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Integrals Involving Hypergeometric Function of Four Variables

Samta Gulia*, Harish Singh**

Abstract: In this research paper we explain the first main case of Integrals Involving Hypergeometric Function of Four Variables of positive definite matrix of order $m \times m$ which has many other similar sub cases, a comprehensive list of these integrals is given. Proof of all integrals are similar, therefore, detailed proof is given in the case of integral (1) and so rest are quoted directly as below.

Keywords: Hypergeometric function, binomial, exponential, logarithmic and trigonometrical series

1. INTRODUCTION

First to explain this paper, we should know about sequence and series as well as matrix sequence and matrix series. A matrix series is calculated by summation of all elements of matrix sequence. Let A_0 , A_1 , A_2 , ..., A_n be the elements of matrix sequence then $M(A)=\sum_{m=0}^{\infty}A_m$, where M(A) is a matrix series.

If the matrix series is a power series then we will be introduce Hypergeometric series as follows:-

The Power series

is one of the great generality; it includes as particular cases, most of the familiar series like the binomial, exponential, logarithmic and trigonometrical series.

For a=1 and b=c, the series reduces to simple geometrical series. From the fact that the series (1.1.1) is a generalization of the geometric series, it is called the Hypergeometric series. We apply a formula in our result by using Factorial function as we are familiar with the factorial of a positive integer. We write it as

We now define its generalization $(\alpha)_n$ (read as α suffix n) by the equations

$$(\alpha)_n = \alpha \ (\alpha + 1)(\alpha + 2) \dots \dots \dots \dots \dots \dots (\alpha + n - 1), n$$

$$\geq 1,$$

$$=\prod_{m=1}(\alpha+n-1)_n \ and \ (\alpha)_0=1, \alpha\neq 0.$$

This function is $(\alpha)_n$ called the Factorial function. Clearly $(1)_n = n!$

For this factorial function we shall prove the result

$$(\alpha)_{mn} = m^{nm} \left(\frac{\alpha}{m}\right)_n \left(\frac{\alpha+1}{m}\right)_n \dots \dots \dots \left(\frac{\alpha+m-1}{m}\right)_n,$$

Where m is a positive integer and n is a non-negative integer.

Where m is a positive integer and n is a non-negative integer. By using above equations, We have the following formula

$$(\alpha)_{mn=m^{nm}} \prod_{k=1}^{m} \left(\frac{\alpha+k-1}{m}\right)_n \qquad (1.1.2)$$

We can define a general Hypergeometric series in real scalar variable Z as below

$$mF_{n} (\alpha_{1}, \alpha_{2}, \dots, \alpha_{m}; \beta_{1}, \beta_{2}, \dots, \beta_{n}; Z) = \sum_{r=0}^{\infty} \frac{(\alpha_{1})_{r} (\alpha_{2})_{r} (\alpha_{m})_{r} Z^{r}}{(\beta_{1})_{r} (\beta_{2})_{r} (\beta_{m})_{r} r!}$$

where $(\alpha)_0 = 1$ and $(\alpha)_m = \alpha (\alpha+1)....(\alpha+m-1)$. Here α_1 , $\alpha_2.....\alpha_m$ scalars and m upper parameters and $\beta_1, \beta_2\beta_n$ are scalars and n lower parameters. Above expression is defined for two, three and four variables for more see Exton².³. Initially nineteen Hypergeometric functions of four variables were introduced by Exton⁴, then sixty four new Hypergeometric functions was formed. Further all forty integrals of four variables has generalized by Vyas et al¹¹. To

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know more about this see Singh et al⁹ and Chandel et al⁸. In this chapter we will discuss p.d.f of forty integrals.

In this paper we explained first case of Integral involving Hypergeometric Function of four variable of positive definite matrix of order m×m which has many other similar cases, a comprehensive list of these integrals is given. Proof of all integrals are similar therefore detailed proof is given in the case of integral (1) and so rest are quoted directly as below.

We shall take p, q, r and s to be positive integers of the symbols $\Delta(n, a)$ and X_r stand for the sequence of parameters $\frac{\alpha}{n}$, $\frac{\alpha+1}{n}$, ..., $\frac{\alpha+n-1}{n}$ and W_1 , W_2 , ..., W_r

respectively.

2. MULTIVARIABLE FUNCTIONS

The great success of the theory of hypergeometric functions of a single variable has stimulated the development of a corresponding study of the theory in the two and more variables, in 1880, Appell introduced and studied systematically the four functions F₁, F₂, F₃ and F₄ which are the generalizations of the Gaussian hypergeometric functions of two variables. In the year Horn⁵ defined ten hypergeometric function of two variables and denoted them by G_1 , G_2 , G_3 , The confluent forms of the four Appell functions were studied by Humbert⁶. A list of these functions is given in the work by $Erdelv^{1}$.

In a similar manner to the generalization of the single hypergeometric function the functions F_1 to F_4 and their confluent forms were further generalized by kampe de Feriet⁷ who introduced a general hypergeometric function of two variables. The Kampe de Feriet function has further been generalized by Srivastana et al¹⁰. The explanation of Integrals of four variables was introduced by Singh et al⁹. under Statistical Distribution associated with Hypergeometric function of matrix arguments.

3. THE QUADRUPLE HYPERGEOMETRIC **FUNCTIONS**

No specific study has been made for any hypergeometric series of four variables, apart from the four variables Lauricella functions $F_A^{(4)}$, $F_B^{(4)}$, $F_C^{(4)}$ and $F_D^{(4)}$ and certain for their limiting cases, and the extremely generalized multiple hypergeometric functions of Srivastava et al¹⁰. On account of the large number of such functions which arise from a systematic study of all possibilities, Exton restricted here to those functions which are complete and of order second and which involves at least one product of type $(a)_{p+q+r+s}$ in the series representation : p, q, r and s are the indices of quadruple summations.

The notations used for quadruple hypergeometric series are K₁, K₂

$$K_1 (a_1, a_1, a_1, a_2; b_1, b_1, b_1, b_1, c_1, c_2, c_3, c_4; ; x, y, z, t)$$

$$\sum \frac{(a_1, p+q+r)(a_2, s)}{(c_1, p)(c_2, q)(c_3, r)(c_4, s)} x^p \cdot y^q \cdot z^r \cdot t^s$$
(1.3.1)

Continuously like this we can make k_2 , k_3 , k_4 ,

It is presumed that parameters and arguments in above functions are so restricted that the series involved is convergent. Other quadruple hypergeometric series have been given by Sharma and Parihar. They introduced eighty three new hypergeometric series of variable four with the symbols $F_1^{(4)}, F_2^{(4)}, \dots, F_{83}^{(4)}$ to quote we have.

$$F_{1}^{4}(a_{1}, a_{1}, a_{2}, b_{1}, b_{1}, b_{1}, b_{1}, c_{2}, c_{3}, c_{4};x, y, z, t)$$

$$= \sum_{p,q,r,s=0}^{\infty} \frac{(a_{1})_{p+q+r}(a_{2})_{s}(b_{1})_{p+q+r+s}}{p!q!r!s!(c_{1})_{p}(c_{2})_{q}(c_{3})_{r}(c_{4})_{s}} x^{p} y^{q} z^{r} t^{s} \qquad (1.3.2)$$

Continuously like this we can make F_2^4 , F_3^4 , F_4^4 Out of these eighty-three functions nineteen functions had already been introduced by Exton.

The recent work on quadruple hypergeometric series has been done by Chandel et al⁸, they introduced seven more possible hypergeometric functions of four variables and thus completed the set of all possible quadruple hypergeometric series.

4. INTEGRALS OF MATRIX VARIATE HYPERGEOMETRIC FUNCTIONS OF FOUR VARIABLES

$$[1] \int_{0}^{1} |u|^{\alpha \cdot 1} |1 \cdot u|^{\beta \cdot 1} F_{1}(\alpha, 1 - \alpha; \gamma; \frac{u}{2})$$

 $F_1^4 [a_1, \, a_1, \, a_1, \, a_2, \, b_1, \, b_1, \, b_1, \, b_1, \, c_1, \, c_2, \, c_3, \, c_4, \; ; \; w|1\text{-}u|^n, \; x|1\text{-}u|^n, \;$ $v|1-u|^n$, $z|1-u|^n$]du

$$=B^{1}F_{1}^{4}\left[a_{1},a_{1},a_{2},b_{1},b_{1},b_{1},b_{1},c_{1},c_{2},c_{3},c_{4};\Delta(n,\beta),\Delta(\frac{n}{2},\frac{\gamma+\beta}{2}),\Delta(\frac{n}{2},\frac{1+\gamma+\beta}{2})\right]\\\Delta(n,\gamma+\beta),\ \Delta(\frac{n}{2},\gamma+\beta+\alpha),\ \Delta(\frac{n}{2},\frac{1+\gamma+\beta-\alpha}{2});\ w \ge y \ge 1$$
(1.4.1)

Where

 $F_1^4(a_1,\,a_1,\,a_1,\,a_2,\,b_1,\,b_1,\,b_1,\,b_1,\,c_1,\,c_2,\,c_3,\,c_4;\,w,\,x,\,y,\,z)$

$$= \sum_{p,q,r,s=0}^{\infty} \frac{(a_1)_{p+q+r}(a_2)_s(b_1)_{p+q+r+s}}{p!q!r!s!(c_1)_p(c_2)_q(c_3)_r(c_4)_s} w^p x^q y^r z^s$$

so that

 $F_1^4[a_1, a_1, a_1, a_2, b_1, b_1, b_1, b_1, c_1, c_2, c_3, c_4; |1-u|^n w, |1-u|^n x, |1-u|^n y, |1-u|^n z]$

$F_1^4[{{1\!\!-\!ul}^n\!\,w},{{1\!\!-\!ul}^n\!\,x},{{1\!\!-\!ul}^n\!\,y},{{1\!\!-\!ul}^nz}]$

Then a probability density function (p.d.f.) of (1.4.1) is given by :

$$F(u) = \frac{|u|^{\alpha-1}|1-u|^{\beta-1} F_1(\chi_1)F_1^4(\chi_2)}{B^1 F_1^4(\chi_3)}$$

= 0 else where

Where

$$\chi_1 = (\alpha, 1-\alpha, \gamma; \frac{u}{2})$$

 $\chi_2 = [|1 \text{-}u|^n \, w, \, |1 \text{-}u|^n \, x, \, |1 \text{-}u|^n \, y, \, |1 \text{-}u|^n \, z]$

$$\chi_{3} = \begin{bmatrix} a_{1}, a_{1}, a_{1}, a_{2}, b_{1}, b_{1}, b_{1}, c_{1}, c_{2}, c_{3}, c_{4}, ; \Delta(\mathbf{n}, \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta}{2}), \Delta\left(\frac{n}{2}, \frac{1 + \gamma + \beta}{2}\right) \\ \Delta(\mathbf{n}, \gamma + \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta + \alpha}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta - \alpha}{2}); w, \mathbf{x}, \mathbf{y}, \mathbf{z} \end{bmatrix}$$

Proof:-

The L.H.S. in the integrand of the (1.4.1) is the expressing of the quadruple Hypergeometric function in terms of equivalent series. We find that the integral becomes

$$\begin{split} &\int_{0}^{I} \left| u \right|^{\alpha_{-1}} \left| 1 - u \right|^{\beta_{-1}} F_{1}(\alpha, 1 - \alpha; \gamma; \frac{u}{2}) \\ &F_{1}^{4} \left| a_{1}, a_{1}, a_{2}, b_{1}, b_{1}, b_{1}, b_{1}, c_{1}, c_{2}, c_{3}, c_{4}; \left| 1 - u \right|^{n} w, \left| 1 - u \right|^{n} x, \left| 1 - u \right|^{n} y, \left| 1 - u \right|^{n} z \right| du \end{split}$$

Above expression can be written as

$$\begin{split} &\int_{0}^{I} \left| u \right|^{\alpha - 1} \left| 1 - u \right|^{\beta - 1} F_{1}(\alpha, 1 - \alpha; \gamma; \frac{u}{2}) \\ &\sum_{\substack{p,q,r,s=0}}^{\infty} \frac{(a_{1})_{p+q+r}(a_{2})_{s}(b_{1})_{p+q+r+s}}{p!q!r!s!(c_{1})_{p}(c_{2})_{q}(c_{3})_{r}(c_{4})_{s}} \left[1 - u \right|^{n} w \right]^{p} \left[1 - u \right|^{n} x \right]^{q} \left[1 - u \right|^{n} y \right]^{r} \left[1 - u \right|^{n} z \right]^{s} \\ &(1.4.1.1) \end{split}$$

We assume that the series is uniformly convergent in the region of integration, the inversion of integration and summation is infinite, then integral

$$= \int_{0}^{I} |\mathbf{u}|^{\alpha - 1} |\mathbf{1} - \mathbf{u}|^{\beta - 1} F_{1}(\alpha, 1 - \alpha; \gamma; \frac{\mathbf{u}}{2})$$

$$\times \sum_{p,q,r,s=0}^{\infty} A_{r,s}^{p,q} \left[\mathbf{w}^{p} |\mathbf{1} - \mathbf{u}|^{pn} \mathbf{x}^{q} |\mathbf{1} - \mathbf{u}|^{qn} \mathbf{y}^{r} |\mathbf{1} - \mathbf{u}|^{rm} \mathbf{z}^{s} |\mathbf{1} - \mathbf{u}|^{sn} \right] d\mathbf{u}$$
(1.4.1.2)

Where
$$A_{r,s}^{p,q} = \frac{(a_1)_{p+q+r}(a_2)_s(b_1)_{p+q+r+s}}{p!q!r!s!(c_1)_p(c_2)_q(c_3)_r(c_4)_s}$$

$$= \sum_{p,q,r,s=0}^{\infty} A_{r,s}^{p,q} w^p x^q y^r z^s \int_0^1 |u|^{\alpha-1} |1 - u|^{\beta-1} F_1(\alpha, 1 - \alpha; \gamma; \frac{u}{2}) \int_0^1 |u|^{\alpha-1} |1 - u|^{\beta+n(p+q+r+s)-1} F_1(\alpha, 1 - \alpha; \gamma; \frac{u}{2}) du$$

$$= \sum_{p,q,r,s=0}^{\infty} A_{r,s}^{p,q} w^p x^q y^r z^s$$

$$\int_0^1 |u|^{\alpha-1} |1 - u|^{\beta+n(p+q+r+s)-1} F_1(\alpha, 1 - \alpha; \gamma; \frac{u}{2}) du$$
(1.4.1.3)

By using the below formula on evaluating the integral by means of the formula

$$\int_{0}^{1} \left| \mathbf{x} \right|^{\alpha \cdot 1} \left| \mathbf{1} - \mathbf{x} \right|^{\beta - 1} \mathbf{F}_{1}(\alpha, 1 - \alpha; \gamma; \frac{\mathbf{u}}{2}) d\mathbf{x}$$

$$= \frac{\Gamma_{\mathrm{m}}(\gamma) \Gamma_{\mathrm{m}}(\beta) \Gamma_{\mathrm{m}}(\frac{\gamma + \beta}{2}) \Gamma_{\mathrm{m}}(\frac{1 + \gamma + \beta}{2})}{\Gamma_{\mathrm{m}}(\gamma + \beta) \Gamma_{\mathrm{m}}\left[\frac{(\gamma + \beta + \alpha)}{2}\right] \Gamma_{\mathrm{m}}\left[\frac{(1 + \gamma + \beta - \alpha)}{2}\right]} \quad (1.4.1.4)$$

Where $\operatorname{Re}(\alpha)$, $\operatorname{Re}(\beta) > 0$

We see that the value of the integral (1.4.1.3) becomes by using (1.4.1.4)

$$= \sum_{p,q,r,s=0}^{\infty} A_{r,s}^{p,q} W^{p} X^{q} Y^{r} Z^{s}$$

$$\times \frac{\Gamma_{m}(\gamma) \Gamma_{m}(\beta + n(p+q+r+s) \Gamma_{m}\left(\frac{\gamma + \beta + n(p+q+r+s)}{2}\right)}{\Gamma_{m}(\gamma + \beta + n(p+q+r+s) \Gamma_{m}\left[\frac{(\gamma + \beta + n(p+q+r+s) + \alpha)}{2}\right]}$$

$$\times \frac{\Gamma_{m}\left(\frac{1+\gamma+\beta+n(p+q+r+s)}{2}\right)}{\Gamma_{m}\left[\frac{(1+\gamma+\beta+n(p+q+r+s)-\alpha}{2}\right]}$$

$$= \sum_{p,q,r,s=0}^{\infty} A_{r,s}^{p,q} W^{p} X^{q} y^{r} Z^{s}$$

$$\times \frac{\Gamma_{m}(\gamma)\Gamma_{m}[(\beta)+n(p+q+r+s)] \Gamma_{m}\left[\frac{(\gamma+\beta)}{2}+\left(\frac{n(p+q+r+s)}{2}\right)\right]}{\Gamma_{m}\left[(\gamma+\beta)+n(p+q+r+s)\right]\Gamma_{m}\left[\frac{\gamma+\beta+\alpha}{2}+\frac{n(p+q+r+s)}{2}\right]}$$

$$\times \frac{\Gamma_{m}\left[\frac{(1+\gamma+\beta)}{2}+\frac{n(p+q+r+s)}{2}\right]\left[\left(\frac{(1+\gamma+\beta)}{2}\right)\right]}{\Gamma_{m}\left[\frac{(1+\gamma+\beta-\alpha)}{2}+\frac{n(p+q+r+s)}{2}\right]}$$

$$(1.4.1.5)$$

Using the formula;

$$(a)_{r} = \frac{\Gamma(a+r)}{\Gamma(a)} \Rightarrow \Gamma(a+r) = \Gamma(a).(a)_{r}$$
(1.4.1.6)

Equation (1.4.1.5) become by using above formula (1.4.1.6)

$$= \sum_{p,q,r,s=0}^{\infty} A_{r,s}^{p,q} W^{p} X^{q} y^{r} z^{s}$$

$$\frac{\Gamma_{m}(\gamma)\Gamma_{m}(\beta)\Gamma_{m}(\beta)\Gamma_{m}(\frac{\gamma+\beta}{2})\Gamma_{m}(\frac{1+\gamma+\beta}{2})}{\Gamma_{m}(\gamma+\beta)\Gamma_{m}\left[\frac{(\gamma+\beta+\alpha)}{2}\right]\Gamma_{m}\left[\frac{(1+\gamma+\beta-\alpha)}{2}\right]} \times \frac{(\beta)_{n(p+q+r+s)}\left(\frac{\gamma+\beta}{2}\right)_{\frac{n}{2}(p+q+r+s)}\left(\frac{1+\gamma+\beta}{2}\right)_{\frac{n}{2}(p+q+r+s)}}{(\gamma+\beta)_{n(p+q+r+s)}\left[\frac{(\gamma+\beta+\alpha)}{2}\right]_{\frac{n}{2}(p+q+r+s)}\left[\frac{(1+\gamma+\beta-\alpha)}{2}\right]_{\frac{n}{2}(p+q+r+s)}}$$

$$R = \sum_{p=0}^{\infty} \sum_{n=0}^{\infty} (a_{1})_{p+q+r}(a_{2})_{s}(b_{1})_{p+q+r+s} \times$$

$$= B' \sum_{p,q,r,s=0} \frac{(a_1)_{p+q+r}(a_2)_{s}(c_1)_{p+q+r+s}}{p!q!r!s!(c_1)_{p}(c_2)_{q}(c_3)_{r}(c_4)_{s}} \times$$

$$\times \frac{(\beta)_{n(p+q+r+s)}\left(\frac{\gamma+\beta}{2}\right)_{\frac{n}{2}(p+q+r+s)}\left(\frac{1+\gamma+\beta}{2}\right)_{\frac{n}{2}(p+q+r+s)}}{(\gamma+\beta)_{n(p+q+r+s)}\left[\frac{(\gamma+\beta+\alpha)}{2}\right]_{\frac{n}{2}(p+q+r+s)}\left[\frac{(1+\gamma+\beta-\alpha)}{2}\right]_{\frac{n}{2}(p+q+r+s)}} w^{p}x^{q}y^{r}z^{s}$$

Where $B^1 =$

$$B \frac{\Gamma_{\rm m}(\frac{\gamma+\beta}{2})\Gamma_{\rm m}(\frac{1+\gamma+\beta}{2})}{\Gamma_{\rm m}\left[\frac{(\gamma+\beta+\alpha)}{2}\right]\Gamma_{\rm m}\left[\frac{(1+\gamma+\beta-\alpha)}{2}\right]}, B = \Gamma_{\rm m}(\gamma)\Gamma_{\rm m}(\beta)/\Gamma_{\rm m}(\gamma+\beta)$$

Where B is a Beta Function.

