On Public Private Partnerships in Canada

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I.   Introduction

In Canada Public – Private Partnerships (P3s) are a long-term performance-based approach to procuring public infrastructure where the private sector assumes a major share of the risks in terms of financing and construction and ensuring effective performance of the infrastructure, from design and planning, to long-term maintenance.This paper gives the broad framework of P3s in Canada and describes some successful project examples.

II.   Broad Framework

In practical terms, P3s in Canada meanthat:

- Governments do not pay for the asset until it is complete
- A substantial portion of the cost is paid over the life of the asset and only if it is properly maintained and performs according to specifications; and
- The costs are known upfront and span the life-cycle of the asset, meaning that taxpayers are not on the financial hook for cost overruns, delays or any performance issues over the asset's life.

P3s work by:

- Adopting a whole life-cycle approach: the private sector assumes responsibility for all or many of the phases of an asset's life-cycle. In doing so, the private sector assumes the interface risk between the phases, is fully accountable for whether the asset delivers, and is incented to produce the most effective result over the lifespan of the asset. The all-too-familiar problems of poor design, sub-standard construction or inadequate or deferred maintenance become the responsibility of the private sector
- Paying based on performance: the private sector is paid only on performance; in the majority of our projects no payment is made until substantial completion, and a significant portion is paid only over the life of the asset based on clear performance criteria. This aligns financial incentives for on-time, on-budget delivery and for the achievement of performance standards during the useful life of the asset. Moreover, since payments are made only on performance the private sector partner must raise significant financing for the construction of the asset. Lenders and equity participants provide a level of due diligence and oversight that brings enormous discipline to the process.
- Specifying the what, not the how: in a P3, the public sector specifies what it wants and leaves as much scope as possible to the private sector to develop the best solution to deliver results. This focus on the what -- rather than the how -- enables the private sector to develop the most innovative solutions.

III.   Applicability of P3s

Public- Private Partnerships (P3s) are a tool in the toolbox to deliver the public infrastructure investments Canadians need. They are not the right solution in every case, but when applied to the right projects, can provide many benefits. P3s work because they engage the expertise and innovation of the private sector and the discipline and incentives of capital markets to deliver public infrastructure projects. In a nut shell it can be summarised that

- P3 projects consider the whole life cycle of the asset
- P3 projects engage the expertise of the private sector
- P3 projects ensure private sector capital is at risk, bringing capital market discipline and incentives

P3S are the right choice when:

- The benefits exceed the costs. This requires thorough Value for Money analysis. Our experience demonstrates that this upfront work produces better projects even if a P3 approach is not the preferred option, as it requires a more systematic consideration of costs, risks, and performance expectations.
- Successful P3s tend to be large, complex projects that transfer the risks of some, or all, of the components of the project (design, build, finance, operation and/or maintenance) to the private sector and deliver positive Value for Money.
- Value for Money is assessed by comparing the estimated total costs of delivering a public infrastructure project using a P3 delivery method to the costs of delivering the project using a traditional delivery method.

The P3 model is appropriate when the following conditions apply:

- There is a major project, requiring effective risk management throughout the lifecycle;
- There is an opportunity to leverage private sector expertise;
- The structure of the project could allow the public sector to define its performance needs as outputs/outcomes that can be contracted for in a way that ensures the delivery of the infrastructure in the long term;
- The risk allocation between the public and private sectors can be clearly identified and contractually assigned;
- The value of the project is sufficiently large to ensure that procurement costs are not disproportionate; The technology and other aspects of the project are proven and not susceptible to short-term obsolescence; and
- The planning horizons are long-term, with assets intended to be used over long periods and are capable of being financed on a lifecycle basis.

Risk Transfer in P3s:

Risks arise in all projects, regardless of the procurement approach. In a P3, project risks are transferred to the party best able to manage them. By making the private sector responsible for managing more risk, governments reduce their own financial burden. The private sector bids a fixed price for the bundled contract, and must pay out of pocket should any unforeseen expenses arise e.g.) cost escalation, construction defects, unexpected maintenance requirements, etc.

The private sector is interested in P3s because as compared to traditional procurement, P3 projects provide the private sector with a greater role in the design, building, financing, and/or operation of public infrastructure and offer a unique business opportunity, allowing private companies to deliver a broad range of services in different industrial sectors over a long term concession period (typically 20 to 30 years). The private sector is interested in P3s because they provide an opportunity to work with stable, bankable partners in governments, and they provide a long-term revenue stream, among other reasons.

Some examples of the Public Private Partnership in Canada:

1. The transition of AECL's nuclear laboratories to a government-owned, contractor-operated (GoCo) model is the second phase of the restructuring that has already seen the sale of AECL's former CANDU Reactor Division to SNC-Lavalin subsidiary Candu Energy.
   CNL was established as a wholly owned subsidiary of AECL in November 2014 in preparation for the transition to the GoCo management model. Contracts are now being finalized after which CNL's shares will be transferred to CNEA. The share transfer is expected to take place in the early autumn.
   CNL's activities are located across several sites, primarily the Chalk River laboratories in Ontario and the Whiteshell Laboratories in Manitoba, and include the 135 MWt NRU (National Research Universal) reactor. The facilities are used for isotope production; reactor component and fuel examination; nuclear instrumentation and dosimetry services; materials and reactor-chemistry research; and training of nuclear professionals. CNL's mandate covers three core

missions: federal waste and decommissioning responsibilities; providing nuclear expertise to support federal government needs; and the commercial provision of services to users of its facilities.

