now cease to be legal tender had to be deposited or exchanged in banks (subject to certain limits). This has automatically led to more amounts being deposited in Savings and Current Account of commercial banks. This in turn enhanced the liquidity position of the banks, which now can be utilized further for lending purposes.

Effect on Alternate Banking and Payment Options: With cash transactions facing a reduction, alternative forms of payment have seen a surge in demand. Digital transaction systems, E wallets and apps, online transactions using E banking, usage of Plastic money (Debit and Credit Cards), and others would definitely see substantial increase in demand in the near future. This should eventually lead to strengthening of such systems and the infrastructure required to fully automate the economy.

Effect on various Economic Entities: With cash transaction lowering in the short run, until the new notes are spread widely into circulation, certain sections of the society could face short term disruptions in facilitation of their transactions. These sections are: Agriculture and related sector, Small traders, SME, Services Sector, Households, Freelancers, Wage earners, Professionals like doctor, carpenter, utility service providers, etc. and Retail outlets.

Literature Review

Few studies suggested that maximizing the long term benefits and minimizing the short term costs associated to demonetization. Minimizing costs by replenishing the cash shortage, stable withdrawal limits, internal convertibility of cash from account and vice versa; thereby restoring the lost confidence of people towards financial system. Maximizing the impetus provided to digitization, taking forward the move gradually rather than swiftly, taking into consideration the digitally deprived, by respecting the choice rather than enforcing.

Sanyal (2016) has claimed that it was the constant inspiration and leadership by the government which had increased the probability of success of such government moves. Rani (2016) stated the plight of shopkeepers and consumers pacing up with demonetization move by understanding and adopting online payment portals and alternate banking channels to survive.

Long term and short term study and Kulkarni & Tapas (2017) studied the rational and outcomes of demonetization and currency contractions across countries. Study covered instances of sudden demonetization from Ghana, Mynmar, Brazil, Soviet Union, Russia, Iraq, North Korea, Cyprus, Greece and Venezuela. The Russian economy did the demonetization for political reasons; Zimbabwe carried it out to get control over chaotic monetary system and Australia took that step for convenience of transactions and did it in a very efficient way. Similar to India, Ghana and Myanmar did it to fight against black money. The major reason of currency contraction had been to fight against hyperinflation or any economy crisis.

Chaudhuri (2017) suggested that the goals of demonetization lack logical consistency and it is unacceptable to expect growth in short run. Whereas Pandia (2017) believed that demonetization is a deterrent to the terror funding and criminal activities and discourages the Indian tendency of hoarding money. Further demonetization has been referred as good initiatives which would yield results in long run and tolerating transitory inconvenience is worth taking.

Balaji & Balaji (2017) studied the impact of demonetization on cashless transactions and suggested that there was a positive impact on cashless transactions and building additional awareness about Internet based banking channels and the risks involved with it. Kulkarni & Tapas (2017) had evaluated the rationale of demonetization and the study concluded that adapting cashless mode was still feasible to achieve in the long run but problem of corruption cannot be solved just by demonetization. Since, it needs an attitudinal change in Indian citizen's behavior.

All the Indian studies related to demonetization were qualitative in nature where implications are induced based on secondary facts and experiences. There is dearth of studies which empirically measures the impact of demonetization on economy and its subsequent effect on cashless economy. Thus our study fills this gap and presents the scale to measure the immediate impact of demonetization.

Objectives

In the light of the discussion, the main objective of the paper is to analyze the overall impact of the demonetization. The following sub objectives are framed to analyze the main objective.

- Analyze the immediate impact of demonetization.
- To explore the long term and short term perception of people regording demonetization.
- To explore the awareness level of public towards Unified Payment Interface (UPI), post demonetization.