Now, if we apply the Formula as describes as (1.1.2)

$$(a)_{k1} = k^{k1} \prod_{j=1}^{k} \left\{ \frac{(a+j-1)}{k} \right\}$$

Where k is a positive integral and non negative, there after little simplification we arrive

at the result [1] is

$$=B^{1}F_{1}^{4}\begin{bmatrix}a_{1},a_{1},a_{2},b_{1},b_{1},b_{1},b_{1},c_{1},c_{2},c_{3},c_{4};\Delta(n,\beta),\Delta(\frac{n}{2},\frac{\gamma+\beta}{2}),\Delta(\frac{n}{2},\frac{1+\gamma+\beta}{2})\\\Delta(n,\gamma+\beta), \quad \Delta(\frac{n}{2},\frac{\gamma+\beta+\alpha}{2}), \quad \Delta(\frac{n}{2},\frac{1+\gamma+\beta-\alpha}{2}); \quad w \ge yz\end{bmatrix}$$
(1.4.1.7)

$$[2] \int_0^1 |u|^{\alpha \cdot 1} |1 \cdot u|^{\beta \cdot 1} F_1(\alpha, 1 - \alpha; \gamma; \frac{u}{2})$$

 $F_2^4 [w|1\text{-}u|^n, x|1\text{-}u|^n, y|1\text{-}u|^n, z|1\text{-}u|^n] \text{ d} u$

$$=B^{1}F_{2}^{4}\begin{bmatrix}a_{1},a_{1},a_{2},a_{2},b_{1},b_{1},b_{1},b_{1},c_{1},c_{2},c_{3},c_{4};\Delta n,\beta\rangle,\Delta(\frac{n}{2},\frac{\gamma+\beta}{2}),\Delta\left(\frac{n}{2},\frac{1+\gamma+\beta}{2}\right)\\\Delta(n,\gamma+\beta),\quad\Delta\left(\frac{n}{2},\frac{\gamma+\beta+\alpha}{2}\right),\quad\Delta\left(\frac{n}{2},\frac{1+\gamma+\beta-\alpha}{2}\right);\quad w \ge y \ge 0$$
(1.4.2)

Where F_2^4 [a₁, a₁, a₂, a₂, b₁, b₁, b₁, b₁, c₁, c₂, c₃, c₄, ; (w, x, y, z)]

$$= \sum_{p,q,r,s=0}^{\infty} \frac{(a_1)_{p+q}(a_2)_{r+s}(b_1)_{p+q+r+s}}{p!q!r!s!(c_1)_p(c_2)_q(c_3)_r(c_4)_s} w^p x^q y^r z^s$$

Then a probability density function (p.d.f.) of (1.4.2) is given by :

$$F(u) = \frac{|u|^{\alpha-1}|1-u|^{\beta-1}F_1(\chi_1)F_2^4(\chi_2)}{B^1F_2^4(\chi_4)}$$

= 0 else where
Where

$$\chi_{4} = \begin{bmatrix} a_{1}, a_{1}, a_{2}, a_{2}, b_{1}, b_{1}, b_{1}, b_{1}, c_{1}, c_{2}, c_{3}, c_{4}, ; \Delta(n, \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta}{2}) \\ \Delta(n, \gamma + \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta + \alpha}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta - \alpha}{2}); w, x, y, z \end{bmatrix}$$
[3]
$$\int_{0}^{1} |u|^{\alpha - 1} |1 - u|^{\beta - 1} F_{1}(\alpha, 1 - \alpha; \gamma; \frac{u}{2})$$

 $F_3^4\left[\text{w}|1\text{-}\text{u}|^{\text{n}},\,\text{x}|1\text{-}\text{u}|^{\text{n}},\,\text{y}|1\text{-}\text{u}|^{\text{n}},\,\text{z}|1\text{-}\text{u}|^{\text{n}}\right]\,\text{du}$

$$=B^{1}F_{3}^{4}\begin{bmatrix}a_{1},a_{1},a_{2},a_{2},b_{1},b_{1},b_{1},b_{1},c_{1},c_{2},c_{3},c_{4};(n,\beta),\Delta(\frac{n}{2},\frac{\gamma+\beta}{2}),\Delta(\frac{n}{2},\frac{1+\gamma+\beta}{2})\\\Delta(n,\gamma+\beta),\ \Delta(\frac{n}{2},\frac{\gamma+\beta+\alpha}{2}),\ \Delta(\frac{n}{2},\frac{1+\gamma+\beta-\alpha}{2});\ w \ge y \ge d(1.4.3)$$

Where

 $F_3^4\,(a_1,\,a_1,\,a_2,\,a_2,\,b_1,\,b_1,\,b_1,\,b_1,\,c_1,\,c_2,\,c_3,\,c_4,\,;\,w,\,x,\,y,\,z)$

$$= \sum_{p,q,r,s=0}^{\infty} \frac{(a_1)_{p+q}(a_2)_r(a_3)_s(b_1)_{p+q+r+s}}{p!q!r!s!(c_1)_p(c_2)_q(c_3)_r(c_4)_s} w^p x^q y^r z^s$$

Then a probability density function (p.d.f.) of (1.4.3) is given by :

$$F(u) = \frac{|u|^{\alpha-1}|1-u|^{\beta-1}F_1(\chi_1)F_3^4(\chi_2)}{B^1F_3^4(\chi_5)}$$

= 0 else where $\chi_{5} = \begin{bmatrix} a_{1}, a_{1}, a_{2}, a_{2}, b_{1}, b_{1}, b_{1}, c_{1}, c_{2}, c_{3}, c_{4}, ; \Delta(n, \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta}{2}), \Delta\left(\frac{n}{2}, \frac{1 + \gamma + \beta}{2}\right) \\ \Delta(n, \gamma + \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta + \alpha}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta - \alpha}{2}); w, x, y, z \end{bmatrix}$

$$[4] \int_{0}^{1} |u|^{\alpha \cdot 1} |1 \cdot u|^{\beta \cdot 1} F_{1}(\alpha, 1 - \alpha; \gamma; \frac{u}{2})$$

$F_4^4 [w|1\text{-}u|^n\!,\,x|1\text{-}u|^n\!,\,y|1\text{-}u|^n\!,\,z|1\text{-}u|^n\,]\,du$

$$=B^{1}F_{4}^{4}\begin{bmatrix}a_{1},a_{1},a_{1},a_{1},b_{1},b_{1},b_{1},c_{1},c_{2},c_{3},c_{4};(n,\beta),\Delta(\frac{n}{2},\frac{\gamma+\beta}{2}),\Delta(\frac{n}{2},\frac{1+\gamma+\beta}{2})\\\Delta(n,\gamma+\beta), \quad \Delta(\frac{n}{2},\frac{\gamma+\beta+\alpha}{2}), \quad \Delta(\frac{n}{2},\frac{1+\gamma+\beta-\alpha}{2}); \quad w \ge y \ge y \end{bmatrix}$$
(1.4.4)

Where

 $F_4^4\,(a_1,\,a_1,\,a_1,\,a_1,\,b_1,\,b_1,\,b_2,\,c_1,\,c_2,\,c_3,\,c_4,\,;\,w,\,x,\,y,\,z)$

$$= \sum_{p,q,r,s=0}^{\infty} \frac{(a_1)_{p+q+r+s}(b_1)_{p+q+s}(b_2)_r}{p!q!r!s!(c_1)_p(c_2)_q(c_3)_r(c_4)_s} w^p x^q y^r z^s$$

Then a probability density function (p.d.f.) of (1.4.4) is given by :

$$F(u) = \frac{|u|^{\alpha-1}|1-u|^{\beta-1}F_1(\chi_1)F_4^4(\chi_2)}{B^1F_4^4(\chi_6)}$$

= 0 else where

Where

$$\chi_{6} = \begin{bmatrix} a_{1}, a_{1}, a_{1}, a_{1}, b_{1}, b_{1}, b_{1}, b_{2}, c_{1}, c_{2}, c_{3}, c_{4}, ; \Delta(n, \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta}{2}) \\ \Delta(n, \gamma + \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta + \alpha}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta - \alpha}{2}); w, x, y, z \end{bmatrix}$$

$$[5] \int_{0}^{1} ||u|^{\alpha \cdot 1} ||1 - u|^{\beta \cdot 1} F_{1}(\alpha, 1 - \alpha; \gamma; \frac{u}{2})$$

 F_5^4 [w|1-u|ⁿ, x|1-u|ⁿ, y|1-u|ⁿ, z|1-u|ⁿ] du

$$=B^{1}F_{5}^{4}\begin{bmatrix}a_{1},a_{1},a_{1},a_{2},b_{1},b_{1},b_{2},b_{2},c_{1},c_{2},c_{3},c_{4};\Delta(n,\beta),\Delta(\frac{n}{2},\frac{\gamma+\beta}{2}),\Delta\left(\frac{n}{2},\frac{1+\gamma+\beta}{2}\right)\\\Delta((\gamma+\beta), \quad \Delta\left(\frac{n}{2},\frac{\gamma+\beta+\alpha}{2}\right), \quad \Delta\left(\frac{n}{2},\frac{1+\gamma+\beta-\alpha}{2}\right); \quad \text{w x y z}\end{bmatrix}$$

(1.4.5)

Where

 $F_5^4\,(a_1,\,a_1,\,a_1,\,a_2,\,b_1,\,b_1,\,b_2,\,b_2,\,c_1,\,c_2,\,c_3,\,c_4,\,;\,w,\,x,\,y,\,z)$

$$= \sum_{p,q,r,s=0}^{\infty} \frac{(a_1)_{p+q+r+s}(a_2)_s(b_1)_{p+q}(b_2)_{r+s}}{p!q!r!s!(c_1)_p(c_2)_q(c_3)_r(c_4)_s} w^p x^q y^r z^s$$

Then a probability density function (p.d.f.) of (1.4.5) is given by :

$$F(u) = \frac{|u|^{\alpha-1}|1-u|^{\beta-1}F_1(\chi_1)F_5^4(\chi_2)}{B^1F_5^4(\chi_7)}$$

= 0 else where Where

$$\chi_{7} = \begin{bmatrix} a_{1}, a_{1}, a_{1}, a_{2}, b_{1}, b_{1}, b_{1}, b_{2}, c_{1}, c_{2}, c_{3}, c_{4}, ; \Delta(n, \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta}{2}), \Delta\left(\frac{n}{2}, \frac{1 + \gamma + \beta}{2}\right) \\ \Delta(n, \gamma + \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta + \alpha}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta - \alpha}{2}); w, x, y, z \end{bmatrix}$$

[6]
$$\int_0^1 |u|^{\alpha \cdot 1} |1 \cdot u|^{\beta \cdot 1} F_1(\alpha, 1 - \alpha; \gamma; \frac{u}{2})$$

 F_6^4 [w|1-u|ⁿ, x|1-u|ⁿ, y|1-u|ⁿ, z|1-u|ⁿ] du

$$=B^{1}F_{6}^{4}\left[\begin{array}{c}a_{1},a_{1},a_{1},a_{2},b_{1},b_{2},b_{3},b_{1},c_{1},c_{2},c_{3},c_{4};\Delta(n,\beta),\Delta(\frac{n}{2},\frac{\gamma+\beta}{2}),\Delta(\frac{n}{2},\frac{1+\gamma+\beta}{2})\\\Delta(,\gamma+\beta),\quad\Delta(\frac{n}{2},\frac{\gamma+\beta+\alpha}{2}),\quad\Delta(\frac{n}{2},\frac{1+\gamma+\beta-\alpha}{2});\quad w \ge y \le 1\end{array}\right]$$

(1.4.6)

Where

 $F_6^4\,(a_1,\,a_1,\,a_1,\,a_2,\,b_1,\,b_2,\,b_3,\,b_1,\,c_1,\,c_2,\,c_3,\,c_4,\,;\,w,\,x,\,y,\,z)$

$$= \sum_{p,q,r,s=0}^{\infty} \frac{(a_1)_{p+q+r}(a_2)_s(b_1)_{p+s}(b_2)_{q+r}}{p!q!r!s!(c_1)_p(c_2)_q(c_3)_r(c_4)_s} w^p x^q y^r z^s$$

Then a probability density function of (1.4.6) is given by :

$$F(u) = \frac{|u|^{\alpha-1}|1-u|^{\beta-1}F_1(\chi_1)F_6^4(\chi_2)}{B^1F_6^4(\chi_8)}$$

= 0 else where

Where

$$\chi_{8} = \begin{bmatrix} a_{1}, a_{1}, a_{2}, b_{1}, b_{2}, b_{3}, b_{1}, c_{1}, c_{2}, c_{3}, c_{4}, ; \Delta(n, \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta}{2}), \Delta\left(\frac{n}{2}, \frac{1 + \gamma + \beta}{2}\right) \\ \Delta(n, \gamma + \beta), \Delta(\frac{n}{2}, \frac{\gamma + \beta + \alpha}{2}), \Delta(\frac{n}{2}, \frac{1 + \gamma + \beta - \alpha}{2}); w, x, y, z \end{bmatrix}$$

Proof of rest of the integral from (1.4.2) to (1.4.6) are similar. Therefore direct results have quoted.

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India's Yes to Megatrends: Issues and Challenges with Special Emphasis on Future of Work and 4th Industrial Revolution

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Abstract: India continues to remain fastest growing major economy in the world and is expected to be one of the top three economic powers of the world over the next 10-15 years, backed by its strong democracy and partnerships. India's GDP is estimated to have increased 6.6 per cent in 2017-18 and is expected to grow 7.3 per cent in 2018-19. The economic scenario is highly conducive for investments. Mergers and Acquisitions (M&A) activities in the country has reached US\$ 82.1 billion in 2018.As per the current union budget, the government is committed towards doubling the farmers' income by 2022. A report states that around 10.8 million jobs were created in year 2017-18. The Government of India, under the dynamic leadership of Prime Minister Sh. Narendra Modi, through various initiatives like Make in India, digital inside, skill development etc, is trying to give boost to the contribution made by the manufacturing sector. India has improved its ranking in the World Bank's 'Doing Business' report in the last few years. India's gross domestic product (GDP) is expected to reach US \$ 6 trillion by FY27 and achieve upper-middle income status on the pillars of digitisation, globalisation, favourable demographics, and the mega reforms. This paper is an attempt to explore India's readiness to reap the benefits of the mega reforms. Also, a comparative analysis of India with other countries to check its position on 'readiness index' for future is done to look into the issues ad challenges. This would involve study of micro and macro factors that would affect the future of work and the Industry 4.0.

Keywords: Mega Reforms, Mega trends, Indian Economy, Future of work, Industrial 4.0, Internet of Things, Augmented Reality

I believe growth should be constant, sustained and inclusive. It's only meaningful if these three things are there. Otherwise they're just economic figures.- Narendra Modi (PM-India)

1. INTRODUCTION

The whole world is looking at Brand India, shining brighter than ever before. We as a nation, continue to take robust steps towards becoming the economic superpower of tomorrow. Various research agencies are focusing on India and the impact of mega reforms initiated by the government of India. The most detailed among these is the Frost & Sullivan's Visionary Innovation Research Program special report on Mega Trends driving India's growth. Their analysis of Mega Trends in India - Macro to Micro Implications of Mega Trends to 2025, has identified 10 key Mega Trends that will accelerate India's growth rate to 10 percent by 2025. Fuelled by a swelling middle class, urbanization, increased infrastructure spending, and improved connectivity; the Indian economy will surge to become the fastest growing economy and the third largest country in the world with a GDP of \$4.6 trillion by 2021.

India is one of the most dynamic markets in the world with unique features and business opportunities. Understanding the Mega Trends in India is important as they not only provide an exhaustive insight into the key drivers shaping India but also offer a visionary outline of the future. By understanding the entire eco system of the Mega Trend, the most important segment of the value chain can be identified, which will redefine the company's competitive position in the market. India's current growth model is not sustainable as the primary sector (Agriculture) employs 51% of the workforce contributes only 12% of the GDP. The industry-related (secondary) sector employs 22% and contributes 28% of the GDP. 27% of the working population employed in the service sector (tertiary) contribute towards 60% the GDP.

During the first half of 2018-19, GDP (at constant 2011-12 prices) grew by 7.6 per cent. India has retained its position as the third largest startup base in the world with over 4, 750 technology startups, with about 1,400 new start-ups being founded in 2016, according to a report by NASSCOM. India's labour force is expected to touch 160-170 million by 2020, based on rate of population growth, increased labour force participation, and higher education enrolment, among other factors, according to a study by ASSOCHAM and Thought Arbitrage Research Institute. India's foreign exchange reserves were US\$ 393.29 billion in the week up to December 21, 2018, according to data from the RBI. In the next sections we focus on understanding the two terms mega-reforms and mega trends in the current economic ecosystem.

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2. MEGA TRENDS AND INDUSTRIAL REVOLUTION 4.0

The vision of Industry 4.0 is being adopted worldwide and it might influence other initiatives and cooperative efforts towards growth. Industry 4.0 is a blend of modern elements like Robotics & Automation, Artificial Intelligence, and Process Digitisation across the business value chain. A key point in this understanding is that the first two dimensions (smart factory and smart products) relate to the physical world, while the other two dimensions (smart operations and data driven services) represent the virtual representation of physical dimensions. So, Industry 4.0 can be called as the fusion of the physical and virtual worlds. There are nine key technological components that progressively make up the foundation of Industry 4.0: Autonomous robots, big data, augmented reality (AR), additive manufacturing, cloud computing, cyber security, IoT, system integration, and simulation.

- Autonomous Robots: They are used to automate production methods across the various sectors and are powered by the concept of Internet of Things (IoT). This connects devices and computer machines to communicate with each other. Materials can be transported across the factory floor via autonomous mobile robots (AMRs), avoiding obstacles, coordinating with fleet mates, and identifying where pickups and drop offs are needed in real-time.
- **Big Data**: Big Data analytics make it possible to identify the performance of an individual component and its operating restrictions in order to prevent future production issues and take preventative action.
- Augmented Reality (AR): Augmented reality grows in use by providing real-time information in an effective manner to allow humans to better integrate and interact with electronic systems.
- Additive Manufacturing: Mostly systems are highly automated within their own operations and struggle to communicate with other systems. Standards and open architecture support the easy transfer of information both to the business and to the customer/end user. This can involve defining common languages for data exchange such as JDF for job information, CxF for colour information etc.
- **Cloud Computing:** The industry has seen a large shift in utilising cloud solutions, and this will continue to grow. The cloud is being used for applications such as remote services, colour management, and performance benchmarking and its role in other business areas will continue to expand. With continuous advancements in

technology, machine data and functionality will only continue to shift towards cloud solutions.

- **Cyber Security:** The security of information becomes paramount as we move away from closed systems towards increased connectivity from the IoT and cloud. Security and reliability enable the successful implementation of a truly modern and digitised production work flow, leveraging all of the benefits of a connected environment.
- **Internet of Things:** (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects and people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.
- **System Integration:** This continues to become increasingly important for small-batch applications or for the production of individual parts or personalised products. This will be used either directly with the customer or by suppliers to improve designs with increased performance, flexibility, and cost effectiveness.
- **Simulation:** The simulations of systems allow assessment of various scenarios. Once the scenarios are assessed, cost effective solutions can be developed, tested and implemented much quicker leading to reduced cost and time to market.

3. FUTURE OF WORK

The world is changing all around us. The work, workplace and workforce are all bound to change because of the industrial 4.0. Technology can help employees focus their time and efforts through analytics and quantified work, which give them the tools to see which efforts payoff, and which were not the best investment of their time. Technology will augment work to help employees accomplish more. How we visualize and interact with our work will change dramatically thanks to virtual reality, advances in tangible telepresence, and other technologies that will have employees working at the speed of thought. Here we try to understand workplace changes - in culture, technology, and processes - and what it means for future workforce. Following is the glimpse into what the future might hold, the who, what, where, when, why, and how of work is changing, and what it means for the future of work.

• **"Who" of Work:** There is a shift in who is working, not just in terms of demographics, but also rise of the gig or freelance economy. Workers are not necessarily full-time employees anymore. In the future as the number of temporary workers and contingent labour increases the culture of the organisations would change.

- "Why" of Work: It is about the growing importance of purpose at work. The future generation employees will be seeking a sense of purpose and meaning from their work Why are they going to work (besides a paycheck)? Why is what they do important?
- "When and Where" of Work: Mobility isn't about a device anymore, it's a style of working. With mobile and cloud capabilities, work now happens anytime, anywhere. Employees don't have to go into the office to work for or be supported by companies. Whether they're full-time employees or members of the gig economy, they can work from their home office, while travelling, or in a coffee shop.
- **"What" of Work:** There is fear around job loss due to automation and technological advancements, but it is coupled with rise of completely new job profiles and opportunities.
- **"How" of Work:** This is going to be the most significant change at the workplace. For most employees, work is constantly coming in faster and from more places. There will be information overload, coming at us from too many places, from too many people, interrupting us too often, asking us to do too much. The future employee will be juggling even more volume.

With the volume and velocity of work, information, and interruptions increasing and accelerating every day, employees need help getting focused. Platforms that help organize work and give it structure can also help employees focus on which efforts matter. Biometrics is another area in which workers might see great advances managing their workload. The use of physiological and psychological data could help us work more effectively. Employees of the future will be more creative as a result of this focused, augmented way of working -- and thanks to technological advances that enable everyone to be a creator, a storyteller, and a producer. Not only will employees have more time and focus to innovate, but perhaps they can start to imagine a world in which technology is useful and beautiful.

4. MEGA REFORMS IN INDIAN ECONOMY

The economic ecosystem of India has undergone extreme overhaul at all levels since the time it gained Independence. Every few years the government comes up with some strong steps to expedite the growth of the economy. The reforms commonly known as economic reforms has completely changed the way Indian economy is now being perceived by other nations. We recently celebrated the twenty fifth anniversary of the mega economic reforms kick-started in 1991. The economy received a massive boost after it was liberalised and changes were brought in the trade regime. These reforms gave more power to the consumers and reduced poverty significantly. The economy became more customercentric with prime focus on services. Below we analyse the recent major reforms that changed the Indian economy:

1. Demonetisation: Demonetisation was announced on November 8 in 2016. Prime Minister Narendra Modi had outlined three broad objectives to fight black money, corruption and terror funding. Demonetisation has earlier occurred two times in the Indian economy, both times the goal was to combat tax evasion through black money. The first demonetisation occurred in 1946, during the rule of the interim government under Jawaharlal Nehru. It was undertaken to target the tax-evading business corporations which were hiding the huge profits they had made by supplying the Allied powers in World War 2. The second demonetisation took place in 1978 under the Janata Party government that had come into power after the defeat of the Congress party in the elections just after the Emergency of 1975-77. The objective was, again, to combat tax evasion through black money. One of the main reasons for implementing demonetisation was to initially promote a 'lesscash' and then a cashless society. This would change spending habits and ultimately result in more growth. Due to the unintentional cash shortages immediately after demonetisation, people were forced to use e-wallets, credit and debit cards and other methods of cashless transactions. Although this was not a smooth transition by any standards, it did help to bring about a 'less-cash' society and a change in spending habits. However, it is important to note that the great surge in use of cashless transactions declined soon after reaching its peak levels in December, 2016. Although India did not become an entirely cashless society, it did become a 'less-cash' society.

2. GST: India is transforming rapidly. Many initiatives are taken by our government to make our country better and one of such initiative is GST bill of 2016. The main objective of the GST is to eliminate excessive taxation. GST is a uniform indirect tax levied on goods and services across a country. Many developed nations tax the manufacture, sale and consumption of goods using a single, comprehensive tax mechanism. GST is a simple tax system. Now, the taxpaver won't be confused about the what type of taxes he/she should pay. There will be only one tax, which is GST. The agenda of the government behind introducing GST itself is "One Nation, One Tax". GST Act is going to ease the stress of taxes from the Indian businesses and manufacturers. They now have to pay lower taxes, and it will surely increase the scope of a better business environment and flexibility. India is economically growing at a lightning speed. The developed countries like Sweden, Denmark, Germany, Switzerland, Japan - have moved to a common GST (Goods and Service Tax) to provide one common window for tax collection. So now GST has become a standard for the global business and India being progressing towards the development had to

embrace a uniform, sophisticated tax system which is GST. GST will surely **increase the number of taxpayers**, which will in turn help to reduce the tax rates as more people are paying taxes. **Removal of the Cascading Tax Effect** is another advantage of GST. In simple words "cascading tax effect" means a tax on tax. In previous tax system, the tax was levied on goods at each stage of the production process up to the point of being sold to the final consumer. A cascaded tax is a type of turnover tax with each successive transfer being taxed inclusive of any previous cascade taxes being levied this creates a burden of taxes on the end user. It is easy to create tax challan and pay it online on GST portal, tax file can be signed digitally. It is regularly being revised, so as to incorporate the changes suggested by public after implementation.

3. FDI Policy: From the beginning of 2015, the government announced fresh liberalisation of FDI rules throwing open food retail, airlines, private security firms, and defence companies to higher overseas investment. Other sectors in which FDI norms have been relaxed include e-commerce in food products, broadcasting carriage services, private security agencies and animal husbandry. Here's a look at the major changes in FDI:

- Up to 100% FDI in defence sector, brownfield airport projects, civil aviation
- Up to 74% FDI in brownfield pharmaceuticals under automatic route
- FDI up to 49% in civil aviation (automatic route), beyond 49% through govt approval
- Local sourcing norms for FDI in single brand retail for products having "state of art" and "cutting edge" technologies
- 100% FDI under automatic route for cable networks, DTH and mobile TV

Foreign investment is considered crucial for India, which needs around \$1 trillion for overhauling its infrastructure sector such as ports, airports and highways to boost growth. A strong inflow of foreign investments will help improve the country's balance of payments situation and strengthen the rupee value against other global currencies, especially the US dollar.

4. Black Money (Undisclosed Foreign Income and Assests) and Imposition of Tax Bill: In 2015, Government passed a bill to deal with black money stashed abroad, and also announced that a separate Benami Bill to deal with domestic black money was being prepared. The bill provides for rigorous imprisonment of up to 10 years for offenders. Earlier, piloting the Undisclosed Foreign Income and Assets (Imposition of Tax) Bill, 2015, Finance Minister Arun Jaitley said there would be short compliance window for persons having undisclosed income abroad to come clean by paying 30 per cent tax and 30 per cent penalty. Once the compliance window closes, anyone found having undeclared overseas wealth would be required to pay 30 per cent tax, 90 per cent penalty and face criminal prosecution.

5. Economic liberalisation in 1991: The major economic reforms in India were initiated in 1991 which intends the policy shift of government from state domination in economy to declining role of state and expanding role of private sector in economy. The reform process was started in response to fiscal and balance of payment crisis. Originally reforms were initiated in 1980s in the form of limited deregulation and partial liberalisation of some regulations but the reforms initiated in 1990s were broad and more rooted. The reforms in 1991 were initiated in the field of industry, trade, investment and later to agriculture sector. The economic liberalisation process that began in 1991, had the goal of making the economy more market-oriented and expanding the role of private and foreign investment. Specific changes were incorporated which include - reduction in import tariffs, deregulation of markets, reduction of taxes, and greater foreign investment. Liberalisation has been credited by its proponents for the high economic growth recorded by the country in the 1990s and 2000s. Ever since the liberalisation process, the Indian markets opened to both private and public sector companies. India started carrying out businesses with foreign establishments as well. Putting an end to "Licence Raj" was one of the chief goals of the 1991 economic liberalisation process.

Two major steps which brought big changes in the economy before adoption of mega reforms 1991 are:

1. Abolishing Privy Purse in India in 1971:Privy Purse was a form of payment made to the royal families of all erstwhile princely states as it was made a part of their agreement in order to integrate with India in 1947, and later to merge their states in 1949, whereby they lost all ruling rights. Privy Purse was discontinued under Prime Minister Indira Gandhi's regime, after the 26th Amendment in 1971, by means of which all their privileges and allowances from the Centre were rendered invalid. If Privy Purse continued, our tax money would have gone to the royal families for no reason.

2. Nationalisation of banks (Banking Reforms) of 1969:Owing to growing demand to nationalise banks in 1969, Prime Minister Indira Gandhi took a major step in the history of independent India by nationalising 14 banks. Due to unavailability of enough credit, and the sector was not working rapidly enough, the decision was taken. Because of nationalisation of banks, today, we are witnessing a surge in private players entering the banking sector and setting up Non-

Banking Financial Institutions (NBFCs) and Banking Financial Institutions (BFIs).

5. INDIA'S YES TO MEGA REFORMS: CURRENT STATUS

India will be at the center of global business and commercial activity with a 1.4 billion strong population by 2020. It will have the largest projected working-age and youngest population by that period, with 535 urban dwellers, 864 million middle class consumers, and more than a billion Gen Y individuals. Other Mega Trends such as infrastructure investment and low-cost innovative business models will help the country achieve industrial status, and a gross domestic product (GDP) of more than 10 percent, a far cry from its agrarian beginnings. With the improvement in the economic scenario, there have been various investments in various sectors of the economy. The M&A activity in India increased 53.3 per cent to US\$ 77.6 billion in 2017 while private equity (PE) deals reached US\$ 24.4 billion. Some of the important recent developments in Indian economy are as follows:

- Exports from India increased 15.48 per cent year-on-year to US\$ 351.99 billion in April-November 2018.
- Nikkei India Manufacturing Purchasing Managers' Index (PMI) stood at 53.2 in December 2018, showing expansion in the sector.
- Income tax collection in the country reached Rs 2.50 lakh crore (US\$ 35.88 billion) between April-November 2018.
- Companies in India have raised around US\$ 5.52 billion through Initial Public Offers (IPO) in 2018 (up to November).
- India's Foreign Direct Investment (FDI) equity inflows reached US\$ 389.60 billion between April 2000 and June 2018, with maximum contribution from services, computer software and hardware, telecommunications, construction, trading and automobiles.
- India's Index of Industrial Production (IIP) rose 5.6 per cent year-on-year in April-October 2018.
- Consumer Price Index (CPI) inflation rose moderated to 2.33 per cent in November 2018 from 3.38 per cent in October 2018.
- Around 10.8 million jobs were created in India in 2017.
- India has improved its ranking in the World Bank's Doing Business Report by 23 spots over its 2017 ranking and is ranked 77 among 190 countries in 2019 edition of the report.
- India is expected to have 100, 000 startups by 2025, which will create employment for 3.25 million people and

US\$ 500 billion in value, as per Mr. T V Mohan Das Pai, Chairman, Manipal Global Education.

- The World Bank has stated that private investments in India is expected to grow by 8.8 per cent in FY 2018-19 to overtake private consumption growth of 7.4 per cent, and thereby drive the growth in India's gross domestic product (GDP) in FY 2018-19.
- India is expected to retain its position as the world's leading recipient of remittances in 2018, with total remittances touching US\$ 80 billion, according to World Bank's Migration and Development Brief.

This year's budget will focus on uplifting the rural economy and strengthening of the agriculture sector, healthcare for the economically less privileged, infrastructure creation and improvement in the quality of education of the country. As per the budget, the government is committed towards doubling the farmers' income by 2022. A total of Rs 14.34 lakh crore (US\$ 196.94 billion) will be spent for creation of livelihood and infrastructure in rural areas. Budgetary allocation for infrastructure is set at Rs 5.97 lakh crore (US\$ 81.99 billion) for 2018-19. All-time high allocations have been made to the rail and road sectors. India's unemployment rate is expected to be 3.5 per cent in 2018, according to the International Labour Organisation (ILO).

Numerous foreign companies are setting up their facilities in India on account of various government initiatives like Make in India and Digital India. The Government of India, under the Make in India initiative, is trying to give boost to the contribution made by the manufacturing sector and aims to take it up to 25 per cent of the GDP from the current 17 per cent. Besides, the Government has also come up with Digital India initiative, which focuses on three core components: creation of digital infrastructure, delivering services digitally and to increase the digital literacy. Some of the recent initiatives and developments undertaken by the government are listed below:

- National Institute for Transforming India (NITI) Aayog released a strategic document titled 'Strategy for New India @75' to help India become a US\$ 4 trillion economy by FY23.
- The Government of India is going to increase public health spending to 2.5 per cent of GDP by 2025.
- The Government of India released the maiden Agriculture Export Policy, 2018 which seeks to double agricultural exports from the country to US\$ 60 billion by 2022.
- Around 1.29 million houses have been constructed up to December 24, 2018, under Government of India's housing scheme named Pradhan Mantri Awas Yojana (Urban).

- Village electrification in India was completed in April 2018.
- Around 22.43 million households have been electrified up to December 17, 2018 under the Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA). Moreover, 100 per cent household electrification has already been achieved in 25 states, as of December 2018.
- Prime Minister's Employment Generation Programme (PMEGP) will be continued with an outlay of Rs 5, 500 crore (US\$ 755.36 million) for three years from 2017-18 to 2019-20, according to the Cabinet Committee on Economic Affairs (CCEA).
- The target of an Open Defecation Free (ODF) India will be achieved by October 2, 2019.
- GOI to invest Rs 2.11 trillion (US\$ 32.9 billion) to recapitalise public sector banks over the next two years and Rs 7 trillion (US\$ 109.31billion) for construction of new roads and highways over the next five years. As of November 2018, Rs 82, 000 crore (US\$ 11.75 billion) has already been infused and the government is planning to infuse Rs 42, 000 crore (US\$ 6.02 billion) more by March 2019.
- The mid-term review of India's Foreign Trade Policy (FTP) 2015-20 has been released by Ministry of Commerce & Industry, Government of India, under which annual incentives for labour intensive MSME sectors have been increased by 2 per cent.

India is also focusing on renewable sources to generate energy. It is planning to achieve 40 per cent of its energy from non-fossil sources by 2030 which is currently 30 per cent and also have plans to increase its renewable energy capacity from to 175 GW by 2022.

6. COMPARATIVE ANALYSIS OF INDIA'S READINESS FOR FUTURE WITH OTHER COUNTRIES: NETWORKED READINESS INDEX

Industry 4.0 has just started making inroads the world economies changing the dynamics of competition among nations. Developed by the World Economic Forum, the Networked Readiness Index (NRI) measures the capacity of countries to use ICTs for increased competitiveness and wellbeing. It is now emerged as a key indicator of how countries are doing in the digital world. The significance of NRI is that several basic infrastructure facilities, policy frameworks etc, are to be built to achieve the benefit of digital revolution. The NRI measures the level of preparedness of countries on this. It depends on whether a country possesses the drivers necessary for digital technologies to meet their potential, and on whether these technologies are actually having an impact on the economy and society. The framework translates into the NRI, a composite indicator made up of four main categories (subindexes), 10 subcategories (pillars), and 53 individual indicators distributed across the different pillars. The main categories are:

Environment subindex: Political and regulatory environment (9 indicators), Business and innovation environment (9 indicators). **Readiness subindex:** Infrastructure (4 indicators), Affordability (3 indicators), Skills (4 indicators). **Usage subindex:** Individual usage (7 indicators), Business usage (6 indicators), Government usage (3 indicators). **Impact subindex:** Economic impacts (4 indicators), Social impacts (4 indicators)

India's rank on the Network Readiness Index in 2013 was 61. In 2016, India ranked 91 out of 139 countries. At 91, India was ahead of Pakistan (110) and Bangladesh (112), but behind Sri Lanka (63), Malaysia (31), and China (59). Singapore topped the rankings for second year in a row. The US was placed at 5th position. The WEF's report makes it very clear that there is huge gap between developed nations and developing ones because of many factors, and hence the loss of position by India.



Fig. 1. Drivers and Impact of various factors on readiness of the nation

(Source: World Economic Forum)

The six components of readiness model are elaborated below -

1. Strategy and organisation: Industry 4.0 offers a new opportunity for developing altogether new business models apart from improving the current processes through the use of digital technologies. The current openness and the cultural interaction should be re-examined to compare the existing systems with the future requirements.

2. Smart factory: The smart factory is a production environment in which the production systems and logistics

systems primarily organise themselves without human interventions. It relies on cyber physical systems (CPS) which links the physical and virtual worlds by communicating through an IT infrastructure/IoT.

3. Smart operations: The technical requirements in production and its planning which are necessary to realise the selfcontrolling work piece are known as smart operations. Industry 4.0 readiness for smart operations can be determined by information sharing, cloud, cyber security and autonomy of the processes.

4. Smart product: Smart products are the foundation for the 'smart factory' and 'smart operations' and are critical components of a unified 'smart factory' facilitating automated, flexible and efficient production. Physical components are equipped with technical components such as sensors, RFID, communication interface etc. to collect data on their environment and their own status.

5. Data driven services: Companies evolving from selling products to providing solutions substantiates data driven services which are used to align future business models to enhance the benefit to customers. The physical products themselves must be equipped with physical IT so they can send, receive, or process the information needed for the operational processes.

6. Employees: Employees readiness in this dimension can be determined by analysing employee's current skills and the ability to acquire new skills as employees are most affected by the changes in technology in an organisation; directly impacting their work environment. This requires them to acquire new skills to get well equipped with the digital workplace.

India had made improvements in political and regulatory environment and in its business and innovation environment. But inadequate digital economy infrastructure and low levels of skills among the population remain the main hurdles for widespread ICT adoption, particularly for individual usage. Similarly, several economies have improved performance quickly. As a result, India's ranking has come down by two places compared to the previous year. The report identifies India's weak areas. Around thirty percent of Indian population is illiterate and a similar share of youth is not enrolled in secondary education. The internet penetration is just 15% and broadband remains a luxury (5.5% people using it). Basic infrastructure is insufficient for bulk of the rural areas. To improve the situation, government launched the programme of Digital India that tries to promote digital infrastructure, raise digital literacy, and to provide online services to citizens. Deloitte believes there are three main forces driving the future of work: technology, demographics, and the power of pull.

Technology like Artificial intelligence, robotics, sensors, and data have created entirely new ways of getting work done that are, in some cases, upending the way we use and think about our tools and how people and machines can complement and substitute for one another. Demographically there are longer lives, growth of younger and older populations, and greater diversity. In most places, people are living longer than ever, and overall, the population is becoming both older and younger, with individual nations becoming more diverse. The prospect of older generations working for longer periods as their physical capability to remain employed improves, could affect the pace at which younger talent and ideas renew organizations. Also, the power of pull is the customer empowerment and the rise of global talent markets. Individuals and institutions can exert greater "pull"-the ability to find and access people and resources when and as needed. Institutions and prospective workers alike now have access to global talent markets, enabled by networks and platforms opening up new possibilities for the way each interacts with the other.

India is expected to be the third largest consumer economy as its consumption may triple to US\$ 4 trillion by 2025, owing to shift in consumer behaviour and expenditure pattern, according to a Boston Consulting Group and PwC reports; and is estimated to surpass USA to become the second largest economy in terms of purchasing power parity (PPP) by the year 2040.

To Conclude,

India does not need to become anything else. India must become only India. This is a country that once upon a time was called the golden bird. (Sh. Narendra Modi Prime Minister - India)

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Impact of Demonetization: Structured and Unstructured Sector

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Abstract: The proclamation made by Prime Minister of India Sh. Narendra Modi on 8th of November that keeping the notes of Rs.500/1000 is no longer legal makes every citizen motionless, it is the plan of Demonetization by the government to restrain unlawful transaction and moves and to control the unfavorable expansion of black money, corruption and forged currency flow. Arguments put up in favor of demonetization is that the money that would be put out, would be "black money" and hence, should be fairly put out to place correct the vicious induced structure in the economy (Singh and Singh, 2016). While the information or the reality is not available to anybody, it would be unwise to say that this is the only option. Therefore, it is essential to assess the short run and medium-term effects that such a blow is expected to traumatize the economy and the extraordinary effect on the sluggish growth of Indian Economy .Demonetization has awfully affected some of the important sectors of our country like Real Estate, Agriculture, Healthcare, Finance. Automobile. Hospitality, Manufacturing. Construction, Aviation etc. Further, the effect of such a step would differ depending on the level to which the government chooses to demonetize. This paper elucidates the effect of such a step on the accessibility of advances, outlays, and government capital and its proceedings. It also highlights the short and long-term economic effects of demonetization on the different sectors of our country.

Keywords: Demonetization, electronic banking transactions, Loans, and tax avoidance

1. INTRODUCTION

Demonetization of high value notes of Rs.500 and 1000 by the government has greatly affected the financial environment. From the midnight of 8th November2016 this concluded to be the lawful submission. People have been directed to exchange their notes by 30^{th} December2016. Under this plan the government means the exclusion of the current notes from the passage and a steady alternate with a new set of currency or notes. Since people are bounded to withdraw the cash from the bank which cause the significant constrict in cash circulation. With the passage of time this constrict may get back to the

tranquil mode. The government proposed few reasons for demonetization like to emasculate the black money, to control the corruption, to keep a check on the forged notes which are adding to terrorism. To keep the pre-demonetization funds delivery remain unchanged in new system, there are two possible ways- first there would be mediators who are having the cash and which they cannot reveal and that money cannot be deposited in banks and hence such money will be snuff off as it cannot be put back. Second, the only the part of money which was in passage might be reinstate and remnant would be obtained as electronic money. This could help to enhance the cashless mode of transaction. There will be short term and medium term effects on the economy by these two ways. To identify the consequences of this in the economy we have to keep an eye on the ways cash transactions are done. In economy mostly operations are done in the form of accounted operations, unaccounted operations, operations of unofficial sectors and unlawful operations. All these sectors are related to whether they have tax liability or not. The unlawful cash requirements like for bribes, inducements, corruption, to spend more than the approved limits. If at any given point of time one would spot the place of cash, then according to these sectors, it is not easy to foresee that what would be the division of cash, but it would be harmless to say that each of these elements would be stand in the picture. (Report on Fifth Annual Employment and Unemployment Survey (2015-16)

2. DEFINITION OF 'DEMONETIZATION'

Demonetization is the act of stripping a currency unit of its status as legal tender. It occurs whenever there is a change of national currency: The current form or forms of money is pulled from circulation and retired, often to be replaced with new notes or coins. Sometimes, a country completely replaces the old currency with new currency. The opposite of demonetization is remonetization, in which a form of payment is restored as legal tender (**Morewedge, 2007**). Demonetization is the method of extraction or pulling of a current form of currency from circulation. Demonetization occurs whenever there is a change in the national currency.

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The new currency unit replaced the old unit of currency. It may be either introduction of new notes or coins of the same denomination or full replacement of the old denominations with the new denomination and which is carried out to trap the black market. The verdict of this study shows that, with the demonetization strategy India will attain a considerable growth and it will create a great positive effect on the entire economy.

OBJECTIVES OF THE STUDY

The first and foremost thing is to clearly define the objectives which may help the reader the properly understand the study. Some of the objectives of this study are:

- i) To recognize the both constructive and unconstructive impacts of demonetization.
- ii) To spot out those sectors, which are adversely impacted by demonetization.
- iii) To check out the outlook of the people regarding the custody of their money.

3. IMPACT OF DENOMINATION OF CURRENCY NOTES ON SOME SECTORS

In India there are few sectors that would be immensely influenced by the ban on notes of Rs 500 and Rs 1,000:

a) E-business setup

The consumers who are tech savvy favor to make their payment by using different modes like online transfers through Pay tm, Net Banking or through E-wallets etc. Ecommerce industry is growing at a very fast rate, now a day's people don't like to pay in cash but on other hand we cannot overlook those people who are not comfortable in using virtual cash. This may influence sales to a trivial extent. Taking into consideration regarding the growth of E-business or Ecommerce setups in India, it is believed that almost all the consumers will get familiar with electronic payment.

b) Cab startups:

The cab startups in India have their own wallet system and the demonetization does not affect it much. Lots of people are using smart phones and through e-wallets they make their cab payments.

c) Wallet startups:

The income of these startups significantly increased and all this is due to the ban on currency notes of Rs.500 and Rs 1000.Every person whether a teenager of middle aged will be going to use the new apps in their smart phones for epayments in subsequent days as these E-wallets setups are giving the good cash back offers like Pay tm is giving cash back to its customers, this is to magnetize people but sooner or later these units will trim down their cash back offers to zero.

d) Foodstuffs or groceries delivery startups:

The new food delivery start ups help the customers to pay through any mode debit card, credit card, net banking etc for their food orders. This make the customers to go cashless and the demonetization process does not upset theses startups like Food panda, Dominos, Café coffee Day etc. Now the food is available at your doorstep or at counter with ease of payment.

e) Information technology startups: The work done by IT companies are par excellent and the assistance provided by these companies to the consumers are greatly priced but the forbidden of the notes of Rs 500 and Rs 1000 does not affect the IT Firms much because their payments are generally done through Cheques, NEFT, Bank Drafts, RTGS etc.

f) Accounting and Economic Advisory startups:

They mostly prefer accepting payments other than physical cash. It goes without saying that they would function smoothly irrespective of such massive pan India-based economic policy adopted by the Central Government.