Hypotheses

Ho: Demonetization has impacted the Indian Economy

Ho_1: There is an immediate effect of demonetization on the Indian Economy

Ho_2: Demonetization has helped in limiting the economic concerns

Ho_3: Demonetization has moved the Indian economy towards cashless economy

Ho_4: Economic concerns does not mediate the effect of demonetization on cashless economy

Research Methodology

It was initiated to construct a scale for demonetisation which can measure its effectiveness and impact on Indian Economy. Hinkin, Tracey, &Enz (1997) have established a systematic seven-step scale development process, which commences with the creation of items to measure a construct under analysis. This process can be conducted inductively, by generating items first, from which scales are then derived, or deductively, starting with a theoretical definition from which items are then generated. The inductive method was used to create the scale. Statements were kept as short as simple as possible in the language suitable to the target respondents, avoiding double- barrelled and negative words. Items were created focusing on the objective that it should be understood by the respondents to get meaningful responses and limited items per scale were included as they are the foundation for internal consistency reliability.

The scale thus created 37 initial item pool, were pretested for the content adequacy of the items as it allows the deletion of items that may be conceptually inconsistent. The content adequacy was conducted through four knowledge experts from the area of banking, economics and psychology and piloted by factor analysis on a smaller data i.e., 50 respondents. Four versions of scale in different order were administered, to control bias effects due to order effects.

In the next step, measurement instrument was administered focussing on the requisite measurement scale and sample size. It is suggested that new items be scaled using five-point or seven-point Likert scales. Since, it enables to create variances, essential to examine the relationship among items and scales and create adequate coefficient alpha reliability estimates (Lissitz and Green, 1975). The minimum item-to-response ratio for exploratory factor analysis is 1:5 (Hier et al) and for confirmatory factor analysis (CFA) and SEM 1:10. Thus the scale used was five-point likert scale and data was collected from the respondents. To test the hypotheses a self-administered online survey was developed. The questionnaire was developed on the basis of various news items published in the newspapers, few of the research papers highlighting the impact and the major implications which were observed during that period. Questionnaire is validated from the two industry experts and two academicians for face and content validity. E copies along with the hard copies of the questionnaires were distributed to the people who were either working in firms, public or private, or having their own business or profession. Thus in other words, responses were asked only from people who were earning an income from any source. Overall 500 questionnaires were sent and 413 were received back. Out of the 413 responses only 370 were found to be valid for the analysis.

Further, it is essential to evaluate items through factor analysis. The exploratory factor analysis reduces the set of items into constructs which are able to predict the likelihood of model. Exploratory factor analysis (EFA) is conducted by way of IBM SPSS 23 on the sample of 190 respondents. After that Confirmatory Factor Analysis (CFA) is conducted on the sample of 370 respondents followed by the Structural Equation Modeling and Path analysis for the testing of major hypotheses and checking of consistency.

Analysis and Discussion

Figures 1 to 7 highlight the few implications of demonetization on the Indian Economy. These charts depict the immediate nonfunctional & functional impact of November 8, 2016 announcement on the Indian Economy. Figure 1 & 2 highlight the amount deposited and withdrawn by the respondents during the demonetization window. Around 75% of the respondents have deposited less than Rs. 50000, followed by 10.3% of the respondents who have deposited in between Rs. 100,000 to Rs. 200,000. We have also seen that respondents were unwilling to disclose the amount deposited by them in the bank especially when it was beyond Rs. 250000. If the scenario of cash deposited (Figure 2), it can be concluded that maximum of the respondents have withdrawn less than Rs. 20,000. 33% of the respondents have said that they withdrew Rs. 20,000 to Rs. 50,000 after the demonetization.

As earlier highlighted in the introduction that economic entities were affected by the demonetization done by the Indian Government. The figure 3 highlights the viewpoint of the respondents with respect to demonetization impact on Small Kirana Owners, Retail Outlet Owners, Big Entrepreneurs, Salaried class, homemakers, Freelancers and wage earners. Respondents were asked to rate the impact on all the economic entities on the scale of very unfavorable to very favorable. Around 58% of the respondents were of the view that demonetization has very unfavorably impacted the wage earners followed by the Small Kirana

Owners. Retail outlet owners were the next affected ones by the demonetization in the unfavorable way. In terms of favorable and very favorable impact, the most preferred ones were Big Entrepreneurs and Salaried Class.