4. IV. IMPACTS OF DEMONETIZATION IN INDIA

a)Black Money: Demonetization pulled out the accumulated black money from our system which was stock up in the form of Rs 500 and Rs 1000 notes. The government has calculated that with the cancellation of Rs500 and Rs 1000 notes the black money around 4.5 lakh crore will get revealed (**Gajjar**, **2016**)

b)Terror Funding: The demonetization step by the government has greatly affected the terror funding set-ups in North Eastern States and Jammu and Kashmir and forbidding the notes of Rs 500 and Rs.1000 broke the (FICN) Fake Indian Currency Network and this surprise attack intensely disturb this whole Network. (www.moneycontrol.com)

c)Real estate may spot major track improvement: Real prices were shooting up and black money is responsible for this price hike as the cash is the important element in resale transactions. Real estate is also likely to be affected by the Demonetization step and now the real estate prices will fall down quickly.

d)Political parties in crisis ahead of polls: The demonetization had cramped all the political parties as elections in large states are approaching and the currency notes of Rs 500 and Rs 1000 are declared illegal from midnight. This move has gave the shock to political parties because Cash contribution or gift are the major part of

Election Management and with this cash crisis all the parties have to administrate and manage their campaigning plans accordingly.

e)Stepping towards digital imbursements: After Demonetization people have changed a lot now the payments are likely to be done through E-Wallets like Paytm as they are getting additional cashback offers. This whole change will make India more smarter.

f)**Temporary chaos and confusion: D**ue to the forbidding of currency notes and shortage of lower denomination people are facing problems but that too for a short period.

g) After disallowing Rs 500 & 1000 Rs Notes: Presently there is lot of discussion on how the combination of twosome first demonetization step and second the Trump's victory will affect the real estate sector. This has affected the share market, NIFTY has fell down by 12%. While the leaders and the future indicators were intimating the depressing days for Indian Real Estate Business.

Let's look at how....

a) **Commercial real estate:** Office and Industrial Leasing transactions are least affected as the cash element does not play an important role in such dealings.

b)Residential real estate: The chief or leading sales section is greatly influenced by housing finance group. Big cities are partially affected but the section which involves the cash component like resale market will pass through critical situation and will definitely get a blow.

c)Real estate investment markets: Projects could be extended as due to non availability of funds and this in fact brings out better prospects for institutional finance. The market seems to be more alluring and transparent to Debt groups, FDI etc. Even the financial institutions like banks start providing capital for land dealings or transactions and thus slow down land prices. (Kumar and Kumar, 2016)

d)Retail real estate:Due to lessen cash dealings retailers could discover slight effect on their business in short and medium term. The effect on their business in the short-tomedium term is due to reduced cash transactions. The luxury or opulence sector is expected to be smacked because of great frequency of cash receipt. However, it is saved by the E-Payments system. On the whole there seems to be no risk for the Indian Retail Agency.

There is an alarming situation for those developers who are wholly reliant on cash transactions. The effect of RERA will be added control in the industry, which in long term will be excellent for its health. The effect of demonetization is very slight in Hotels and Hospitality-related real estate in the structured sector

5. THE IMPACT OF DEMONETIZATION ON STRUCTURED SECTORS

Structured sectors are well-known with banking and other official procedures, rules and regulations. But the unstructured sector which includes farmers and laborers will have to undergo a bad experience as they mostly done their savings in currency notes. The demonetization effect in hospitality industry is more in short and medium term but it has positive effects on its growth and development in long term. As the peak season for hospitality sector to earn great profits is expected to be from October to March but due to the non availability or shortage of currency people are postponing their tours or searching those hospitality products who are accepting the E-Payments. People are now switching to the structured sectors. The demonetization has optimistic or constructive impacts on Structured Hospitality Sector in India as they are open to any electronic mode of payment. Hospitality and Tourism industry is very big; building the big hotels does not attract customers. The inability to attract customers due to non availability of payment option, the unstructured sectors bears the most. The Suppliers of unpreserved goods are also affected by the demonetization process because they do dealings in cash. It also affects the stock of hotels. The lesser availability of cash lead to the retarded growth of hotel industry. The cash only unstructured sectors influenced the customers to move towards the structured sectors. The hospitality and tourism sectors are essentially attached to the fiscal conditions of any country. The demonetization process offered improvement to the macro economy of the country will efficiently dribble down to the industry (Kumar and Sharmila, 2016). Gradually, the conditions will improve and the fear will fade away from all the sectors whether its tourism and hospitality or real estate.

6. THE EFFECT OF DEMONETIZATION ON UNORGANIZED SECTOR IN INDIA.

In the November month Demonetization of higher denomination has crashed the unstructured sector. The structured sector is slightly impacted from this move due to lack of cash but the unstructured sector is badly affected. The business analyst is of view that "The unstructured sector is likely to suffer heavy burden of demonetization. "Most of the industries got affected due to daily load of liquidity required to run the business." (**Report of National Commission on the Enterprise in the Unorganized Sector, 2009**)

7. EFFECT ON VARIOUS ECONOMIC ENTITIES

There are some of the major sectors of the economy where cash dealing play an important role like Construction, Real

Estate, Tourism, Gold and informal sectors. Cash is the soul of informal sector whereas cash dealing is doubtful in gold and real estate. For instance, the small farmers sell off their produce in local fruit and vegetable market like Mandi and can see the instant effect. With this unexpected demonetization step there is a unfavorable effect on this sector of economy and it will observe an instant action though such phase is for a short period and will fade away soon. Once the new currency notes comes in circulation these disturbances regarding the non availability of cash in certain units will peter out. These Units/ sections are:

- Services Sectors
- Households
- Agriculture and related sectors
- Small traders
- Retail outlets
- Professionals like doctors, carpenters, utility service providers, etc.
- SME

The industrial operations concerned with these units are very frequent and that need cash for such dealings, therefore, these units have major effect of demonetization and such an effect will get cooled up once the new currency notes comes in circulation.

8. DEMONETIZATION AND ITS IMPACT ON GDP GROWTH

Different rating agencies gave their estimation regarding the GDP growth. Several are with the points that in 2016-17 GDP growth turns down by 40 basis point and with a small amount in 2017-18.Globally favorable mode of payment or dealing in cash but ambiguity is the biggest problem in cash transactions. In India the percentage of currency to GDP in the year 1975-2000 is around 8.3% and after the year 2001 it is increased by1.5% and rose to 10% and in the year 2015-16 there is an incisive rise in the percentage of currency to GDP but in last three years a setback and depressing drift is observed. Cash played a dominant role in the informal sectors and they are highly disturbed by this demonetization step. On one hand there is a poor growth in savings but on other hand this sector adds 40% of capital formation (**www.livemint.com**)

Due to Demonetization of high denomination notes there is very less currency in circulation and this has disturb the other sectors households etc. The addition of cash in the very low and this had a great impact in both formal and informal sector incomes but the adversely hitted sector is informal/unstructured sector.

9. CONCLUSION

Nation's financial system comprises of big industrial organizations which act as its significant part. Due to such

unexpected move small sectors are adversely impacted rather than large sectors. We have seen the slow economic pace but it is likely of recovery in the coming time. To curb the black money in India, government has took the most important step of Demonetization of higher denominations. This step impacted the general public and various sectors especially the unstructured sector a lot but for the better concern of the country such a step is unavoidable. This step does not fully wipe out the black money but yes to somewhat large level it has effect the black money

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Abstract: In this era of technical progression, where everything

Digitalization - a Key to Sustainable Development

revolves around the alphabet "e", the digitalization has come up and spread its wings over all the spheres of life. The massive use of digital devices and mounting dependency of man on them clearly states that digitalization is the need of the today's fast going life where time is treated as money and as far as digitalization is concern it save both time and money so it's not wrong to say that it has the potential to revolutionize the socioeconomic growth parameters thus, it has developed a symbiotic relationship with complete growth and sustainable development. More over digitalisation has also simplified the functioning and process of various areas like administration, regulation, planning and operations of the socio-economic sphere by eventually enriching the quality of work. All these feature of the digital age act as mile stones in process of achieving sustainable development, as when the societies are digitally empowered, people of that area become more Conscious, Connected, Compliant, Collaborative and Content towards their own growth and as result of this, they work in a tandem manner which makes them a responsible resources for nation's future development. (De Croo, 2015). This paper therefore aims at highlight the role that Digitalization play in the current scenario in order to attain the ideal aim of Inclusive Growth by following the path of sustainability. Paper also focus on the "5Cs model of Inclusive Sustainable Growth", which establishes a link between Digitalization and sustainable development. Paper also discuss the focus area of sustainable development which are widening the horizon of services which are being offered to the society like better technology to access everything at one click, improved facilities in the healthcare and hospitality department and good opportunities in educational sector for the less privileged, upliftment of people who remain grounded within the walls of poverty, illiteracy and unemployment, register their existence and ask for their rights of development and connect them with the nation and paper also tell how digitalisation work as solution key to all these problems by providing a platform where urban and the rural worlds come together under a common sheath of Sustainable development and can live a life of self-enabled and digitally equipped people who would be good learners, thinkers, reformers, participators and agents of change and growth marching ahead on the path of sustainable development.

Keywords: Digitalization; Inclusive growth; Socio-economic; Sustainability.

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1. INTRODUCTION

Malcolm X's in his Speech at the Founding Rally of the Organization of Afro-American Unity, 1964 said that "The future belongs to those who prepare for it today" and this phase seems to be very true when we talk about global sustainable development. The preparation for sustainable development began with the evolution of mankind from a nomadic cave man to a civilized social being living in a culturally rich, economically sound and socially buoyant environment. Even after so much of development the dream of sustainable development seem to be faraway but the introduction of digitalization as a part of IT revolution worked as a catalyst in speeding up the work in this direction. (Johnston, 2007). As far as the process of sustainable development is consider digitalization work as driver which spins along with the wheels of time and harness growth and development. Digitalization mainly focuses at providing

- 1. Universal digital literacy
- 2. Universal accessibility of all digital resources for citizens of all countries around the globe.

The vision is centred on three key areas that are:-

- Creation of digital infrastructure
- Delivery of governance and services on demand
- Digital empowerment of mankind.

2. OBJECTIVES OF STUDY

- 1. To analyse the concepts and scope of digitalisation and meaning & origin of sustainable development concept.
- 2. Paper highlights the 17 goals of sustainable development.
- 3. To showcase the role of Digitalization in the current scenario leading to the attainment of the ideal aim of Inclusive Growth by following the path of sustainability.

Research Methodology:

This study attempts to explain the role of digitization in the attaining the aim of sustainable development globally. It is based on secondary data that is collected through different sources like newspaper, internet, journals etc

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Concept Of Digitalization

Digitalization is the integration of digital technologies into day to day life and this is done by the digitization of everything that can be digitized. The literal meaning of digitalization gives an apparent idea of making a technological dependent world, which may lead to fulfilment of sustainably Developed goals. Digitalizing help, mankind to preserve, access, and share information whenever it is needed. For example, an original historical document may only be accessible to people who visit its physical location, but if the document content is digitalized, it can be made available to people worldwide. There is a growing trend towards digitalization of historically and culturally significant data.

Scope of Digitalization

- 1. Digital infrastructure try to give high speed internet facility to every citizen, a cradle to grave internet identity, easy access of internet service on mobile phone, fast transaction handling of bank account, access to common service centre, sharable private space on a public cloud and safe and secure cyberspace.
- 2. Governance and services on demand which will be available in real time for online and mobile platforms, seamlessly integrated across departments and jurisdictions. All citizen documents to be made available on the cloud platform; as a result, citizens will not be asked to produce such documents for availing services. In addition, the provision of cashless electronic transactions will help generate business. Geographical Information Systems (GIS) will be integrated with the development scheme (**Stirling, 2006**).
- 3. Empower citizens, especially rural citizens, by making them digitally literate. This will be done through collaborative digital platforms and by making available the digital resources in their native language with a view to making their participation a reality. It will help tap into the data that will be freely available on the cloud computing platform—independent of an intervention.

Concept of Sustainable Development Meaning and Origin

The concept of sustainable development originated with the Report of the World Commission on Environment and Development (WCED), *Our Common Future* (Brundtland Report, 1987) which defined sustainable development as "development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs." The concept of sustainable development was first given prominence at the United Nations Conference on Environment and Development (UNCED, "Earth Summit", Rio, 1992) with passage of time this notion of sustainable

development rapidly gained greater awareness among common people. Sustainable development is made by combining the two terms, 'sustainability' and 'development' in order to indicate a pattern of growth that a nation must follow. Sustainable development tells about both that how a nation is capable for taking care for their people in relation to their total relationship with the resources of earth. It focuses upon a relationship between humans and their environment and indicates a warning that human being must not push development which is against nature. The concept of development put major emphasis sustainable on environmental and disparities problems in the world. It marked a decisive stage by recognising the existence of challenges and problems that were common on the entire planet and to all mankind. It thereby considerably widened the scope of global problems to include such matters as the environment, health, trade and poverty. It also highlighted the links between globalisation, planet-wide risks and shared responsibilities that created a need for concerted action by the international community. (OIDA International Journal of Sustainable Development)

Goals of Sustainable Development

The Sustainable Development Goals (SDGs), is also known as the Global Goals as these goals universal call for people's help in order to end poverty, protect the planet and ensure that all human enjoy peace and prosperity (Kuhlman, 2010). There are 17 Goals build for the successes of sustainable development goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected - often the key to success on one will involve tackling issues more commonly associated with another. The SDGs work in the spirit of corporation and pragmatism to make the right choices now to improve life, in a sustainable way, for future generations. These 17 goals lay down clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large so that they can achieve the target of sustainable development. The SDGs are an inclusive agenda. They tackle with the root causes of poverty and try to unite the entire mankind together in order to make a positive change for both people and planet.

1. No Poverty

Eradicating poverty in all its forms remains one of the greatest challenges facing humanity. While the number of people living in extreme poverty dropped by more than half between 1990 and 2015 – from 1.9 billion to 836 million – too many are still struggling for the most basic human needs. Globally, more than 800 million people are still living on less than US\$1.25 a day, many lacking access to adequate food, clean drinking water and sanitation. Rapid economic growth in countries like China and India has lifted millions out of poverty, but progress has been uneven. Progress has also been limited in other regions, such as South Asia and sub-Saharan Africa, which account for 80 percent of those living in extreme poverty. New threats brought on by climate change, conflict and food insecurity, mean even more work is needed to bring people out of poverty. The SDGs are a bold commitment to end poverty in all forms and dimensions by 2030. This involves targeting the most vulnerable, increasing access to basic resources and services, and supporting communities affected by conflict and climate-related disasters.



Fig. 1. 17 Goals of Sustainable Development

2. No Hunger

Rapid economic growth and increased agricultural productivity over the past two decades have seen the number of undernourished people drop by almost half. Many developing countries that used to suffer from famine and hunger can now meet the nutritional needs of the most vulnerable. Central and East Asia. Latin America and the Caribbean have all made huge progress in eradicating extreme hunger. These are all huge achievements in line with the targets set out by the first Millennium Development Goals. Unfortunately, extreme hunger and malnutrition remains a huge barrier to development in many countries. 795 million people are estimated to be chronically undernourished as of 2014, often as a direct consequence of environmental degradation, drought and loss of biodiversity. Over 90 million children under the age of five are dangerously underweight. And one person in every four still goes hungry in Africa. The SDGs aim to end all forms of hunger and malnutrition by 2030, making sure all people - especially children - have access to sufficient and nutritious food all year round. This involves promoting sustainable agricultural practices: supporting small scale farmers and allowing equal access to land, technology and markets. It also requires international cooperation to ensure investment in infrastructure and

technology to improve agricultural productivity. Together with the other goals set out here, we can end hunger by 2030

3. Good Health and Well Being

We have made huge strides in reducing child mortality, improving maternal health and fighting HIV/AIDS, malaria and other diseases. Since 1990, there has been an over 50 %decline in preventable child deaths globally. Maternal mortality also fell by 45 % worldwide. New HIV/AIDS infections fell by % between 2000 and 2013, and over 6.2 million lives were saved from malaria. Despite this incredible progress, more than 6 million children still die before their fifth birthday every year. 16, 000 children die each day from preventable diseases such as measles and tuberculosis. Every day hundreds of women die during pregnancy or from childbirth related complications. In many rural areas, only 56 % of births are attended by skilled professionals. AIDS is now the leading cause of death among teenagers. These deaths can be avoided through prevention and treatment, education, immunization campaigns, and sexual and reproductive healthcare. The Sustainable Development Goals make a bold commitment to end the epidemics of AIDS, tuberculosis, malaria and other communicable diseases by 2030. The aim is to achieve universal health coverage, and provide access to safe and affordable medicines and vaccines for all. Supporting

research and development for vaccines is an essential part of this process as well.

4. Quality Education

Aim to achieve target of universal primary education. The total enrolment rate in developing regions reached 91 % in 2015, and number of children dropped out of school has reduced to half. There has also been an increase in girls and overall literacy rates than ever before. These are all remarkable successes. Progress has also been tough in some developing regions due to high levels of poverty, armed conflicts and other emergencies. Children from the poorest households are up to four times more likely to be out of school than those of the richest households. Disparities between rural and urban areas also remain high. according to SDG achieving inclusive and quality education for all is important because it is belief that education is one of the most powerful and proven vehicles for sustainable development. This goal ensures that all girls and boys complete free primary and secondary schooling by 2030.

5. Gender Equality

Ending all forms of discrimination against women and girls is not only a basic human right, but it also crucial to accelerating sustainable development. It has been proven time and again, that empowering women and girls has a multiplier effect, and helps drive up economic growth and development across the board. Since 2000, UNDP, together with our UN partners and the rest of the global community, has made gender equality central work, remarkable progress since then. More girls are now in school compared to 15 years ago, and most regions have reached gender parity in primary education. Women now make up to 41 % of paid workers outside of agriculture, compared to 35 % in 1990. The SDGs aim to build on these achievements to ensure that there is an end to discrimination against women and girls everywhere.

6. Clean Water and Sanitation

Water scarcity affects more than 40% of people around the world, an alarming figure that is projected to increase with the rise of global temperatures as a result of climate change. Although 2.1 billion people have gained access to improved water sanitation since 1990, dwindling supplies of safe drinking water is a major problem impacting every continent. In 2011, 41 countries experienced water stress – 10 of which are close to depleting their supply of renewable freshwater and must now rely on alternative sources. Increasing drought and desertification is already worsening these trends. By 2050, it is projected that at least one in four people will be affected by recurring water shortages. Ensuring universal access to safe and affordable drinking water for all by 2030 requires UN has

invested in adequate infrastructure, provide sanitation facilities, and encourage hygiene at every level.

7. Affordable and Clean Energy

Between 1990 and 2010, the number of people with access to electricity has increased by 1.7 billion, and as the global population continues to raise so will the demand for cheap energy. A global economy reliant on fossil fuels and the increase of greenhouse gas emissions is creating drastic changes to climate system. This is impacting every continent. Efforts are done to clean energy has resulted in more than 20 % of global power being generated by renewable sources as of 2011. Still one in seven people lack access to electricity and as the demand continues to rise there needs to be a substantial increase in the production of renewable energy across the world. In order to provide affordable clean electricity by 2030 various cost-effective standards for a wider range of technologies is used in order to reduce the global electricity consumption by buildings and industry by 14 %.

8. Decent Work and Economic Growth

Over the past 25 years the number of workers living in extreme poverty has declined dramatically, despite the lasting impact of the 2008 economic crisis and global recession. In developing countries, the middle class now makes up more than 34 % of total employment - a number that has almost tripled between 1991 and 2015. However, as the global economy continues to recover we are seeing slower growth, widening inequalities, and not enough jobs to keep up with a growing labour force. According to the International Labour Organization, more than 204 million people were unemployed in 2015. The SDGs promote sustained economic growth, higher levels of productivity and technological innovation. Encouraging entrepreneurship and job creation are key to this, as are effective measures to eradicate forced labour, slavery and human trafficking. With these targets in mind, the goal is to achieve full and productive employment, and decent work, for all women and men by 2030 (Arora and Athreye, 2002).

9. Industry, Innovation and Infrastructure

Investment in infrastructure and innovation are crucial drivers of economic growth and development. With over half the world population now living in cities, mass transport and renewable energy are becoming ever more important, as are the growth of new industries and information and communication technologies. Technological progress is also key to finding lasting solutions to both economic and environmental challenges, such as providing new jobs and promoting energy efficiency. Promoting sustainable industries and investing in scientific research and innovation are all important ways to facilitate sustainable development.

10. Reduce Inequality

It is well documented that income inequality is on the rise, with the 10 % richest earning up to 40 % of total global income and 10 %poorest earn only between 2% and 7% of total global income. In developing countries, inequality has increased by 11% if the growth of population is taken into account. These widening disparities require the adoption of sound policies to empower the bottom percentile of income earners, and promote economic inclusion of all regardless of sex, race or ethnicity. Income inequality is a global problem that requires global solutions. This involves improving the regulation and monitoring of financial markets and institutions, encouraging development assistance and foreign direct investment to regions where the need is greatest. Facilitating the safe migration and mobility of people is only the key to bridging the widening divide.

11. Sustainable Cities and Communities

More than half of the world's population now live in urban areas. By 2050 that figure will have risen to 6.5 billion people - two-thirds of all humanity. Sustainable development cannot be achieved without significantly transforming the way urban spaces build and manage. The rapid growth of cities in the developing world, coupled with increasing rural to urban migration, has led to a boom in mega-cities. In 1990, there were ten mega-cities with 10 million inhabitants or more. In 2014, there are 28 mega-cities, home to a total 453 million people. Extreme poverty is often concentrated in urban spaces and national and city governments struggle to accommodate the rising population in these areas. Making cities safe and sustainable is possible only by ensuring access to safe and affordable housing, and upgrading slum settlements. (www.reliefweb.int/report/world/sustainable-developmentgoals-report-2017)

12. Responsible Consumption and Production

Achieving economic growth and sustainable development requires the urgently reduce our ecological footprint by changing the way production and consumption goods and resources is done. Agriculture is the biggest user of water worldwide, and irrigation now claims close to 70 % of all freshwater use by human. The efficient management of our shared natural resources, and the way we dispose of toxic waste and pollutants, are important targets to achieve this goal. Encouraging industries, businesses and consumers to recycle and reduce waste is equally important, as is supporting developing countries to move towards more sustainable patterns of consumption by 2030 (Marchese et al, 2018)

13. Climate Actions

There is no country in the world that is not experiencing firsthand the drastic effects of climate change. Greenhouse gas emissions continue to rise, and are now more than 50% higher than their 1990 level. Further, global warming is causing longlasting changes to our climate system, which threatens irreversible consequences if no action is taken now. The goal aims to mobilize \$100 billion annually by 2020 to address the needs of developing countries and help mitigate climaterelated disasters. Helping more vulnerable regions, such as land locked countries and island states, adapt to climate change must go hand in hand with efforts to integrate disaster risk measures into national strategies. It is still possible, with the political will and a wide array of technological measures, to limit the increase in global mean temperature to two degrees Celsius above pre-industrial levels. This requires urgent collective action.

14. Life Below Water

The world's oceans - their temperature, chemistry, currents and life – drive global systems that make the Earth habitable for humankind. Biggest stand is that how to manage this vital resource is essential for humanity as a whole, and to counter balance the effects of climate change. Over three billion people depend on marine and coastal biodiversity for their livelihoods. However, today 30% of the world's fish stocks overexploited, reaching below the level at which they can produce sustainable yields. Oceans also absorb about 30% of the carbon dioxide produced by humans and therefore a 26% rise can been see in ocean acidification since the beginning of the industrial revolution. Marine pollution, an overwhelming majority of which comes from land-based sources, is reaching alarming levels, with an average of 13, 000 pieces of plastic litter to be found on every square kilometre of ocean. The SDGs aim to sustainably manage and protect marine and coastal ecosystems from pollution, as well as address the impacts of ocean acidification.

15. Life on Land

Human life depends on the earth as much as the ocean for sustenance and livelihoods. Plant life provides 80% of human diet and human rely on agriculture as an important economic resource and means of development. Forests account for 30% of the Earth's surface, providing vital habitats for millions of species and important sources for clean air and water; as well as being crucial for combating climate change. Today it can be seen that unprecedented land degradation is happening and the loss of arable land at 30 to 35 times as compare to historical rate. Drought and desertification is also on the rise each year, amounting to the loss of 12 million hectares and affects poor communities globally. Of the 8, 300 animal breeds known, 8 percent are extinct and 22 percent are at risk of extinction. The SDGs aim to conserve and restore the use of terrestrial ecosystems such as forests, wetlands, dry lands and mountains by 2020.

16. Peace Justice and Strong Institutions

Without peace, stability, human rights and effective governance, based on the rule of law - one cannot hope for sustainable development. (Estevez et al, 2013). Today's world is increasingly divided into various parts. Some regions enjoy sustained levels of peace, security and prosperity, while others fall into seemingly endless cycles of conflict and violence. This is by no means inevitable and must be addressed. High levels of armed violence and insecurity have a destructive impact on a country's development, affecting economic growth and often resulting in long standing grievances that can last for generations. Sexual violence, crime, exploitation and torture are also prevalent where there is conflict or no rule of law and countries must take measures to protect those who are most at risk. The SDGs aim to significantly reduce all forms of violence, and work with governments and communities to find lasting solutions to conflict and insecurity.

17. Partnership for The Goals

The SDGs can only be realized with a strong commitment to global partnership and cooperation. While official development assistance from developed countries increased by 66% between 2000 and 2014, humanitarian crises brought on by conflict or natural disasters continue to demand more financial resources and aid. Many countries also require Official Development Assistance to encourage growth and trade. Coordinating policies to help developing countries manage their debt, as well as promoting investment for the least developed, is vital to achieve sustainable growth and development and this can be possible by technological up gradation as by this all countries remain connected to each others as partners. The goals aim to enhance North-South and South-South cooperation by supporting national plans to achieve all the targets. Promoting international trade, and helping developing countries increase their exports, is all part of achieving a universal rules-based and equitable trading system that is fair and open, and benefits all.

Role of Digitalisation In Attaining Various Goals of Sustainable Development

• Zero Hunger

Smart agriculture includes the deployment of optimized farm management; precision agriculture, such as use of IoT, soil sensors, and integrated real-time weather information; and traceability and tracking systems. This will increase agricultural productivity while reducing the need for scarce resources such as water. (**Report of the world commission on environment and development: Our common future, 1987**)

• Good health and well-being

With IT solutions in remote diagnostics videoconferencing, electronic data storage, augmented reality, wearable,

biosensors, personalized medicine, and DNA sequencing, the goal of providing easily accessible, affordable, and better quality healthcare becomes realistic. (Janowski, 2013)

• Quality Education

Solutions like videoconferencing, advanced data analytics, Massive Open Online Courses (MOOC), open community platforms, augmented reality, gamification, and voice recognition software can provide children with accessible and affordable high quality education.

• Affordable and clean energy

Smart energy solutions include smart grid, smart appliances, energy storage, predictive analytics, sensors, and demand response technology. They can improve energy efficiency and provide access to more affordable energy.

• Decent work and economic growth

Connectivity includes providing fixed or mobile access and Internet to everyone. Solutions like augmented reality, cloudbased platforms, telecommuting, and virtual business meetings can help achieve the goals of e-work. These will boost growth and help decouple it from resource consumption.

• Industry, Innovation and Infrastructure

Smart manufacturing includes industrial IoT, data analytics, cloud computing, and drones. In addition, smart logistics includes IoT connected vehicles, load units, products and machines; augmented reality; and digital warehouses. These solutions will boost efficient and innovative supply, production and delivery of goods.

• Sustainable cities and communities

Smart city mobility includes mobile ride sharing, driverless transportation, and connected infrastructure. Moreover, smart buildings include alarm management, big data analytics, smart metering, and IoT sensors. They will reduce resource consumption, improve energy efficiency and reduce air pollution.

3. CONCLUSION

The world today is more interconnected than ever before. Improving access to technology and knowledge is an important way to share ideas and foster innovation. As paper highlight the various goals sustainable development become easy to monitor and conduct because of IT revolution in the form of digitalisation. Digitalization is working as one of the most useful tool in process the attainment of aim of SDG then hardly matter whether the program is related to zero hunger aim of global development mission or sustainable cities and communities aim. It will be not wrong to say that introduction digitalization has work as helping hand for taking the global mission of sustainable development to a new height from where the fulfilment of aim of SD do not seem to be too far away know.

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Abstract: Every economical pattern is unique and has its own

operating environment and sets of requirements. There are

various parameters which lead to the existing position of the

Indian economy since the nation's independence and a cross-

country evaluation of where India stands and to analyze the

factors behind the changes in India's economic conditions over

a period of time. As a result, the execution of economical

projects is subject to numerous constraints that limit the

commencement or progression of field operations, which

invariably have significant negative impact on overall project

performance. Successful execution and control of a project relies on effective identification and management of constraints

through master planning and short-term look-ahead

scheduling. While the master schedule provides a global view of

a project and the overall execution strategy, a look-ahead

schedule offers a detail account of operational constraints and a

detailed plan showing work to be done within a relatively short time window. Since Independence, India has gone through

various phases of failures and success when it comes to

economical scenario still we are not falling in the required

category. In view of the above, it was felt that there is a need for a critical examination of the strategies adopted, the

interventions sought, funds flow and its utilization, organizational structure and the mechanism of implementation

by the implementing agencies in sampled states to understand

the impact, failures and success. This research Paper will

provide an overview of state-of-art schedule constraint analysis

practice during the implementation and execution of socio-

economic projects in India. In addition, it will propose a

conceptual framework for managing constraints and get the

maximum out of such great initiatives taken by the government.

This study leads to assess the extent to which it has been

possible to achieve the aims and objectives of the economical

beneficiaries, but also to review the various schemes and

Keywords: Poverty, Unemployment and Underemployment,

1. INTRODUCTION

The modern world has been characterized by several factors;

urbanization is on the top among all. The basic fact cannot be

denied that urban centers were very much in existence in

suggest policy measures to improve the situation.

Corruption, rural economy and quality of Education

India's Economic Policy: Its Bottlenecks and Implications

antiquity, they were very small in comparison to these cities what we find today. The ever increasing populations as well as expanding geographical areas of the modern cities have brought in major changes in the organization and provision of people in the country and abroad. The urban agglomeration at massive scale therefore has resulted into the following complex problems:

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- Poverty
- Unemployment and Underemployment
- Wide disparities in Personal Incomes
- Attitude prevents hard work
- Corruption in every possible form
- Capital Starvation for Agriculture as well as Industries
- Deprivation of the rural economy
- Negative impact of foreign investment
- Degradation of Agricultural and Industrial potential of India
- Degradation in the overall quality of Education

2. PROBLEM STATEMENT

The importance of developing a constraint-free and reliable work plan has long been recognized by the nation. However, numerous projects are still plagued by delays and cost overruns, which can frequently be traced to ineffective identification and treatment of constraints. First, when a constraint is not properly identified during scheduling, subsequent conflicts in the field are inevitable. Today's projects are becoming more and more technically complex and logistically challenging, which exposes operations to even more complex constraints. Second, the traditional methods, bar charts etc which are widely used as a basis for constraint analysis, greatly limit our capability in resolving constraints during execution of the projects. In summary, there is a need for a better understanding of constraints in construction and a structured approach in identifying and modeling constraints to ensure a constraint-free work plan. More specifically, the following research questions need to be addressed:

1. What are the typical constraints found in various economical projects?

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- 2. How to classify these constrains for easier identification, modeling and recommendations?
- 3. What are the current industry practice as well as research advancements in resolving constraints?

3. OBJECTIVES OF THE STUDY

The long term goal of the research is to develop a formalized constraint management system when it comes to the implementation and execution of various economic projects. The objective of the current study is to provide a comprehensive review of literatures and practices in relation to constraint analysis and outline a conceptual framework for constraint management in economical way. Particularly, the study has the following sub-objectives:

- 1. To provide a comprehensive review of sources and characteristics of constraints typically found in economical projects.
- 2. To develop a constraint classification method for easier constraint identification and modeling
- 3. To review current industry practices and researches in regards to economical field.
- 4. To outline a conceptual framework for total constraint management.

The result of this study will be valuable to the industry practitioners as well as the government in developing better practices and tools for economical advancement and development.

4. METHODOLOGY OF THE STUDY

The primary research method for this study is literature review. Constraint identification and classification through a structured approach is the very first step toward a "zeroconstraint" environment. This study will first review various types of constraints in economical projects and their characteristics. Based on this understanding, a classification method will be developed to categorize constraint factors for the purpose of constraint identification and categorization. In the second stage of this study, existing methods will be identified based on a comprehensive review of current industry practices and academic researches. Finally, once the constraint classification would be done, a conceptual framework for total constraint management will be outlined. This study will be conducted between January, 2019 to December' 2019. The sections in the pages overleaf describe the methodology for each key task that was undertaken to meet the requirements of the assignment.

(i) Meeting with the officials of Planning Commission

In the inception phase, a meeting was held with the key representatives of the Planning Commission, and other key stakeholders. In this meeting, the team discussed about their understanding and requirements for the assignment, the work plan, the expected deliverables and the associated timelines, reporting schedules, etc and finalized the same.

(ii) Training of Teams

We organized meeting of the team members, Researchers, Supervisors, and Field Investigators. Researchers were given a thorough briefing by Project Director about the project and their role therein.

(iii) Secondary Research

The secondary data were collected from the Annual Reports and administrative guidelines of the Ministry of Rural Development, Government of India as well as from the classified data available with the Offices of the states and SGSY coordinating departments of the State Governments of Haryana, Gujarat, Uttar Pradesh, Punjab, Rajasthan and Delhi (UT). Apart from these, offices of DRDA and Lead Bank Manager, coordinating the banks in the selected districts, together with books, journals, seminar papers, websites, etc. also formed the sources for the collection of secondary data for the study.

The necessary primary and secondary data in respect of this study were also collected from the functionaries at various levels.

5. APPROACH OF THE STUDY

The study design as depicted diagrammatically in below mentioned Figure includes sources of data collection both primary and secondary, identification of relevant variables analysis and tabulation of data, their interpretation, critical opinion of official and non-official stakeholders and report writing.

6. AREA OF THE STUDY

The study was conducted in State Governments of Haryana, Gujarat, Uttar Pradesh, Punjab, Rajasthan and Delhi (UT) in the northern region of the country. We also covered four districts in each State, two blocks in each district of the sampled States.

The study employed a combination of quantitative and qualitative methods and the data collected both from primary and secondary sources.

7. LIMITATIONS OF THE STUDY

The major limitations for the study are as follows:

- The report has been prepared based on the data collected from the field and published secondary data
- The study findings and recommendation given are based on the limited coverage of 5 states
- The facts presented are based on the information provided and discussion held with the stakeholders
- Poor availability of secondary sources of data
- Since objective of this study was to carry out detailed assessment of aims and objectives of the overall economical schemes at national, being a sample study, state wise analysis may be able to give skewed results. Therefore attempt has been made to present a report focused on activities / aims/ objective of economical initiatives.

8. CONTENT TO BE STUDIED

Since 1991, the Indian economy has pursued free market liberalisation, greater openness in trade and increase investment in infrastructure. This helped the Indian economy to achieve a rapid rate of economic growth and economic development. However, the economy still faces various problems and challenges.

1. Unemployment

Despite rapid economic growth, unemployment is still an issue in both rural and urban areas. The fast rate of economic growth has left unskilled workers behind, and they have struggled to find work in growing industries. In 2017, the official unemployment rate was just below 5%. However, a report by the OECD found over 30% of people aged 15-29 in India are not in employment, education or training (NEETs). Livemint reported on March 6, 2017. WIth, little if any government welfare support for the unemployed, it leads to dire poverty.

2. Poor educational standards

Although India has benefited from a high % of English speakers, (important for call centre industry) there is still high levels of illiteracy amongst the population. It is worse in rural areas and amongst women. Over 50% of Indian women are illiterate. This limits economic development and a more skilled workforce.

3. Poor Infrastructure

Many Indians lack basic amenities lack access to running water. Indian public services are creaking under the strain of bureaucracy and inefficiency. Over 40% of Indian fruit rots before it reaches the market; this is one example of the supply constraints and inefficiency's facing the Indian economy.

4. Balance of Payments deterioration.

Although India has built up large amounts of foreign currency reserves, the high rates of economic growth have been at the cost of a persistent current account deficit. In late 2012, the current account reached a peak of 6% of GDP. Since then there has been an improvement in the current account. But, the Indian economy has seen imports growth faster than exports. This means India needs to attract capital flows to finance the deficit. Also, the large deficit caused the depreciation in the Rupee between 2012 and 2014. Whilst the deficit remains, there is always the fear of a further devaluation in the Rupee. There is a need to rebalance the economy and improve the competitiveness of exports.

5. High levels of private debt

Buoyed by a property boom the amount of lending in India has grown by 30% in the past year. However, there are concerns about the risk of such loans. If they are dependent on rising property prices it could be problematic. Furthermore, if inflation increases further it may force the RBI to increase interest rates. If interest rates rise substantially it will leave those indebted facing rising interest payments and potentially reducing consumer spending in the future

6. Inequality has risen rather than decreased.

It is hoped that economic growth would help drag the Indian poor above the poverty line. However, so far economic growth has been highly uneven benefiting the skilled and wealthy disproportionately. Many of India's rural poor are yet to receive any tangible benefit from the India's economic growth. More than 78 million homes do not have electricity. 33% (268million) of the population live on less than \$1 per day. Furthermore with the spread of television in Indian villages the poor are increasingly aware of the disparity between rich and poor. (3)

7. Large Budget Deficit

India has one of the largest budget deficits in the developing world. Excluding subsidies, it amounts to nearly 8% of GDP. Although it is fallen a little in the past year. It still allows little scope for increasing investment in public services like health and education.

8. Rigid labour Laws

As an example Firms employing more than 100 people cannot fire workers without government permission. The effect of this is to discourage firms from expanding to over 100 people. It also discourages foreign investment. Trades Unions have an important political power base and governments often shy away from tackling potentially politically sensitive labour laws.

9. Inefficient agriculture

Agriculture produces 17.4% of economic output but, over 51% of the work force are employed in agriculture. This is the most inefficient sector of the economy and reform has proved slow.

10. Poor tax collection rates.

According to the Economist, India has one of the poorest taxes to GDP rates in the whole world. India's tax revenue as a % of GDP is just 12%. Compared to an EU average of 45%, this poor tax collection rate reflects widespread corruption, tax avoidance and complicated tax rates. In 2017, Narendra Modi has sought to improve tax collection rates and reduce complications through the introduction of a general sales tax (GST) which involves a single tax rate – rather than tax rates applied multiple times at different stages of production.

11. Business difficulties

According to the World Bank, the ease of doing business in India is poor. India ranks 130/190. Big issues for companies include

- Ease of enforcing contracts
- Dealing with construction contracts
- Paying taxes
- Trading across border.

12. Inequality within regions

India's economic growth has benefitted some regions more than others. Technological hubs, such as Delhi and Mumbai have attracted higher paying jobs. This has attracted an inflow of most mobile and skilled workers; this has created congestion in these super-cities but failed to address the poverty of rural areas, especially in the north east.

Prime Minister Narendra Modi is less than ten days away from completing action-packed three years at South Block. This month on 26 May, the Modi government will enter into fourth year of its five-year term.

Prime Minister Modi promised many economic reforms including ease of doing business, inflation control, fiscal deficit, trade deficit, job creation, manufacturing revival - that seems to have been delivered with the exception of job creation on which India has, so far, failed to perform as expected.

Whatever may be the reason behind falling job creation and slow down in manufacturing industry, the Prime Minister has seemingly tried to address these two issues by introducing several key initiatives such as 'Make in India', 'Skill India', 'Start-up India'. Also, the Prime Minister last year on November 8 demonetised large currency notes which was later termed 'the single most economic reform in the history of independent India'.

Let's take a look at his economic achievements in three years in office.

Goods and Services Tax

The GST bill, which is scheduled to be effective from July 1, is the biggest tax reform being undertaken since Independence. It will subsume all indirect taxes to create one rate and integrate the country into a single market. Once the GST is in force, it will replace at least 17 state and federal taxes and bring them under single unified tax structure.

GST is a comprehensive indirect tax on manufacture, sale and consumption of goods and services throughout India to replace taxes levied by the central and state governments. It is expected to bring about a qualitative change in the tax system by redistributing the burden of taxation equitably between manufacturing and services.

While officials are busy in laying down the guidelines for effective GST regime, the International Monetary Fund has already appreciated India's effort to reform country's taxation system. "The government has made significant progress on important economic reforms that will support strong and sustainable growth going forward, " IMF Deputy Managing Director Tao Zhang said.

Demonetisation

Last year on November 8, the Prime Minister scrapped old Rs 500 and Rs 1, 000 notes to what he called a step to root-out black money and fake currency in the system. Six months later, it was noticed that the move couldn't achieve the desired results as fake currencies were still running and corruption was still rampant. However, the government succeeded in profiling the people by getting to know the differences between actual flow of money and the undeclared money. Recently, it was reported that India has more car buyers than the taxpayers in the country.

In last assessment year, there were only 5.5 lakh people, out of the 3.65 crore individuals who filed returns, paid income tax of more than Rs 5 lakh and accounted for 57 per cent of the total tax collection. This essentially means that only 1.5 per cent of those filing tax returns (3.65 crore) were contributing to 57 per cent of tax kitty. The Prime Minister wanted to address this issue by bringing the unaccounted money into banking channel.

While many top-notch economists were divided over its impact on the economy, former UIDAI Chairman Nandan Nilekani hailed Modi's demonetisaion move and said that it would see a massive activation of digitisation of financial services in the country. He also explained as to how India's over 80 per cent work force will come into formal channel, he said: "The more important thing is when the economy becomes formal, when everybody's financial transactions are digitised ...India is going to go from data poor to data rich and that will make it more and more difficult for people to do dishonest things or to be outside the system. You will reduce the amount of black money in the system." Jan Dhan Accounts

It was 15 August 2014 when Prime Minister Narendra Modi launched India's biggest ever financial inclusion drive. PM Modi launched his first flagship programme called Pradhan Mantri Jan-Dhan Yojana which was country's National Mission for financial inclusion to ensure access to financial services, namely savings accounts, remittance, credit, insurance, pension in an affordable manner.

Prime Minister's move was to provide access to formal banking services to more than 15 per cent of the unbanked population in the country. It helped Prime Minister Modi reestablish his image as the leader of masses. Jan Dhan Yojna was not just about banking but also about several other benefits that the Prime Minister Modi offered with accounts. Under the scheme, if a person holds an account for more than six months s/he is allowed an overdraft of up to Rs 5, 000. Last year, the ET reported that over 19 lakh account holders had already availed an overdraft amounting to Rs 256 crore. Jan Dhan accounts holders are also able to claim accidental insurance cover of Rs 1 lakh. The scheme also provides life cover of Rs. 30, 000 payable on death of the beneficiary. Prime Minister Modi tapped country's over 15 per cent population with just one economic policy. So far, over 27.84 crore accounts have been opened under Jan Dhan Yojna.

Affordable Housing

After promising banking for all, Prime Minister Narendra Modi launched another flagship housing scheme 'Pradhan Mantri Gramin Awas Yojna' with the aim of providing 'Housing For All' by 2022. The scheme was designed entirely for the rural masses. The ambitious scheme aimed to provide affordable houses to 4 crore people living below the poverty line. Under the new rural housing scheme, the central government will provide a financial assistance of Rs 120000/for constructing the home. An additional assistance of Rs 12000 would be provided for construction of toilets in households.

Pradhan Mantri Awas Yojna says that "By the time the Nation completes 75 years of its Independence, Pradhan Mantri Awas Yojna will bring a 'Pucca house' for every family in urban cities with water connection, toilet facilities, 24x7 electricity supply and complete access." In Uttar Pradesh alone there are '1.5 crore people who don't have houses'.

Deen Dayal Upadhyaya Gram Jyoti Yojana

Gram Jyoti Yojana was launched to ensure round the clock electricity supply to farmers and rural households. The scheme

was kick-started by the Prime Minister on 25 July 2015. The programme was expected to initiate much awaited reforms in the rural areas. During his Independence Day speech in 2015, the Prime Minister had announced that all of the country's villages would be electrified in 1, 000 days and that by December 2018, all Indian citizens would have access to electricity.

"At the time when the NDA government came to power, there were 18, 452 un-electrified villages. Out of these, we have electrified 12, 022 villages under the Deen Dayal Upadhyaya Gram Jyoti Yojna (DDUGJY). The ministry is trying its best to complete the target by 1 May 2018, "The Sunday Guardian quoted a ministry official as saying.

PM Ujjwala Yojana

Last year on May 1, Prime Minister Narendra Modi launched an ambitious social welfare scheme - Pradhan Mantri Ujjwala Yojana - with the aim of providing 5 crore LPG connections to women below the poverty line across the country. The scheme was aimed at replacing the unclean cooking fuels mostly used in the rural India with the clean and more efficient LPG Gas. Prime Minister Modi's pledge to provide cooking gas cylinders to every households has helped India to become the world's second-largest importer of liquefied petroleum gas or LPG. Earlier Bloomberg reported that India's import of LPG, mostly used as cooking fuel, increased 23 per cent during the financial year that ended March 31 to 11 million tons. India replaced Japan from the second position whose imports slipped 3.2 per cent during the same period to 10.6 million tons.