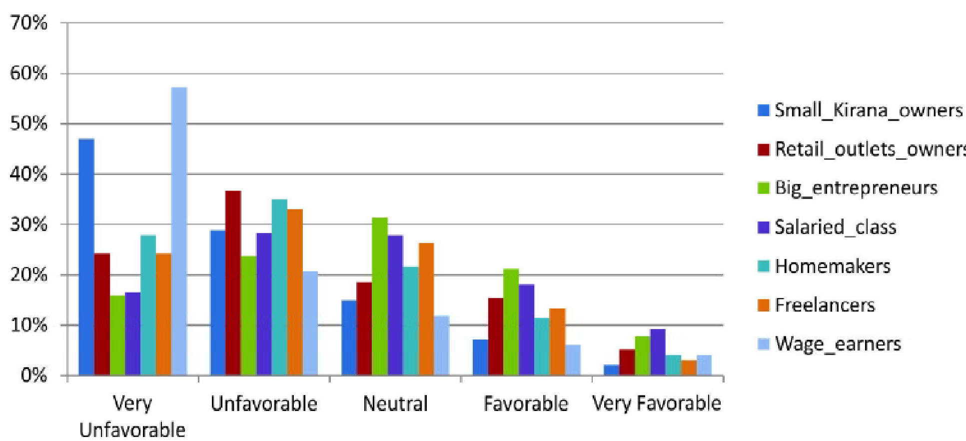

Figure 1: Impact on economic entities

Majority of the respondents have visited the bank one to three times in order to withdraw the cash and there were only handful of the people who have not visited the bank even once i.e. 10% as shown in Figure 4. More than 20% of the people had to visit the bank for more than three times to withdraw the cash due to demonetization.

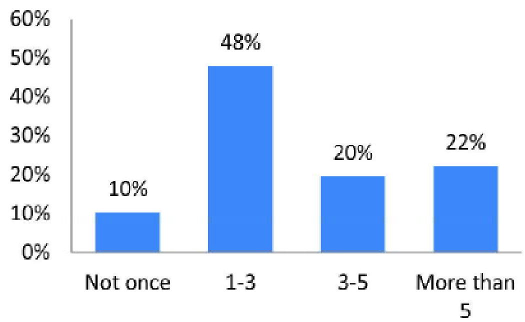

Figure 2: Bank visits for withdrawal of cash

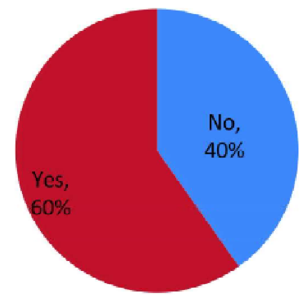

Figure 3: Consumption of old currency

We have also asked the respondents that whether they have used the old currency instead of depositing in the bank and results of these are presented in Figure 5. 60% of the respondents have agreed to usage of the cash for other purposes and not depositing it in the bank in order to avoid crossing of the limits set by the government of deposits. Figure 6 maps the various avenues in which respondents have used their old currency notes. Around 228 respondents have agreed to use of the old currency in the petrol for filling of the petrol in their vehicles. Then the next two major avenues that emerged were Medicines and the Groceries. People have also paid their utility bills from the old currency instead of depositing it in the bank.

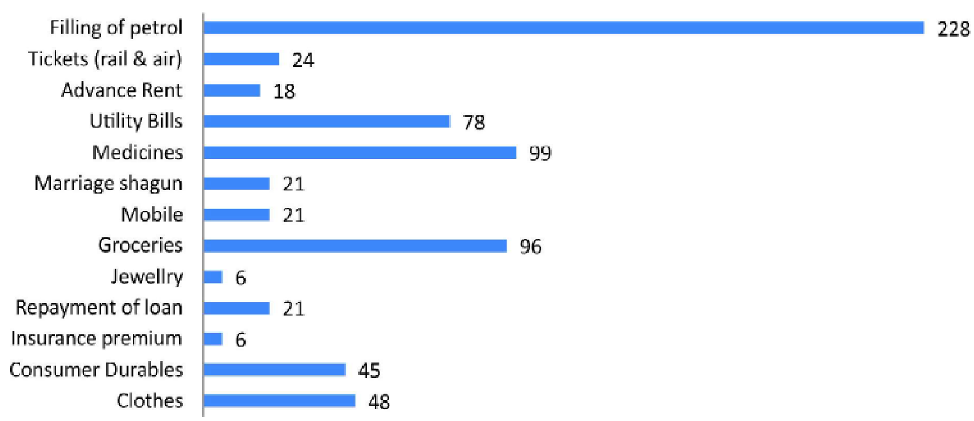

Figure 4: Usage of old currency

Since one of our objective is to analyze the impact of demonetization towards moving to cashless economy. Thus we asked the opinions from the public about what they think are the current barriers or obstacles in moving towards fully cashless economy in Figure 7. The word cloud is generated on the basis of the frequency distribution made of the responses received. Majority of them said lack of infrastructure and Internet access followed by the security concern in doing online payments. Thus technology reach, speed and infrastructure are the prominent barriers in moving towards fully cashless economy.

This descriptive analysis discussed highlights the immediate effect of demonetization on the economy as a whole. This is just the short term view of the effect and in order to analyze the impact as a whole, factor analysis has been used.

As the content and face validity has already been done in the pilot survey along with the industry experts and academicians. Hence with regard to construct validity, EFA and CFA are used. Since no research background is available to measure the impact of demonetization, 37 statements has been framed after many deliberations with the peers and EFA is applied to categorize them into various factors. To analyze the applicability of EFA, four parameters are checked for the data, namely KMO (Kaiser-Meyer-Oklin) & Bartlett test, Eigen value to be one, factor loadings of all the factors to be more than 0.40, and the Varimax rotation to analyze the factors. Table I shows that factor analysis is suitable for analyzing the data, as KMO is greater than 0.50 indicating that sample is adequate and Bartlett s test of sphercityÇ2(p }* 0.000). On the basis of the Eigen value equal to one, a six factor model was formed that explained 68.21% of the total variance.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.841
Bartlett's Test of Sphericity	Approx. Chi-Square	9368.431
	Df	820
	Sig.	0.000

The result of the EFA along with the factor loadings is presented in Table 2.The six factors which were finalized by the EFA are Economic Concerns, Cashless Economy, Payment Portals, IT enabled services, Traditional Banking and Social Issues. After formation of factors, that were the result of demonetization, by EFA, Confirmatory Factor Analysis (CFA) was conducted to validate them. Results given by CFA are presented in Table 3. In order to maintain the face validity, the items with high loadings are retained. All the statements received the standardized factor loadings larger than the recommended value of 0.4. Thus suggesting that the instrument is valid and none of the selected statements needs to be excluded. The results of CFA suggested that the statements related to payment portals and alternate banking options were combining into one. Thus model was run again with both the factors merged and the results improved. The values of CR and AVE (average variance extracted) for each construct are all above the desired levels. It can be seen that all the factor loadings in CFA are greater than 0.70 and have significant t- values also. All AVEs exceed 0.5, all CRs (the degree to which items are free from random error and therefore render consistent results) exceed 0.7 showing minimally accepted construct reliability (Gefen *et al.*, 2000).

Table 2: Results of EFA & CFA

Factors	Variables	Statements	EFA	CFA
		Eigen value =6.021 , CR =0.867, AVE =0.583		
EC	BM	Black Money	.801	0.89
	TR	Terrorism	.797	0.79
	CP	Corruption	.746	0.79
	II	Inequality of income	.674	0.71
	UE	Unemployment	.649	0.68
		Eigen value = 4.014, CR =0.821, AVE =0.512		
CE	CE3	Cash less transactions make a better economy	.674	0.73
	CE2	Shifting to fully cash less economy is good	.646	0.68
	CE1	Post demonetization, everyone has adopted cash less transactions	.627	0.65
	IB	Internet Banking	.841	0.89
	PM	Plastic Money	.802	0.82
		Eigen value = 3.781, CR =0.838, AVE =0.68		
ITeS	PM1	Unused debit cards are into use now	.786	0.80
	PM3	Government is promoting use of debit & credit cards on petrol pumps & other payments	.692	0.72
	PM2	More people have opted for credit cards	.658	0.70
	PP1	The concept of payment portals is necessary to understand for all, post demonetization	.512	0.61
	PP2	Demonetization made me use payment portals	.469	0.60
	PP3	Payments of all the utility bills using payment portals has increased	.455	0.61
	MB2	Internet banking is more secure to use than mobile banking	.659	0.69
	EB1	The use of E- Banking services are made compulsory to you	.640	0.69
	EB2	It is easy to shift all business transactions via E-Banking. / Does everyone have resources to shift to e banking?	.584	0.60

Contd...