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Intrusion Detection Techniques for Mobile Cloud Computing in Heterogenous 5G Technologies

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Abstract: As the importance of distributed computers is rapidly growing, they are becoming the target of more and more crime. Intrusion may be defined as the set of attempts to compromise computer network security. Besides the several security services, Intrusion Detection System/Techniques are taken into point that strengthen the system security and is more powerful in preventing internal and external attacks. This technique is considered to be very efficient in preventing wireless communication in Fifth Generation. In this paper we will discuss what Mobile Cloud Computing is and various Intrusion Detection Techniques for mobile computing along with challenges faced by each technique.

Keywords: Intrusion, Mobile Cloud Computing, Intrusion Detection System/Techniques.

1. INTRODUCTION

The latest fast growth of advanced mobile technologies led to a great advantage in the development of mobile cloud computing (MMC). Mobile devices performance has enhanced by incorporating three technologies in which the first one to be involved is cloud computing, second is mobile internet and third is mobile computing in which choosing MCC has become main advantage.

Taking into consideration, Fifth Generation (5G) background in the coming time, MCC will achieve greater class performances in unloading computation by relocating data storage and processing data to the cloud so that the abilities of the mobile devices can be enhanced [4-7] by the cause of improved bandwidth. Though, lot of provocations will be faced by advanced wireless networks [8, 9], that has been investigated from different aspect by earlier research [10]. Out of which one of the provocations is that controlling risk from intrusions is not easy because of managing tool limitations, mutual interferences between signal cells, high efficiency wireless communications, intentional attacks and improper user authentications. The intrusions are concealed by attackers with the help of enhanced networking speed.

The paper shows safety concerns in MCC and combines latest attainments all together in intrusion detection abilities so that the approaches can be found which can successfully deploy the rise in heterogeneous 5G. As Intrusion Detection System (IDS) is a vital authority that has been related with various techniques. As each technique has different property therefore each observation process has both prevalence and restrictions. The major benefactions of this paper are bifold:

- It allocates 5G users of future and developers with an analytical efficient model to attain safe data communication.
- It analysis and integrates all critical safety concerns in MCC from a technical aspect.

2. MOBILE CLOUD COMPUTING TERMINOLOGY IN FIFTH GENERATION

A. MOBILE CLOUD COMPUTING

To extend cloud to the edge of the networks, one of the cloud service models. MOBILE CLOUD COMPUTING is fast emerging. It consists of various mobile devices that are useful for many users. A prediction was made by Gartner that by 2013, PCs will be overtaken by mobile phones as the most common web access devices, worldwide [1]. Mobile Cloud Computing mainly tells how the resources of cloud can be best utilized by smart phones to reduce its consumption of energy. And a particular task can be executed either on mobile device or can be sent to cloud. Overhead tradeoffs between communication and computation, decides where to execute the task. One of the most important features is that the data processing and data storage are migrated from mobile devices to cloud. With this feature, to support applications running in cloud MCC model is designed that offers high level centralized functions. If we talk about security in MCC model, the security problems can be addressed by threat assessment from three technologies- Mobile Internet, Cloud Computing and Mobile Computing [2]. This model also helps in reducing obstacles that are related to security (reliability and privacy), performance and environment.

1. MOBILE COMPUTING

To enable devices that are portable, to access the services available on the web, a platform known as Mobile Computing is developed that is supported by wireless networks. It is a

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technology in which without being connected to a fixed physical link, we can transmit data, video and voice via any wireless device. It involves the following:

- a. *Mobile Hardware:* To receive and access the service of mobility, Mobile devices or components comes in this category such as, tablet PCs, portable laptops, smartphones, etc. These devices are capable of sending and receiving signals at the same time.
- b. *Mobile Communication:* To ensure that seamless and reliable communication goes on, mobile communication is an infrastructure that is put in place for the same. For example, services, portal, protocols and bandwidth necessary to support the services. It ensures that the other systems that offers the same service, does not collide.
- *Mobile Software:* It is the actual program that runs on the mobile hardware. It is the operating system of appliance. It deals with the demands and characteristics of mobile applications. It is the most essential component used to operate mobile devices.

It is useful in reducing application's development time. When communication takes place, it also faces threats. For example, one of the threats is when using virtual private network, the wireless communication can be easily invaded because of interconnection of various networks. Authentication and encryption methods are used for security in mobile computing for virtual private network access.

2. MOBILE INTERNET

The method of accessing browser based Internet services from mobile devices, such as smartphones, through wireless networks is referred to as mobile internet. It is a technology derived from development of wireless networks. Some recent technologies that are active, includes: Third Generation (3G), Mobile Commerce (M-commerce), WiFi and long term evolution. The future asset for mobile internet is 5G. The central idea of mobile internet is to connect two communicators that support Web services, via wireless network. Web services may be defined as any software that makes itself available on internet and uses a standardized messaging system known as XML. It can also be defined as consolidation of web applications by using Simple Object Access Protocol, Extensible Markup Language, Web Services Description Language and Universal Description, Discovery and Integration. The security criteria and requirements may vary in mobile internet. Therefore, they often address service layer objects such as application, platform and infrastructure layer. It doesn't matter which layer is choose, wireless network itself always faces threats from intrusion.

3. BEHIND CLOUD COMPUTING

Cloud computing have some technologies that are similar to the deployments or service types[10, 11].Basically, there are three technologies that are adopting the cloud computing with the Mass Distributed Storage(MDS) virtualization and the technology that are under the Parallel Programming Model(PPM)[12-15].Cloud computing used service deployment technology that are provided by virtualization. The main advantages of the virtualization was that distributing the resources among multiple levels of service[16, 17] with the help of object virtualization that are network, storage, data, physical machine and servers[18]. If the levels of service are explained only then the virtual machine are capable of delivering the services of the system to the end users. Virtual machine also capable for describing the information in a proper way and represent the resources in a set of entities that are logic-related for the end-users [19-21]. Virtual machine provide some application that are isolated in nature to the endusers with the functionality of the virtualized system and that application are running on the operating system. By using the Virtual machine the cost of resources are reduced for the endusers, saved the usage of energy and provide the easiest path for the maintenances of system[22-24]. The main function of Virtual machine are independent in nature and provided the isolated platform to the users system component and protect the information of users from the attackers[25, 26]. Attackers provided the controls of the Virtual machine in the context of the networking by attacking the provisioning and configuration module that are used for the formation of lowest layer that are reside on the hypervisor in cloud[27]. The nature of the Virtual machine are dynamic so that it provide the level of difficulty to control the security of the system. Due to the nature of Virtual machine, the vulnerability of the system are also increased [28].By reducing the overhead of virtualization and reliability of system, Lin et al [29] proposed a technique that are used and supported the features of the hardware so that the performance of the Virtual machine easily improved that are known as hybrid virtualization. MDS technology are used for storing the data in different storage servers for protecting the loss of data from any kinds of disaster. MDS is a technique that are used for increasing the infrastructure efficiency and data reliability by using the different and distributed application and storage servers. For setup the connection of the distributed multiple services, the interconnection among the heterogeneous network are used in MCC[30].Some storage devices are available as infrastructure that are the major security concern for the users in MCC.MDS are used as a wireless technique among multiple location that are responsible for the infrastructure's changes. But this technique provided many problems such as disconnecting the servers, supplied incorrect signals and network management chaos. For reducing these problems, MDS provide technique to the end-user such as cloud base services [30].PPM is a technique that are commonly known as cloud based solution

and solved the problem of synchronous tasks by accepting the parallel data processing. This technique are used for drilling the tasks into multiple number of small tasks so that the tasks can easily solved in minimal time. For solving the problem of large sized information, parallel programming model was the best approach [31]. In the above description of the techniques are considered as a fundamental unit of cloud that are designed for the solution and the security concern. Now there are various section have the knowledge about the heterogeneous network that are used for providing the platforms of networking to the cloud computing.

B. HETEROGENEOUS FIFTH GENERATION NETWORKS

A heterogeneous network is considered as a wireless network that are used for the connection of portal devices with different operating systems and describe the explanation of the integrated network to the end-users. Heterogeneous network provide some protocols without any problem of manufactures. Heterogeneous network are also called mixture-style network that are used in the recently wireless area which support the advanced mobile broadcast services[49].In mobile broadcast services, new style of spectrums are used for increasing the compatibility and provided the fashionable improvement to the network performance. These spectrums required long time for providing the goal of the current methods [32]. Now focus on the previous information of the heterogeneous data in network, some features can be predicted for the future data of heterogeneous 5G of network in the context of mobile. The first one was introduced the explanation of the heterogeneous 5G that are used for improving the performance of the future devices. Mobile cloud have heterogeneous network that provided solution for improving the performance of network management and saved the energy usage trade-off [33].For improving the network management broadly, a technique are used such as leveraging distributed. These technique have the capacity to increase the 5G dramatically. Heterogeneous network are also used for the end-users so that they can easily switch network between the latest one 5G, 4G and the WIFI that are concern the security and the interoperability[34]. There are many problem for adopting the MCC that is interferences and standardization among the networks and provide the intrusion properties with the attackers. There are some current intrusion detection technique that are used for the context of advanced wireless network.

3. INTRUSION DETECTION SYSTEMS

Intrusion may be defined as the set of attempts to compromise computer network security. Besides the several security services, Intrusion Detection System/Techniques are taken into point that strengthen the system security and is more powerful in preventing internal and external attacks. Intrusion can also be defined as an attack which can occur in any situation. Some tasks handled by IDS are

- a. It prevents and mitigates the damage caused by intrusion.
- b. It identifies the activity that can cause a more serious attack.
- c. It identifies the attack perpetrator.
- d. It discovers new attack patterns.

Some requirements that the IDS follow to fulfill its tasks include completeness, accuracy, performance, timeliness and fault tolerance.

IDS is classified into 5 categories:

- a. Detection based on Anomaly (ABD)
- b. Detection based on Signatures (SBD)
- c. Hybrid Intrusion Detection
- d. Stateful Protocol Analysis Detection (SPAD)
- e. Detection based on Specifications (SPBD)

A. DETECTION METHODOLOGIES

This part includes the description of techniques, concepts, limitations and deployments of various IDSs including ABD, SBD, hybrid intrusion detection, SPAD and SPBD approaches.

1. SIGNATURE BASED DETECTION AND APPROACH

This technique is also known as Misuse Detection. It depends on the known patterns of unauthorized behavior [35]. It comprises of storing the signature profiles that identifies patterns that are associated with network intrusions in signature database and generates some rules that are based on signature profiles. The data packets that are transmitted on the network with their corresponding classification rules are classified on the basis of these generated rules. The intrusion patterns or strings on the database that are pre-installed, SDB depends on that. If SDB system is not updated, the signatures will not be detected that results in decrease of its performance. Since the intrusions are dynamic, the IDS using SBD may not identify new threats when connected to internet.

This problem can be solved by deploying an automated signature creator that is attached to this system [36, 37]. By collecting and analyzing the constituents of consistent behaviors, these signature creators can be generated [38, 39]. But this solution has also a limitation that the latest algorithms cannot completely detect all malicious instances. Due to the excess load of packets on network, the performance is deducted when the processing capability cannot match the

wireless transmission ability [40]. This can be solved if the data storage and processing can be moved to cloud and by examining the parallel signature matching on cloud based servers [41].

2. HYBRID INTRUSION DETECTION

Different types of intrusion depend on the security that are requested by the users [42, 43, 44, 45]. This type of intrusion detection are the combination of the two techniques that are called packet header anomaly detection(PHAD) and second technique called network traffic anomaly detection (NETAD)[46]. The limitations of these two technique are prevented by using the two components of detection such as misuse and anomaly. These two major components are designed by using the random forest algorithm [47]. These two techniques are designed on the bases of IDS which are used for the open sources assignment[48]. The main aim of hybrid intrusion technique to increase the accuracy of the detection and decreasing the complexity of the network system[49]. The hybrid intrusion detection technique are also used for enhancing the performance of the wireless network and designed the hierarchical structure of network[50]. The main drawback of the hybrid intrusion detection was that in these it is difficult to combine the different types of detection techniques. In these multiple techniques are come to perform the tasks at the same time that's why the workload of the packets are increase.

3. ANOMALY-BASED DETECTION AND APPROACH

This system is an intrusion detection system which helps in detecting both network as well as computer intrusions and misapply by monitoring system activity and categorizing it normal or anomalous. The categorization is based on rules instead of signatures or patterns, and trying to identify any kind misapply that comes from normal system operation. The ABD system represents an approach of recognizing obvious separation or unpredictability in the events and transmissions [51, 52-54]. The collation if there is any separation in the usual and unfamiliar deportment and this unfamiliar deportment is observed to be dynamic or possible assault, which rely on the amount distinctness. There are three major techniques sustaining collations which contain mathematical-based [55], fact-based, and machine knowledge-based techniques [56, 57].

Mathematical-based (also referred as statistical-based) technique: This technique route each and every traffics and creates a description which analyzes if there might any kind of inappropriate traffic by a mathematical examination [58]. The problems for implementing mathematical-based technique are bifold. First, placing an actual stability between good or bad deportment is difficult. Second, if the system is being assaulted this technique may get failed.

Fact-based technique: It is a kind of computer program that make use of knowledge base to resolve complicated problems. This technique is relevant to those systems that have distinct knowledge structures or connected to set of rules [58], like symbolic representation.

Machine learning-based technique: Machine learning is a branch of computer science that provides computers the potential to know without being precisely programmed. In machine knowledge-based technique, [57, 58] latest deportment models which are based on the considerations of events, events, and activities are built.

4. SPECIFICATION-BASED DETECTION AND APPROACH

When compared with Anomaly-based detection, SPBD has almost identical mode for perceiving divergence but wants users to set up a behavior consideration level in a particularrequirement formation [60]. The stimulation for practicing SPBD system is to achieve excessive level of abilities in recognizing recent attacks and improving perfection. The SPDB approach is observed as a suitable result to inspecting the variable-extent patterns [61]. Although, identical to other ABD systems, the SPBD system too needs a large number of tasks for determining normal behavioral specifications.

5. STATEFUL PROTOCOL ANALYSIS AND APPROACH

The idea of stateful protocol analysis is basic to put stateful properties together to regular protocol analysis. The SPAD access of incursion investigation that differentiate inconsistent conclusions from regular courses in a period purchasing a preset global profile [62]. The profile supply ultimate users with an account of protected and reliable activity definitions. While performing the SPAD both the Datagram Protocol (UDP) as well as Transmission Control Protocol (TCP) will be assessed. [63]. This respective technique has the major absolute property which is supplying evaluation with stateful properties. In spite that the SPAD proposes powerful protocol analyses, there are two restrictions in practice. Furthermore, the difficulties of detecting assaults based on a particular request or retaliation are not fully fixed by that technique. Inscribing these difficulties, additional stateful properties required to be sum up with t the protocol analysis profile, which coincidentally claims large tasks and massive packets.

USER AUTHENTICATION

For the security, the high level of password are generated for the authentication's user. If the password of the user does not match then the user cannot get their information due to the security purpose. The main aim of the authentication was to ensure that the identities of the user was matched with the help of mechanisms of the authentication and randomly checked that the user request are forward to the parties with the appropriate password [64]. The mechanisms for testing the identities of the user is called biometric. The biometric mechanisms of the authentication checked the identities such as password (eye detection, finger prints etc.), behavior of the given characteristics [65-67]. This mechanism are used for the protection of the access user and supported by the password verification technique. This technique forward the data and the user information to the access user that are authentication for the data and create the privacy of data during the communication of the wireless network.

4. CONCLUSION AND FUTURE WORK

This technology of the networking are designed for the benefits of the user with the help of MCC and 5G heterogeneous network. IDS technique are used for the protection of the wireless networking communication with the help of protection the transmission of user data. This review paper discuss about the techniques of wireless network that are used for the communication and gave the outcomes based on the some achievements such as MCC, IDS and the 5G heterogeneous network. For securing the high level communication of the wireless 5G, introduced the framework that are based on the cloud intrusion detection techniques.

Based on these review paper, there are some questions that are introduced for the future work.

- (1) How to solve the problem of security with the help of Cloud based IDS?
- (2) If we generate some model such as energy aware model, how to fulfill the usage of the 5G heterogeneous network for the mobile cloud computing?
- (3) How we can explain the transmission of secure data between the cloud based IDS and the users?

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Revival of Glass Work Art of Purdilnagar, Hathras, U.P.

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Abstract: There was a time when approximate more than 15000 individual small artisan were engaged in manufacturing of glass beads and their glass products at their residence/ home.Presently, there are not more than 1000 people engaged in this art. To investigate the root cause of vanishing of this 400 years old craftsmanship, and find out the permanent and longterm solution to the existing problems, brainstorming was done. Discussions were held with people and community who could provide support in form of ideas or actions to revive Purdilnagar Artists community.

After many brainstorming sessions and elaborative discussions on issues and problems of the artists, visits were conducted in Purdilnagar. District Magistrate, Sh. Amit Singh not only provided required information but also participated in all discussions and brain storming sessions. He also arranged for visit to Purdilnagar and Firozabad. An elaborative questionnaire was prepared to gather information from all the concerned stake holders. Visit was taken up and Workers, local Merchants, exporters/ tradesman were interviewed in Purdilnagar Firozabad, being a Flourishing market of glass work products, provided information and ideas to come out with solutions to problems of Purdilnagar artist's community.

Keywords: Glass bead, artisan, local merchants, artist, interview

1. INTRODUCTION

The word "Beads" is derived from Anglo-Saxon verb "Biddan to "pray" and "bede" meaning prayer. Glass beads is a handicraft item produced by skilled artisans out of block glass or colourful glass rods. The Glass bead made with simple machines and a tool are used to make artificial jewellary and is used to decorate garments also. Glass Beads play a decisive role in almost all areas of industrial and daily life.

They are also required in artificial jems & jewellary making like rings. ear rings, garlands, neckless, imitation stones, decorating of textiles like sari, bed sheets, dupatta, blouse, salwar, kurta, table clothes, curtains, footwear decoration, bags & purse decoration, decorating of artistic handicraft items, wood, brass, plastic, cloth es, stones etc. are also used seat covers of automobiles etc.

2. HISTORY OF GLASS BEADS MAKING IN INDIA

In India, Glass Beads are manufactured in Purdilnagar (Hathras), Firozabad, in U.P. Purdilnagar, a town near the glass city Firozabad, is very popular for production of glass beads by the rural artisans, the history dates back to more than 400 years.

Purdilnagar is also known as Shrangar Nagar. Purdil nagar made Glass beads are based on traditional craft. The beads of Purdilnagar are used for manufacturing of jewellary, artware goods and other decorative items. The manufacturing of Glass Beads in Purdilnagar is in un organized sector. The work of Glass was started with the making of Glass bangles at Purdilpur in the period of Timur Lung. In the 14th century while Timur Lung was returning after invading India, he advised some soilders who were interested in Glass work to stay back, some soilders who were glass bangles makers, settled at Sikandra Rao, Distt- Hathras (U.P.). They requested the emperor of Sikandra Rao to provide some land so that they can start their work of glass bangles making for their living. The emperor granted a piece of land about 4 Km, away from Sikandra Rao. It was a dense forest at that time. Thus all the glass bangles makers, who belonged to the Muslim community, were shifted to the allotted place, which is now called Purdilnagar.

3. GEOGRAPHICAL LOCATION

The notification of creating district Hathras was released on 06 May 1997. Purdilnagar is a small town famous for its beads and ceramic produce in Hathras Distt. U.P. It is located 43 Kms

4. PROCESS OF MANUFACTRING -PRESSED /ROLLING METHOD

The glass beads industry is highly labour intensive. Process of making – Pressed/Rolling method is employed by artists of Purdilnagar.

A skilled artisans takes glass rods as a raw material into a pot furnace and melt it at a temperature of 500 to 600*C by the

*Reader, Maharaja Surajmal Institute (GGSIPU), New Delhi, alkamittal@msi-ggsip.org **Professor, Maharaja Surajmal Institute (GGSIPU), New Delhi, harishsingh@msi-ggsip.org ***Assistant Professor, Maharaja Surajmal Institute (GGSIPU), New Delhi, preetimalik@msi-ggsip.org fuel of wood. Take molten glass and rolled on a tip of a iron rod and pressed into given design/shape. Almost 7 to 15 artisans do their work at a time on a single furnace and pot capacity of glass 2 to 5 kgs.

5. REVIVING THE ART AND ARTISTS

There was a time when approximate more than 15000 individual small artisan were engaged in manufacturing of glass beads and their glass products at their residence/ home. Presently, there are not more than 1000 people engaged in this art. To investigate the root cause of vanishing of this 400 years old craftsmanship, and find out the permanent and long-term solution to the existing problems, brainstorming was done. Discussions were held with people and community who could provide support in form of ideas or actions to revive Purdilnagar Artists community.

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The following problems were identified on the basis of visits and discussions:

- 1. The artists in Pudilnagar are still using wood as fuel, which is not only harming environment and their health, but also results in less production. If they are provided with alternative fuel source like LPG, their production will increase by 30 to 40 percent.
- 2. The artists produce glass beads or bangle as per the sample presented to them, by local merchants or exporters. It will not be farfetched to say that the artists work as labourers for, local merchants/ traders. They are provided with raw material and sample of glass bead/ bangle. On delivering the beads/ bangles, artists receive payment on piece rate or weight. Every artist gets 200 to 250 rupees on an average every day. The artists also share the expense of wood consumed, in the furnace.
- 3. Most of them are literate but not much educated
- 4. Due to Chinese beads available in market, demands for Purdilnagar beads have reduced, substantially.
- 5. They lack knowledge of available market nationally or globally. They have no education of means of marketing available.

- 6. Few exporters had hired artists who creates beautiful glass work items by using beards or other material. They were also paid either on hourly or piece rate basis.
- 7. In the residence, women are also engaged in creating glass bead jewelry like necklaces for local merchants/ exporters. The raw material, is provided by exporters. Women are also paid on piece rate basis.
- 8. The artists had no knowledge of loan or government aid they could receive.
- 9. Due to malnutrition and in hailing of glass fumes, average life span has also reduced.
- 10. The most motivating finding was that, artists were satisfied with the work they were engaged in. They reported that this was the art they had inherited and did not want to quit it.
- 11 Firozabad, which is few kilometer from Purdilnagar is a flourishing market. But it works on different model. It is not producing handmade crafts. Unlike Purdilnagar, It is heavily mechanized.

On the basis of information received and visits made, following solutions as sequenced, are proposed:

- 1. Enrolment of the artists -They may be issued an Identity Card, mentioning the artistic skill owned by the artists.
- 2. Motivating them to form an association of artists.
- 3. Providing the enrolled artists alternative fuel on subsidized and long term sustainable rates. Providing them LPG will help them to work from home. The women in the house will also be able to contribute in the work, thus increasing their production
- 4. Branding- Artists and traders should be educated to market themselves as Purdilnagar hand made glasswork, nationally as well as internationally
- 5. The artists association should be helped as to get their stalls at places like Dilli Haat, run by Delhi Tourism and Transportation Development Corporation (DTTDC).
- 6. The artists association should be educated to display and sell their products in various *Utsavs* and *Melas* organized by government and various Societies and trust e.g. Shiromani Gurdwara *Prabandhak* Committee organizes *Melas* on various occasions all over India.They can be requested to provide stall to the Artists association during those *Melas*.
- 7. NGOs working in this area may also be requested for their inputs in form of guidance in designing and branding to those artists.
- 8. E-marketing of their products a website may be created and maintained for display and selling off for their products.



CRAFTMEN AND THEIR CRAFT



USE OF WOOD VS USE OF LPG

For implementation of these suggestions, multidimensional efforts are required:

The observations and suggestions are based upon interview held with artisans and local traders. The study was conducted in July, 2017

- 1. Discussion with government department/ ministry to provide CNG to artists
- 2. Students from universities in vicinity can be educated and brought together to help in this project
- 3. Enrolment of Artists and registration of their association is most important work. Association of government machinery, team members and positively guided students will be able to complete this work at the earliest.
- 4. For E-marketing experts/ professionals from this area can be requested to provide support.
- 5. Efforts to educate the artists about loans and government aid available should be made.
- 6. Holding talk with NGOs and Social groups to provide needed help.

FURTHER PROGRESS NEEDED

- There Has Been A *Demand-Supply Mismatch For Lpg.* Last Financial Year, The Country Imported 8.33 Million Tonnes (Mt) Of Lpg, While The Total Consumption Was 18.2 Mt. In The Previous Financial Year, Imports Stood At 6.61 Mt And The Total Demand At 16.29 Mt. Ioc & Bpcl Is Working Towards Setting Up Of Lpg Import Facility Plants In Different Parts Of Our Country. At Present, They Are Setting Up An Lpg Import Plant In Paradip In Odisha. State-Run Bharat Petroleum Corporation Limited (Bpcl) Plans To Build An Import Terminal At West Bengal's Haldia, With An Estimated Cost Of Rs 1, 200 Crore. The Terminal Will Help The Company.
- On Enquiring The Hindustan Petroleum Corporation Limited About Purdilnagar Area Problem, We Came Out With The Following Conclusions:

A. Install Capsule Plant: The Capsule Plant Will Have Big Capsule Along With + 2 Bullets +2 Vapouriser +1 Compressor And It Will Require At Least 1000 Sq. Yards Land + Pipilines Cost Etc. It Will Take Some Time Also. Moreover, Hpcl Is Asking For The Group Who Will Run This Project?

0r

- B. Install Lpg Cylinder (Commercial 47.5kg Gas) Costing Rs.2600 / Per Cylinder For Each Bhatti. Make Bhatti's (Pot Furnaces)Strong Like In Ferozabad.
- Request The Centre For Developing Energy-Efficient Gas-Fired Muffle Furnaces With The Aim To Replace Existing Coal-Fired Units Through State Government.



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Indian Administrative System: Some Reformative Measures

Kaptan Singh*

Abstract: Since Independence administrative reforms have been a major concern for Government of India. Successive Central Governments have expressed need for reforming the administrative machinery. Number of committees and commissions were constituted to look into this matter and make suitable recommendations. However on the basis of these recommendations there have been only incremental reforms and many of the recommendations involving basic changes have not been acted upon and therefore the framework, system and methods of working of Government machinery based on the colonial model remains largely unchanged. The major hurdles with the implementation of recommendations for basic changes have been bureaucratic stronghold over administrative reforms and lack of political will to surmount the the internal resistance of bureaucratic lobby. Today our country is passing through a deep socio-economic crisis. The major share of this situation rests at the doors of the administrative set up of the country in as much as though the Political leadership takes the final decision but the administrative machinery plays an important role in the formulation of policies and later on their implementation. The failures of our administrative system include professional incompetence, lack of responsive work culture, lack of accountability and corruption. In fact our government machinery has lost the confidence of people at laree who often perceive the government machinery an agent of exploitation rather than provider of service and feel that public services are meant to benefit public servants and not the public. Therefore there is urgent need to initiate administrative reforms for making, the administrative machinery professionally competent, effective, result oriented and responsive to the people. This paper contains, in brief, background information, reformation efforts and reasons of their failures, shortcomings of the existing system and measures to improve the situation.

1. INTRODUCTION

Today our country is passing through a deep socio-economic crisis. This compels us to review the performance of the last seven decades. Undoubtedly, we have made enormous progress in various fields after independence yet the fact remains that we were expected to do better and we could have done better had we utilized our resources of man, material and capital in an optimum manner. Certainly, we have failed to do it. The major share of this failure rests at the doors of administrative set up of the country in as much as though the political leadership takes the final decision but the administrative machinery plays a pivotal role in the formulation of policies and programs and later on their implementation. Admittedly our machinery failed to meet the challenges of the country effectively and squarely. One of the major failures of our administrative system is its professional incompetence leading to inept handling of the problems that bedevil the Nation, inability to innovate and come up with imaginative solutions to difficult questions that confronts us. The second major failure is that the administrative machinery has lost the confidence of people at large. They feel that public services are meant to benefit public servants and not public. The then Hon'ble Prime Minister, Sri Atal Behari Bajpai, while addressing the National Development Council Meeting on 19-2-1999, rightly summed up the situation as follows:

"People often perceive the bureaucracy an agent of exploitation rather than a Provider of service."

Infact reasons for failures arc in built in our administrative structure itself which we inherited from a colonial state and we could not reform it in spite of recommendations of various commissions and committees. Today there is urgent need to reform the colonial ordained system to meet the requirement of a democratic and developing country. This paper contains briefly the background information, reformation efforts and reasons of their failure, shortcomings of the existing system and remedial measures to achieve the goal.

2. BACK GROUND INFORMATION

1. General

We all know that independent India adopted a parliamentary —federal form of government and superimposed it over the administrative structure largely inherited from the British colonial State. This is also true that the Britishers had created and developed this system to meet their colonial interests and to continue with this system in an independent, democratic and development oriented country was not a wise step .Of course the principal challenge faced by our constitution founding fathers was to devise a new system to serve the country or to reorient the colonial bureaucratic apparatus to the tasks of adapting to a parliamentary-federal

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constitution, changing the work culture from ruling class to the servants of people and undertaking the responsibilities of socio-economic development with honesty justice and equity .Unfortunately no serious exercise was conducted to devise a new system commensurate with the changed **circumstances** and a colonial ordained system was adopted without incorporating basic changes to meet our requirement .Perhaps our political leaders felt that constitutional and political changes were of major consequences that will automatically make government machinery undergo the requisite transformations under its impact .However the fact remains that such transformation never really happened .

2. Basic Features of British System

Structure

The Civil Services in British India had mainly three tiers. The top tier was the All India Services below them provincial services were created. Under provincial services subordinate civil services were created. In addition to this some Central Services were also there .Besides Indian Civil Service there were other All India Services created as and when required including Indian Police Service, Indian Forest Service, Indian Engineering Service, Indian Medical Service, Indian Veterinary Service, Indian Agriculture Service etc. The initial appointment and terms of conditions of All India Services and Central Services were settled by the Secretary of State for India, a member of the British Cabinet. Provincial Services and Subordinate Services were under the control of Governors. The structure continued as such till 1920. But the First World War had A great impact on the British Imperial power. The war undermined the imperial strength. There was resurgence of Indian Nationalist and revolutionary movements. Government of India Act 1919 wasthe result of these developments. The act introduced diarchy in provincial governments; ride of two- executive councilors (Head of Different Departments) and popular ministers - was introduced. The Governor was to be the executive head in the province. Subjects were divided into two lists "reserved" which included subjects such as law and order, finance, land revenue, irrigation etc. and "transferred" subjects such as education, health, local government, industry, agriculture, excise etc. "Ilie "reserved" subjects were to be administered by the Governor through his executive council of civil servants, and the "transferred" subjects were to be administered by ministers nominated from among the elected members of the legislative council. The Secretary of State and the Governor General could interfere in respect of "reserved" subjects. However, this act failed to make any impact on the Indian National Movement and the Indian struggle against Imperialism took a decisive turn towards a broad-based popular struggle. This compelled the Britishers to formulate the Act of 1935. It provided formation of an All India Federation which never came up. The act introduced diarchy

at Central level and provincial autonomy at provincial level. At Central level, subjects were divided into "reserved" and "transferred" subjects. Reserved subjects — foreign affairs, defense, tribal areas and ecclesiastical affairs — were to be administered by the governor general on the advice of executive councillors who were not to be responsible to the central legislators —Transferred subjects included all other subjects and were to be administered by the Governor General on the advice of ministers elected by the legislator. The bicameral legislature was introduced at the Central level. Provincial autonomy replaced diarchy and granted separate legal identity to provinces.

In the light of these developments the British Government lost interest in socio-economic development activities and focused on law and order and general administration, revenue and regulatory activities. On the recommendations of Lee Commission (1924) it was decided to stop the recruitment to All India Services which were administering the subjects transferred to the control of Governors acting with their ministers. The Government gradually abolished All India Services except ICS and IPS with the provision that provincial services should develop and increase gradually as members of the All India Services cease to become available. Meanwhile the two services will continue to exist side-by- side as long as their remains any member, whether British or Indian recruited on an All India basis for these departments. After 1935, these posts were replaced by Class-I provincial services and erstwhile provincial services were designated as Class-II provincial services.

After independence, ICS and IP were retained as IAS and IPS. Later on, Indian Forest Service was also created. In some States, some Class-I and Class-II services were amalgamated into one service- Junior scale and Senior scale. Inadvertently, disparities in career value and status were created amongst these services and those services which still had All India Services over them.

3. ROLE/ POSITION OF ICS IN BRITISH INDIA

Though there were 8All India Services in British India but the ICS was the core Institution to manage the colonial state from its beginning to end, unlike British civil service which is the product of responsible political government. The remark of Lord Dalhousie, Governor General quoted below makes the fact very clear:

"A member of civil service in England is a clerk, a member of civil service in India may be proconsul."

In British India, the ruling hierarchy consisted of Secretary of State— Governor General-Governor- Commissioners -District Magistrate. Small provinces were ruled by Lt Governors and Chief Commissioners. Road up to Lt Governors were open to members of ICS. In fact, they were the actual rulers of this country. Even than British Government maintained a balance in between ICS and other All India Services. Heads of departments of these services were also functioning as Secretaries and Members of Governor and Governor General Councils and there were marginal differentials in their career value in comparison with ICS. But the organized structure and role of the ICS made India a Bureaucratic State and the service made itself over time the real authorities of the Colonial State and political elements like Secretary of State, Indian Council, Governor Generals and Governors could pretend to have powers over the ICS, but in real, the bureaucracy made itself the most effective organized power in the Colonial State. In the eyes of all, British and Indians, the members of ICS appeared to be "Heaven born sons" ever pampered, ever privileged and practically above law. The story continues even after independence. The trend in the development of the Civil Services during this period is largely marked by the continuity of the inherent tradition of the services that existed prior to 1947. This culture must change to suit the democratic values and over all development of the country. The erstwhile ruling hierarchy has been replaced by the elected leaders and sovereign power now rests with the people and through them with the elected leaders. However the IAS maneuvered to retain lot of power with them which has created imbalances in the system.

Secretary/Secretariat

During British Period, by and large, all Heads of Departments used to work as Secretaries as well. The position of Public Works Department, manned by Engineers, was better due to importance of their works. There were separate P.W.D. Secretariats at Central and provincial levels. Chief Engineer PWD was also Secretary of the Department at the Central level. Same arrangement was in practice at provincial level. PWD Secretariat was merged with Civil Secretariat in 1924 and later on post of Chief Engineer and Secretary was separated. This was the fall out of freedom struggle as now the British Govt. changed its focus from development works. Now all the posts of Secretaries were given to ICS. The system continued after independence wherein most of the Secretariat posts are occupied by IAS the legacy of ICS. Induction of professionals, if made, has not been very successful on account of collective internal opposition of IAS lobby. This has been the case of various public undertakings. It is pertinent to note that in British India Heads of Departments -Secretaries were also members of Councils of Governor General and Governors. Therefore, their status was that of a Minister of a Cabinet. After Independence, the Council consists of elected representatives only and a Secretary cannot retain his earlier status and authority. Still, the Secretary retains lot of authority which is causing imbalances in the system. It may be pointed out that the system in British India

was different from the system working in Britain where Secretary was a Minister and only political leader could occupy this post. Bureaucrats could occupy the post of Permanent Secretary, a post different from secretary in power and status. Incidentally, in U.S. and number of other developed countries, the Secretary is a political person. 'Therefore, after Independence, institution 01 Secretary in present form with monopoly of one service (IAS) was not required.

Cabinet Secretariat

Cabinet Secretariat, in present form, was created by interim Government in 1946 on the recommendations of an I.C.S. officer. It has developed into a powerful instrument in due course of time. Cabinet Secretariat is now responsible for the administration of Govt. of India under the Transaction of Business rules 1%1 and the Government of India Allocation of Business Rules 1961. It is responsible for-

- a. Cabinet Meetings
- b. Inter-Ministerial Co-Ordination
- c. Monitoring
- d. Co-Ordination
- e. Promotion of new policies initiatives

It is headed by an I.A.S. Officer and includes Secretaries and other officials. It works under the Prime Minister of India. Byand-large, this is a bureaucratic instrument and yields enormous power and position. Cabinet Secretariat in present form does not reflect democratic culture or a platform for collective wisdom.

It appears that structures of British Cabinet Secretariat and erstwhile executive council of Governor General were in the background of the formation of this instrument. But a close scrutiny of both these institutions reveals that those were structured on the basis of democratic norms and the principle of collective management instead of bureaucratic monopoly. Following facts will make this analysis very clear.

- i. In Great Britain, the Cabinet Secretariat is manned by a Secretary who is a Minister in the Cabinet. Dy. Secretaries are also political person. A bureaucrat is there but as a permanent Secretary. He is the Accounting Officer of the department, meaning that he is answerable to Parliament ensuring that the department spends money granted by the Parliament appropriately. His status is lower than the political secretary.
- ii. In British India, before the adoption of the portfolio system, all governmental business was disposed by the Governor General in Council. The Council had six members pertaining to following functional fields :-

- a. Finance
- b. Legal Expert
- c. Military (Commander-in-Chief)
- d. P.W.D. (Engineer)
- e. Home and Revenue (ICS)
- f. Foreign Office (Dealt by Governor General)

The Council used to function as a joint consultative board. As the amount and complexity of work increased, the work of departments was distributed amongst various members. More important cases were dealt by the Governor General or the Council collectively. The procedure was legalized in 1861, during the time of Lord Canning leading to the portfolio system and the inception of Executive Council of the Governor General. The Secretariat of the Executive Council was headed by the Private Secretary of Governor General but he did not attend the council meetings. Lord Willington first started the practice of having his private Secretary by his side in the meetings. Later, this practice continued and in 1935, the Vice Roy's private Secretary was given the additional designation of Secretary to Executive Council. It may be pointed out that the status of Secretary in British India was equivalent to a Minister. The Constitution of interim Government in 1946 brought a change in the name and the executive Council's Secretariat was then designated as Cabinet Secretariat. It seems, however, that at least in retrospect, that Independence brought a change in the function of Cabinet Secretariat. It no longer remained concerned with only the passive work of circulating the papers to Ministers or Ministries but developed into an organization for effecting coordination between the Ministries. This change necessitates that Cabinet Secretariat should be restructured into a democratic instrument in place of bureaucratic instrument. It should be headed by a minister and include experts of various fields.

District Administration

District is the basic unit of administration in India. The District Collector also known as Deputy Commissioner and District Magistrate is the head of district administration. In British India his main role was to collect land revenue and general administration, to maintain law and order with the help of police, and to carry out other regulatory works. In the later period of British rule one of his main responsibilities was to suppress the national movement for independence and augment war efforts. He was the government and rightly called," **the eyes,the ears,the mouth, and the hands of the British Government . For a common man he was the Mai-Bap.** After independence the role of district administration has changed completely in as much as all the activities which touch the welfare of the people are performed at district level. Today the District collector is overburdened officer. The expansion of socio-economic activities, the change in emphasis and quality- from the regulatory to development and the altogether context of work in a free and democratic system, combine compels us to review the system of district administration and to redefine the role of District magistrate.

3. Efforts of Administrative Reforms and Causes of Failures

It is pertinent to note that since Independence, administrative reforms have been a major concern for Government of India. Successive Prime Ministers have expressed need for reforming the administrative machinery. As a consequence of which number of Committees and Commissions were constituted to look into this matter and make suitable recommendations. On the basis of these recommendations, there have been incremental reforms such as: creation of a separate department of Administrative Reforms, setting up of the Indian Institute of Public Administration and Central Vigilance Commission, constitution of Lokayukts in States and Lokpal at GOI level, citizen's charter and strengthening of citizens grievances redressal machinery, training and restructuring of the recruitment process, modifications in the performance appraisal system etc. But many of the recommendations involving basic changes have not been acted upon and therefore the frame work, system and methods of working of government machinery based on the colonial model of the mid-nineteenth century remains largely unchanged. Irony of the situation is that at the cost of public interest, the Institutional group of I.A.S. lobby has so far maneuvered to forestall the basic reforms recommended by first Administrative Reform Commission. For example, gist's of some of the basic recommendations made by first Administrative Reforms Commission that are relevant to this proposal are quoted below:-

- 1. Entry into the middle and senior management level in top administrative ranks and secretariat should he made from all services and practice of monopolizing such positions by the generalist JAM to the blockage of specialist services must be done away.
- 2. Secretariat should shed functions of executive nature which it has been performing.
- 3. Abolition of the position of a Divisional Commissioner intermediate between the District Magistrate and secretariat.
- 4. Replacement of the Board of Revenue by the Secretariat itself for its Administrative and advisory function and transfer of the appellate functions to a revenue tribunal.
- 5. A functional field must be carved out for the IAS. Multifunctional District Magistrate to be left with regulatory functions including Land revenue etc.

6. A unified grading structure based on qualifications and nature of duties and responsibilities.

There were many more other recommendations to bring basic changes. However, these recommendations were turned down due to lack of political will and bureaucratic dominance over implementation of the recommendations. Only those recommendations have been implemented which pertained to administrative improvements in the existing structure. Even the ARC recommendation of LOKPAL was accepted but implemented after 50 years. There is a need for reforms which were recommended by ARC-1. For this, Government of India should constitute a Committee of eminent political persons and experts to review the stage of implementation of accepted recommendations and examine the other recommendations as to why these cannot be accepted and during this process, bureaucrats should be kept away.

The major hurdles with the implementation of recommendations of commissions and committees are:

- 1. Lack of political will to surmount the internal resistance of bureaucracy.
- 2. Bureaucratic stronghold over administrative reforms. The bureaucrats serve on the highest echelons of state administration as well as in the union administration on periodic deputation and occupy key positions in the Ministries and higher levels. They examine all such reports before submitting to the minister or to the cabinet. By-and-large, a bureaucrat would never pass any recommendation that is uncomfortable for him and his class. Admittedly, any recommendation for basic change is bound to be uncomfortable to the ruling class of bureaucrates, so it is killed at the very beginning. So far, the bureaucratic lobby has given preference to their vested interests over the national interests.
- 3. Lack of long term strategizing agency for administrative reforms. At present, the department of Personnel and Administrative Reforms under Home Ministry of GOI looks after this job. Similar departments are working under State Governments. These are manned by career bureaucrats who would not pass hard reform measures and will be content with soft ones. This department of GOI is supposed to determine the policy relating to administrative reforms in India but it is carrying out the work of improvement of existing structure only. It is rather unfortunate that officers manning these departments are far away from actual problems of administration and are just performing clerical duties.

4. Lack of awareness among public at large regarding their right and responsibilities of administrative machinery towards them and importance and urgency of reforms.

4. Shortcoming of exiting systems and proposed Steps for Administrative Reforms

1. Underutilization of best available talent and experience at key levels of management and policy making

In a democratic set up, a minister as a political head of the department, lays down policies and programs of the department. However, he requires expert advice on all such matters. Me secretariat plays the role of advisory body and the secretary is the principle adviser of the minister on all the matters pertaining to the ministry.

So far our elected leaders have relied almost entirely upon the general administrators (IAS) for this advisory role. The statics reveal that more than 90% posts at secretariat level and for administrative level are filled by the officers of the General Administrative Services (IAS).

This system deprives the elected leadership from expert opinion at key levels of management and policy formulations because one single service or cadre is neither capable nor expert to render advice on various activities of the State. A Ministry of Steel, Irrigation, Roads, Defense Service, Science and Technology etc. should not be left to the charge of a Secretary who has absolutely no background about such matters. The present day requirement is that the Secretary or the Manager must know a good deal about the field with which he is working before he can make wise judgments about cost, policy, planning and advise the Minister. Today it is no longer enough to be expert in bureaucratic negotiations or the management of papers. Moreover, this system offers almost no opportunity for participative management and the specialists though fully accountable and responsible to produce results have no say in the decision-making process. Due to this considerable delay takes place in processing the case. Technical proposals drafted and scrutinized at the highest level in the executive departments are further checked in the Ministry / Secretariat at lower levels. This only delays the decision-making process without adding much to the quality of end result.