	EB4	E-Banking facility providers are attracting new customers.	.465	0.60
	MB1	Mobile banking is more convenient to use as compared to Internet banking	.415	0.61
		Eigen value =2.983 , CR =0.859, AVE =0.612		
TB	BB3IB3	I prefer branch banking as compared to Internet banking	.904	0.91
	BB2MB3	I prefer branch banking as compared to mobile banking	.874	0.90
	BB1	Branch banking is preferable because of the services provided by the staff	.787	0.81
	BB4	I am still comfortable in visiting the bank after demonetization?	.689	0.71
		Eigen value =1.821 , CR =0.743, AVE =0.65		
PP	UPI3PP8	I feel more secure while using UPI over Payment portal	.713	0.73
	UPI1PP6	You prefer UPI over payment portal	.707	0.71
	UPI5PP5	Cash back is the strong reason to use payment portals	.655	0.67
	UPI4PP4	Use of payment portals was common even before the demonetization	.461	0.63
	UPI2PP7	Payment portals give me more incentives to use than UPI	.409	0.60
		Eigen value = 1.730, CR =0.793, AVE =0.585		
SI	SI7	Imbalance between rich & poor has been equalized after demonetization	.860	0.88
	SI5	Demonetization is for nation s good than a mere political stint	.828	0.84
	SI4	Problem of corruption cannot be solved just by demonetization	.776	0.79
	SI8	I feel that most of the unaccounted money has been deposited into banks post demonetization	.566	0.61
	SI1	I feel wage earners were misused at the time of exchanging currency from banks	.584	0.60
	SI2	There is a connection between black money & terrorism	.572	0.62
	SI6	Sentiments of daily wage earners are hurt because of increased unemployment in unorganized sectors	.408	0.60

Source: Author Calculation

To assess the CFA, goodness of measurement model fit using SEM were used: $\chi 2$ (p ≥ 0.05); goodness-of-fit index (GFI ≥ 0.90); adjusted goodness-of-fit index (AGFI ≥ 0.80); normed fit index (NFI ≥ 0.90); non-normed fit index (NNFI ≥ 0.90); comparative fit index (CFI ≥ 0.90); standardized root mean-square residual (SRMR}≤0.08); and root mean-square error of approximation (RMSEAo0.10). The result of the SEM demonetization model is presented in table 3, indicating that all the model statistics are better than the recommended values.

Table 3: Model goodness of fit Indices

Desired level:	Results
Ç2, p>=0.05	0.00
NFI>=0.90	0.90
NNFI>=0.90	0.92
CFI>=0.90	0.92
GFI>=0.90	0.91
AGFI>=0.80	0.85
SRMR<=0.08	0.05
RMSEA<0.10	0.06

Source: Author Calculation

SEM model concluded that major impact of demonetization is seen on the IT enabled services followed by the payment portals and the social issues. All these indicate one trend i.e. surge in the use of plastic money in the form of credit and debit cards, activation of deactivated internet banking accounts, increase use of payment portals and other bank apps for doing payments and other transactions. After demonetization traditional banking has taken a setback, as now people prefer to do online transactions and also there is long waiting time in the banks. That is the reason that SEM model have shown the negative impact of demonetization. IT enabled service providers are luring the customers by offers and perks to transact online as much as possible, hence now very few visit the bank for daily transactions. It has also been observed and even felt by the respondents that circulation of black money has reduced after the happening of the event, as not much cash is available in the hand of the general public. In terms of impact on economic concerns, measured by terrorism, black money, inequality of income, unemployment and corruption, respondents believed that there is reduction in these activities after the demonetization. This can be interpreted as there is reduction in black money as compared to earlier status the announcement; better disclosure of income; more transparent business dealings; less holding of huge amounts of cash in hand and others.