To retrieve this situation following reforms are required:-

i. The Cabinet Secretariat should be restructured and should be headed by a political person and should include experts from various fields. This system is working in Britain from where we have inherited our system.

- ii. The personnel and administrative reforms department should be managed by human resource experts from outside instead of I.A.S. to ensure fair deal to all services.
- iii. The Secretariat should not be the preserve of I.A.S. cadres only. The talent and experience of personnel from all activities should be pooled and utilized for polio' planning and management. Officers from different services and disciplines should be inducted in the Secretariat. All the posts of technical fields should be manned by technical personnel only Dichotomy of the secretariat and department should be scavenged off and offices of heads of department and secretary be merged. All head and middle level posts of technically based undertakings, boards, statutory bodies be manned from corresponding technical personnel.

This will ensure expert and correct opinions at key levels of management and policy formulations, will eliminate dual checking of cases and avoid delay, decisions will be fast and taken by broad based body of experts, will ensure healthy and better interaction between different functionaries of the administration and will end monopoly of one or the other class of government servants and ensure rational basis of accountability and authority.

2. Non-equitable distribution and development of talent amongst various functions of the Government

In a developing country, like ours, besides general administrative services, the State. essentially requires services of engineers, doctors, educationists and other specialists to serve it and implement its plans and programs. A very important fact concerning government services is that attraction should be provided to the civil servants so that they may adopt government service as a permanent career. The purpose of the career services is to attract and retain men and women of talent and ambition in government employment according to their aptitude and natural abilities. To establish government career services and to attract and ensure equitable distribution of talent, certain essential are to be observed. These are:-

- a. There should be adequate attraction amongst important services to those citizens may join the services of their choices as per their aptitude and qualifications.
- b. There should be equal pay for equal work.
- c. There should be equal opportunity for promotion and advancement in different services.

The present system does not observe the above essentials. At present, glaring disparities exist in the career value of :

professional services and general administrative services, in between different All India Services, and in between Central and State services . The pay structure of different services is not based upon level of productivity and value of work. As a matter of fact, general administrative services are much better placed in respect of status and emoluments to the services of engineers, doctors and other specialists. Though, the position should have been otherwise in a developing country like ours. Following points need consideration while resolving this issue

- 1. Ours is a development oriented state and not merely a regulatory state . Therefore there is no justification to rate LAS higher than other All India Services or Central Services. This disparity is perpetuated due to the reason that Central Pay Commissions are dominated by LAS officers. Further recommendations of the commissions are drafted by the 1AS officers and then studied by Cabinet Secretariat, Department of Personnel and Training and Department of Expenditure all are headed by 1AS officers .Therefore they are in a position to manipulate higher career value and status .
- 2. After abolition of erstwhile All India Services their higher responsibilities posts were encadred in class-1 or senior scale posts of state services. Re designation of these posts did not change their responsibilities and contribution. In view of the articles 14 and 39(D) which provide fundamental right to equality and equal pay for equal work there is no justification to compare these cadres with other state services which have All India Services over and above them. These state services with the machinations of IAS lobby have been able to devalue the concerned services. Unfortunately most of these services are carrying out development works.
- 3. The Central services play their role inseparable from the State services in taking advantage of their resources, contribution to the economic conditions and meeting the requirements of development in the States. The natural as well financial resources of the States contribute towards the growth of the financial resources of the Central Government and inversely the central Government provides lion's share of the financial resources to the State governments to meet their requirements either developmental or otherwise. Moreover, the expenditure on the education, marriage and other essential items of the Central Government employees are similar to those of the State Government employees. As educationists, scientists, engineers are concerned their case is further genuine because most of their activities have no regional or state boundaries, Major load of the development, which is a national goal, are the responsibilities of State services. The job

requirement and responsibility of professionals of different States arc similar and similar to their counterparts in Central services.

4. As a matter of filet, the existing disparities amongst various services have created sub-system conflicts and lead to agitations and strikes. Thus, the administrative system has become inefficient and unhealthy. The technical personnel are frustrated and demoralized. There is a brain-drain to foreign countries from amongst the technically qualified people. There is brain towards the general administrative services.

To retrieve this situation following reforms are required:-

- i. "A national wage policy should be evolved and disparities between pay-scales of State and Central services, administrative services and technical services, IAS and other MI India Services be dispensed with in the best interest of the community. This will ensure adequate attraction to technical personnel to adopt government service as a career and remove the demoralization and frustration prevalent amongst the serving professionals. It will ensure equitable distribution of talent for various government services and minimize the brain-drain of technical personnel. It will minimize sub-system conflicts within the administrative structure of States and Central government. It will he conducive for the interstate exchange of experience which is very important for the technical fields."
- ii. It will also be appropriate to exclude a bureaucrat from Pay-Commissions and other similar Committees to ensure fair deal to other serving cadres.
- iii. There should be unified grading structure for the entire Civil Service so as to facilitate the movement of officers from one area to another for which they are qualified and in which they may be required .

3. Authority must co-exist with responsibility

Authority in an organization means the power to take decisions, communicating them to the subordinates for implementation and thus, influencing their behavioral pattern. For the successful functioning of an organization, authority must be commensurate with responsibility for which certain conditions need to be fulfilled. Adequate authority should be given to realize the purpose of organization. An individual should have all the means at his disposal to achieve the objectives for which he has been made responsible. He should not be handicapped in the performance of his responsibilities for the lack of authority. One should have authority to take action in order to meet a particular situation. One who exercises authority is also held responsible for the exercise of that authority but cannot be held accountable if his powers are less than what the occasion demands.

Unfortunately, our present administrative structure does not fulfill these conditions because here there is concentration of powers in general administrative services at district, region and state level. For example, the responsibility of execution of a project lies with the head of department but he has little power to take decisions in the matter of financial and administrative sanctions of even small aspects of the project. This is the jurisdiction of secretariat manned by IAS.

Timely availability of land is an essential parameter for the expeditious completion of projects. It is the district magistrate who has to carry out this job. As the things stand today, large number of development projects has been delayed on account of non-availability of land on time but nobody can make the district magistrate accountable for this delay.

In the pre-Independence period, the activities of the State were limited and most of them were carried-out through the general administration. After Independence, activities of State have increased manifolds and large number of services and departments have been created to carry out these responsibilities. However, these new services have not been empowered adequately and the powers are still retained by the administrative services.

To improve this situation, I propose as under :-

"The duties and powers of each job should be defined clearly and in detail on the basis of a scientific analysis of work content. The arrangement of various positions and powers within an administrative organization should be determined primarily by the nature and content of administrative tasks and functions to be performed. Decentralization of powers from general administrative services should be made and these should be given to related specialist services at district, regional and state level. The role and powers of Secretary and Secretariat should be redefined to suit the present democratic requirements. Some of the financial and administrative powers should be decentralized from the Secretariat and given to heads of executive departments."

This will lead to a system where the authority and responsibility will co-terminate, co-equal and be defined.

4. Problems in the law and order and general administration and development works at district level

There has come about a radical change in the fundamental aims of the district administration. Now the functions of the district administration may be broadly classified as below:

1. Land Revenue

The district collector is the head of the revenue department of the district .In this capacity he possesses the power of general supervision and control of land records and their staff. He is responsible for collection of land revenue.canal dues and other government dues, distribution of taqavi loans, distribution of distress taqavi during losses to crops caused by natural calamities, relief of fire sufferers, payment of rehabilitation grant, remission of revenue in case crops are destroyed due to floods or droughts or other reasons, managing government properties, assessment and realization agriculture tax, supervision of treasury, enforcement of stamp act, ensuring that rights of land are held and enjoyed and passed from one party to another within the jurisdiction of law . He also looks after land acquisition work and matters relating to work.

However land revenue function is in bad shape on account of involvement of District Magistrate in development works and law and order.

2. General administration and other regulatory works

Besides land revenue function District Magistrate performs numerous other functions of regulatory nature some of them are listed below:

- 1. Establishment of revenue staff.
- 2. Issuing tour programs of ministers and VIPs. To act as a protocol officer. To make arrangement for stay of VIPs .
- 3. Compiling and submitting annual administration reports of the district.
- 4. Enforcement of Press act.
- 5. Issue of certificates of domicile, scheduled and backward classes etc.
- 6. Elections.
- 7. Conduct of census operations once in ten years .
- 8. Civil defence work .
- 9. Supervision of local government institutions .
- 10. Liaisoning with military authorities and look after the welfare of armed forces in the district.
- 11. Management of Nazul lands .
- 12. Co-ordination with other district officers

There are more than 50 district level officers in a district and it is not possible for a single officer to co-ordinate with them and to carry out his regulatory functions.

3. Law and order

Administration of law and order is a complex phenomenon which includes many activities, such as protection of life and property, enforcement of multifarious laws, internal security detection and prevention of crimes .Being a state subject the primary responsibility of peace and order falls on the state governments .The major functions of police include, prevention of crime, investigation of crime, maintenance of order .Presently District Collector is assigned an important role in the law and order function of the district as District Magistrate. As District magistrate he is the head of criminal administration in the district. He can inspect the police stations and ask for any information, statement, record and register dealing with crime. The police officers are duty bound to obey his orders. Is the legal responsibility of the S.P to inform him any apprehension of breach of peace and order .As a District Magistrate he grants licenses for explosives, possession and sale of all types of poisons and poisonous substances .He can issue warrants for the arrest of a suspected offender and a fugitive criminal .He can ban the assembly of five or more persons if it is likely to cause danger to peace. He may impose curfew in a particular locality or localities for a specific period .As the District magistrate he has the power to disperse unlawful assemblies and issue orders under section 144 of the CRPC

In fact the administration of Law and Order in India, by and large, is of a dyarchical in nature as the police organization is subject to the control of the District Magistrate. This system leads to delay and inefficiency in decision making . In this connection National Police Commission has proposed that the police should be made solely responsible for the maintenance of law and order to the exclusion of the District Magistrate. It may be added here that, in Britain all regular powers of law are vested in police officers. The same was the practice adopted in the presidency towns of Calcutta, Madras, Bombay in British India This might have changed under the impact of National Movement. However this system is being used at some parts of the country.

4. DEVELOPMENT FUNCTIONS

Development functions of the District administration include; agriculture, extension, education, health, animal husbandry, control of population growth, spread of co-operative institutions, implementation of panchayat raj, strengthening of local self institutions, various rural development programs implemented by District Rural Development Agency. Chief Development officer, an IAS, looks after this function under the supervision of District Collector. It is rather surprising that the system pays more attention on construction activities at the cost of its primary function to look after education, health, agriculture and extension in general and that of rural India in particular . As a consequence of this neglect small countries like Sri Lanka, Bangla Desh etc are now ahead of us in the Human Development Sector.

Development (Engineering Activities)

Besides above large number of engineering activities are going on the district .Important of them are, irrigation, buildings and roads,water supply, energy, housing etc These officers work under the control and supervision of their respective departmental heads District Collector supervises and co-ordinates their works also .However this leads to confusion instead of effective coordination.

Thus in the present set-up, the district magistrates have been empowered and entrusted with the task of management and co-ordination of development activities besides their own areas of activities. Their involvement in development works is adversely affecting the efficiency of law and order and general administration is on the one hand and development works on the other hand. The co-ordination of development works by the district magistrates relate to more or less 40/50 departments for various functions having wide jurisdiction. The district magistrates have neither knowledge nor expertise for the co-ordination of developmental activities. The arrangement lacks co-ordination at functional level leading to confusion and inefficiency and resulted in more paper work and meetings and less field work. Moreover, wide powers given to district magistrates in the name of co-ordination have made the other services sub-ordinate to one service which is against the participative co-ordination. There is another important aspect which needs consideration. Most of the works taken up through rural development and similar programs pertain to construction of roads, buildings and drains etc. In some of the States, the district magistrates are executing these works through non-engineering departments such as cane department, soil conservation department etc. These nontechnical departments have no technical know-how or experience to carry out such works. This, sometimes results in faulty construction of works. For example, these nontechnical departments often ignore drainage aspect while constructing road network which results in jacketing of those very rural areas leading to water-logging during Monsoons.

Thus, there is no matter of doubt that in view of the present law and order conditions and day-to- day increasing pressure of regulatory functions, it is jeopardizing people's welfare to burden district magistrates with development activities.

To improve the situation, following reforms are required as :-

"Activities at district level should be divided into following sectors.-

- i. Revenue and Regulating Work
- ii. Law and Order
- iii. Development including welfare and extension.
- iv. Development (Engineering

Officer from respective fields should manage and co-ordinate these sector. District Collector should manage revenue, regulatory works and general administrations. The present Chief Development Officer should be renamed as District Development Officer and he should manage Development including welfare and extension sector. There should be district engineer in each district who should manage technical sector. Law and order should be managed by officer of Police department who should be renamed as District Police Officer The overall co-ordination between these four sectors should be entrusted to political executives instead of District Collector.

5. OUTDATED WORKING PROCEDURES, CODES AND CONDITIONS OF DEVELOPMENT ACTIVITIES

Technical services contribute about 80% of the total activities of our planned efforts. It is apparent, therefore that the success of our plans and programs depend largely upon these services. Under the present set up, technical persons are struggling to fulfil their responsibilities against numerous handicaps and obstacles inherent in the present management and administrative set up which was inherited from the Britishers.

Major technical services in the country were created in the pre-Independence period. To suit their own purpose, the Britishers centralized the authority at head quarter in each organization. Due to excessive centralization, the services developed the diseases of remoteness, inflexibilities, insensitiveness, clumsiness and complacency. This disease is very harmful for technical activities which need to be time based and result oriented. Hence, there should be decentralization of authority from headquarter to field units in these activities and powers and responsibility of each post should be reviewed thoroughly and defined clearly. Secondly, rules and procedures were formulated to carry out the functions of technical organizations. Many of these rules and procedures have become outdated resulting in wastage of time, delay in work and red tape. For delivery of goods efficiently, economically and timely, these procedures and rules need to be improved significantly. Thirdly, in different States, new technical organizations have been created after Independence. Most of them are working on adhoc procedures and rules. Their working is even worse than the old departments. In some of the States, more than one technical organization is

working for the similar functions. At some places, the general administrators have developed a tendency to carry out the development works through non- technical departments leading to technical problems. Personnel management of State Technical Services is in a mess and there is no defined policy. In most of the States, technical organizations lack adequate infrastructure for planning, monitoring, design, research, development and experimentation which is very vital for dynamic and economic working in this present world or advancing technology. In most of the States, technical organizations do not have adequate infrastructure for monitoring, inventory control and operation of equipment and machinery. This is resulting in under utilization and uneconomical utilization of equipment. The norms, practices and facilities for maintenance of technical works are also outdated and inadequate. This is why the consumer is not getting desired level of service. These norms needto be improved in the changed circumstances. In some States, technical organizations dealing with the same source or similar activities are placed under different Ministries. Lastly, technicalofficers in different States are faced with problem of law and order in their day-to-day working.Contractors often use strong arm tactics to intimidate the officers during tender openings or execution of works. In Uttar Pradesh and Bihar, a large number of technical officers havealready laid down their lives at the hands of bad elements when they did not succumb theirpressures to accept low quality of works. to Unfortunately, district administration has often failedto come to the rescue of technical officers.

To improve the situation, following action is required :- "To make the technical organizations dynamic and result oriented, it is very much essential that these are restructured and modernized on scientific basis to meet the new challenges. Improvements in the rules, procedures and practices are also essential for efficient working. For this purpose, a high powered committee or commission needs to be constituted to make suitable recommendations about following aspects

- *i.* Restructuring
- ii. Personnel Management
- iii. Financial Management
- iv. Technical Management
- v. Administrative Procedures
- vi. Equipment Management
- vii. Maintenance norms and procedures
- viii. Problem solution of low and order faced by the technical persons
- *ix.* Procedures for enquiry and disciplinary proceedings
- x. Decentralization
- xi. District Level Planning

xii. Apparatus for Removal of Public Grievances

If with proper re-organization, we could make the efforts of our human resources working intechnical organisations, go to 20 to 20% further than it is today, then we have a better chance ofgoing towards our goal of achieving higher economic growth. "

6. In-efficient working of public Corporations and undertakings_

The reports of Public Accounts Committee and the various enquiry committees appointed from time-to-time have shown that public corporations and undertakings in India have not fared well. Sometimes, voices are raised to close these organizations. This is not in public interest in as much as these are important innovations in political organization and constitutional set up and destined to play a significant role in the changing India of the future. However, it is essential that the mistakes made in the past are examined honestly and rectified to make these organizations dynamic and result oriented. The main defects pointed out by Chagla Committee, A.R.C., Krishna Menon Committee of the existing system are as follows :- i. The Board of Directors has a preponderance of official members which reduces the corporation to the position of a department of a Government. These official members have neither the time nor the entrepreneurial skill. Sometimes, the same person is appointed In number of Boards. All this retard the work of the Board and causes uncertainty and drift in the policies of corporations.

ii. The corporations / undertakings are autonomous only in name, actually they are regarded as government departments. As observed by Estimate Committee, these Bodies have become adjuncts to ministries and are treated more or less on the same lines as any subordinate organization or office which has a harmful effect on the productivity of these organizations as these are subjected to all the usual red tape and procedural delays common to a government department with serious consequential effect on production.

For the better management of these Bodies, following suggestions are proposed:-

a. The Management Board of corporations should compromise of full 6me functional directors. Nor more than two part-time government representatives; and two or three part-time members from outside the government. The government representatives should be selected on the basis of their qualifications and experience and not by virtue of the office which they hold in a particular ministry. The managing director must be a specialist of the area of activity of the Body. The Chairman should preferably be a specialist.

- b. No officer of the ministry should be made Chairman of these Bodies for should a Secretary of ministry be included in its Board of Management.
- c. Each organization should prepare as comprehensive programme to embrace the entire organization. A small technical cell should be set up in each ministry concerned to assist in the scrutiny and evaluation of feasibility studies and detailed project reports and for the analysis and utilization of progress reports and returns received from public undertakings.
- *d.* These should be systematic appraisal of the performance of all public bodies.

6. ABSENCE OF ALL INDIA SERVICES IN RESPECT OF IMPORTANT SUBJECTS WITH NATIONAL BEARINGS

As already pointed out, Britishers, under the impact of First World War and Indian FreedomMovement, abolished various All India Services carrying out development works. Even afterIndependence, except I.F.S., no other All India Service was created. To meet the National requirement of the country, there is urgent need to create AB India Services of Engineers, Agriculture and Medical etc. Admittedly, Water Resource Management, Road and Transport and some other subjects have National bearings. Incidentally, States Reorganization Commission had also recommended creation of Indian Service of Engineers, Indian Medical and Health Services and Indian Forest Service. Only Indian Forest Service was created and creation of other services is still pending.

7. BUREAUCRACY AND COMMON MAN

In the colonial days relation between the bureaucracy and people was that of ruler and ruled.

Democracy has changed the scene theoretically. Now, it is the government of people, by thepeople and for the people. But the work culture of bureaucrats has not changed and most ofthem still consider and behave like rulers and treat the common men with contempt and do notfeel responsive towards them. They still consider themselves masters instead of servants ofpeople. This work culture suited imperial purpose well since it was an efficient way ofcollecting taxes and of maintaining law and order. But it left a tradition of detachment andpaternalism that remains evident today. This must change in a manner that the governmentmachinery works in a responsive and citizen friendly manner. Following steps are required to move in this direction:

- i. Each department should specify standards of service and time limits that the public can reasonably expect. There should be independent watch dog to monitor the results.
- ii. There should be inbuilt mechanism for prompt and effective redressal and independent monitoring.
- iii. Each department should conduct an exercise for simplification of existing laws, regulations and procedures to suit the common man.
- iv. A reformation of laws should also be taken up to remove the hurdles in the way of poor and weaker sections.
- v. Efforts should be made to reduce the time and cost of the disposal of cases in civil and criminal courts.
- vi. No government servant should be authorized to administer the Panchayat Raj Institutions.
- vii. Strict action should be taken against a government servant who ill treats a common man or exploits him.

5. Proposed Action

A committee of eminent political persons and experts should be constituted to examine this matter .The committee should also review the stage of implementa6ons of accepted recommendations of ARC-1 and other commissions and examine the other recommendations as to why these cannot be accepted. During this process bureaucrats should not be associated with this committee as, at the cost of public interest, the institutional group of bureaucrats has so far maneuvered to forestall the basic reforms recommended by first administrative reforms commission in as much as basic changes are bound to uncomfortable to the ruling class of bureaucrats.

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Unpublished:



Vaughan, R., Andriotis, K. and Wilkes, K. (2000) 'Characteristics of tourism employment: the case of Crete'. Paper Presented at the *7th ATLAS International Conference NorthSouth: Contrasts and Connections in Global Tourism.* 18-21 June 2000. Savonlinna, Finland.

Published:

Jackson, C. and Wilkinson, S.J. (2009), 'An evaluation of the viability of photovoltaics in residential schemes managed by UK registered social landlords' in *COBRA 2009: Proceedings of the RICS Foundation Construction and Building Research Conference*, RICS Foundation, London, England, pp. 396-410.

Reports

Printed

Halliday, J. (1995) *Assessment of the accuracy of the DTI's database of the UK wind speeds*, Energy Technology Support Unit, ETSU-W-11/00401/REP.

Online

Liu, R and Wassell, I.J. (2008) *A novel auto-calibration system for wireless sensor motes*. [online] Technical report UCAM-CL-TR-727, Computer Laboratory, Cambridge University, Cambridge. http://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-727.pdf (Accessed 18 September 2011)

Standards

International Organization for Standardization (2008) ISO 9001:2008: *Quality management systems -- Requirements*. Geneva, ISO.

Online papers, preprints

Chandler, D. (2009) *Semiotics for beginners*. http://www.aber.ac.uk/media/Documents/S4B/sem02.html (Accessed 26 July 2010).

Blogs

Shah, V. (2011) 'Capitalism - what comes next?' *Thought Economics* [online] 1 September. http://thoughteconomics.blogspot.com/2011/09/capitalism-what-comesnext. html (Accessed 14 September 2011).

Web sites

Apache Jakarta Project. [online] http://jakarta.apache.org/ (Accessed 21 September 2007).

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