To test the last hypothesis and to assess the presence of mediating variables using Structural Equation Modelling, the procedure outlined by

Baron and Kenny (1986), Judd and Kenny (1981), and James and Brett (1984) is followed.

It demonstrates that four necessary conditions should be met to fulfill the mediation requirements. First, the causal variable (demonetization effect) must be significantly associated with the outcome (Cashless Economy) in the *absence* of the mediating variable (Economic Concerns, Step 1). This step establishes that there is an effect that may be mediated, also referred as total effect. The second condition is that the causal variable (demonetization effect) must be significantly associated with the mediating variable (Economic Concerns, Step 2). This step basically treats the mediator as if it was an outcome variable. . The third condition is that the mediating variable (Economic Concerns) must be significantly associated with the outcome (Cashless Economy, Step 3). The Beta value derived from step two and three represents indirect effect. Lastly, the final condition is that when the mediating (Economic concerns) variables are included, the direct relationship between the causal variable (demonetization effect) and the outcome (Cashless Economy) becomes significantly less (partial mediation) or negligible (full mediation, Step 4).

Table 4: Mediation effect

Effect (derived from Step)	Beta	p- value	Remarks
Total Effect, Step 1	.89	.001	Total effect is significant
Indirect Effect, Step 2 and 3	.61*.65 =.396	.001	Significant, mediation exists
Direct Effect, Step 4	.114	.043	Insignificant, Full Mediation exists

Hence the study concludes that demonetization had an immediate and long term impact on the Indian Economy.

There is an immediate impact of the demonetization on the Indian economy as the traditional banking has reduced, payments portals have gained, alternate banking options are being used more widely by the public, there is less liquid cash in the households and the business houses, sales in various sectors and of various products has been affected. Economic concerns of the country have taken a hit on the positive side, as there is less activity in them after demonetization and the impact is also high as seen in the SEM model.

Demonetization is a move towards cashless India and is the long term goal of the government. People have adopted the IT enable services and the payment portals after the demonetization and are thus more willing to transact online as compared to traditional banking. Economic concerns mediate the effect of demonetization on the Cashless economy. In other words, due to demonetization it has been observed that various social issues have got affected which in turn will help in marching towards cashless economy. Economic concerns variable appears to fully mediate the relationship, which implies a significant finding in the demonetization

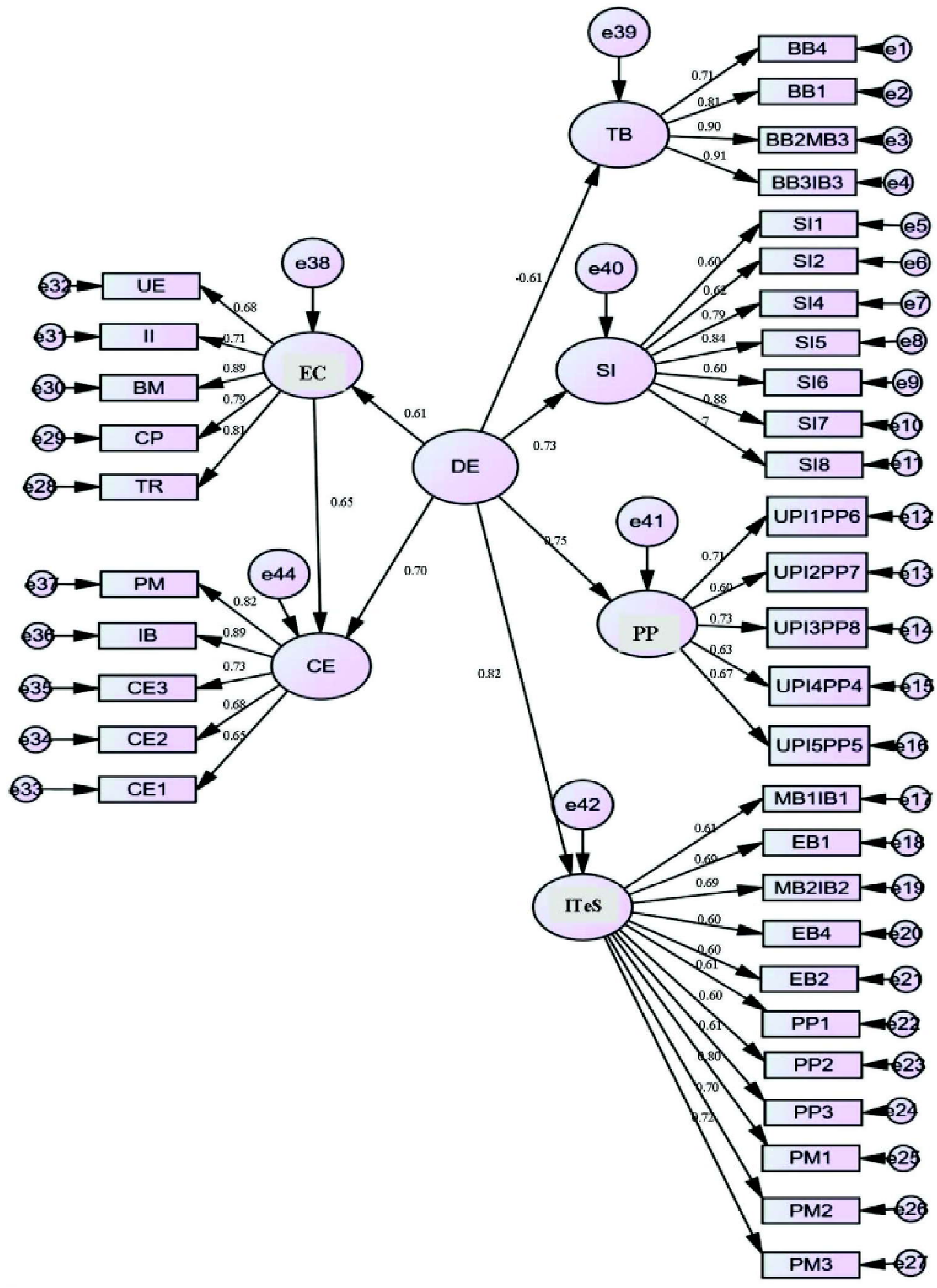

Figure 4: Diagramatic presentation

literature. Hence, it can be said that if demonetization will be successful in eroding the economic constraints of black money, terrorism, inequality of income and tax evasion attitude, moving towards cashless economy would be more effective.

Scope of Future Research

The researchers can develop more on this by way of analyzing the mediating effect of the economic concerns on the move towards cashless economy. Impact of demonetization can be analyzed in the long term as well as in the short term, in order to frame the future policies and better understand the government perspective of taking this action. Impact on various sectors separately can be analyzed in the light of change in their financial dealings, impact on their finances, conducting of the business and others. On the financial side, demonetization impact on the share prices and the foreign investment can be greater future interest as both are majorly dependent on economic happenings like these.

Conclusion

The results suggested that traditional banking was negatively impacted by the demonetization. Thus showing that now people are least interested to visit the banks or reluctant to visit. With this change the payment portals and alternate banking channels have seen a surge in their business and markets. Now more people are moving towards the cashless economy as direct effect of demonetization is seen more on it than on economic concerns. Thus it can be concluded that demonetization has definitely laid the path for cashless economy but still there is long way to go. Various infrastructural changes are required; internet should be made available to each and every one and at each and every place. More incentives or offers are to be given for the e-transactions in order to motivate the people to do more cashless transactions. With stringing of other policies and laws along with demonetization long term effect, it can also be hoped that economic concerns are limited to some extent. Economic concerns variable appears to fully mediate the relationship, which implies a significant finding in the demonetization literature. Hence, it can be said that if demonetization will be successful in eroding the economic constraints of black money, terrorism, inequality of income and tax evasion attitude, moving towards cashless economy would be more effective. Overall study concludes that there is an immediate effect of demonetization on the Indian economy; Demonetization has helped in limiting the economic concerns; Demonetization has moved the Indian economy towards cashless economy; and economic concerns mediate the effect of demonetization on cashless economy.

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