The GoCo model aims to create value and reduce risks and costs for taxpayers while continuing to fulfil the core mandate, and is similar to models in operation in the UK and the USA. CNEA president and CEO Mark Lesinski pointed to the consortium's extensive experience across CNL's three key missions and also the GoCo management model.

"CNEA brings a successful track record and extensive nuclear experience that will bring enormous benefits to the decommissioning and clean-up program and in ensuring that Canada's world-class nuclear science and technology capabilities continue to grow", he said.

CNL president and CEO Robert Walker welcomed the announcement of the preferred bidder as "good news for the future of the Canadian nuclear sector and Canadian nuclear science and technology", adding that CNEA would bring "private sector rigour and efficiency" to CNL's management and operation.

AECL remains responsible for the management of CNL until the share transfer takes place. AECL interim president Jon Lundy said the company would be looking to CNEA to leverage existing expertise and to create value at the laboratories.

2. The delivery of public safety services on behalf of government of Ontario by a private not for profit self funded organization.
    Since 1997, the Technical Standards and Safety Authority (TSSA) have delivered public safety services on behalf of the government of Ontario in four key sectors:

    • boilers and pressure vessels, and operating engineers;
    • elevating devices, amusement devices and ski lifts;
    • fuels; and,
    • upholstered and stuffed articles.

    TSSA is a not-for-profit, self-funded organization dedicated to enhancing public safety. With headquarters in Toronto, TSSA employs approximately 380 staff, 70 percent of whom work in operations. Governed by a 13-member board of directors, TSSA is accountable to the Ontario government, the residents of Ontario and its other stakeholders.
    TSSA funds its operations by charging its industry customers a fee for the services it provides.

<center>IV.   Concluding Remarks</center>

In this paper the procedures adopted in Canada to identify fit cases for planning and executing P3s have been outlined. The broad frame work discussed is applicable on all classes of P3s. Applicability of P3s mode has been pointed out. Paper ends with some successfully carried out projects.

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A Meta analysis and Systematic Review on Microfinance and its Impact

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Abstract - All economic activities are directed to serve the demand and supply function of scarce resources. One of the largest economic activities is the movement of funds from those who have excess (lenders) to those who have limited (borrowers). This phenomenon has given rise to the emergence of banking services. Although the transfer of funds were done earlier also, but formal banking services has defined the role of borrowers and lenders in an economy in more clear and precise terms. Banking Services in India started in the late 18th Century. Till its inception, banking services has tried their best to include everyone into their scope. But due to several constraints such as illiteracy, complex formalities and regional disparities, a large number of people especially rural masses are still out of the ambit of financial services. This has given rise to the terms – "Financial Inclusion" and "Microfinance". The present paper attempts to review the literature available on impact studies of microfinance programs.

Keywords – Microfinance, Financial Inclusion, Employment Generation, Women Empowerment

Financial inclusion refers to the unrestrained access to the financial services to the vast sections of society, thereby bringing everyone under the umbrella of financial services. Prime Minister of India Sh. Narendra Modi has also stressed on financial inclusion by initiating a scheme known as Jan Dhan Yojna. This scheme highlights the importance of including every citizen under the scope of financial services.

Reports have shown that banks have collected more than Rs. 1500 crore under this scheme as deposits from new customers. More than 3 crore savings bank accounts have been opened in just three weeks since the launch of the scheme. However, it is also estimated that only 20% of the savings accounts opened under the scheme have a positive bank balance whereas only 80 % are still empty.

There is widespread literature available on various dimensions of microfinance. Some has worked on its structure while others have worked on its impact. Hence, literature review for microfinance can be grouped under three heads:

- Microfinance literature on its origin and operations
- Microfinance literature on its impact on Employment Generation
- Microfinance literature on its impact on Women Empowerment

1. **Microfinance literature on its Origin and Operations:**

There is vast literature available on the emergence of Microfinance. Many studies have been done to justify its origin and need in Indian as well as Global context. Global and Indian context have one common instance that origin of microfinance is not traced exactly. Microfinance existed in the global world in some informal ways as "chit-funds" in India, "arisan" in Indonesia and so on. **(Siebel, 2005)**

Indian Microfinance history is characterized in three stages:

1. Money Lenders
2. Chit Funds or Rotating Savings and Credit Associations(ROSCAs)

3. Merchant Bankers

These stages evolved from a non-formal system to a more formal and organized system. Very recent in this area is Rural Finance in the form of Non Banking Financial System-Microfinance Institutions (NBFC-MFIs).

In 1988-89, NABARD undertook a survey of 43 NGOs spread over eleven states in India to study the functioning of the SHGs and possibilities of collaboration between the banks and SHGs in the mobilisation of rural savings and improving the credit delivery to the poor. Encouraged by the results of field level experiments in group based approach for lending to the poor, NABARD launched a pilot project of linking 500 SHGs with banks in 1991-92 in partnership with non-governmental organisations (NGOs) for promoting and grooming self-help groups of socio-economically homogeneous members. In order to meet their credit requirements, in July 1991 RBI issued a circular to the commercial banks to extend credit to the SHGs formed under the pilot project of NABARD. During the project period different NGOs like Association of Sarva Seva Farms (ASSEFA), Madras; People's Rural Education Movement (PREM), Behrampur; Professional Assistance for Development Action (PRADAN), Madurai; and Community Development Society (CDS), Kerala promoted hundreds of groups. The results were very encouraging. In February 1992, the launching of pilot phase of the SHG- Bank Linkage Programme (SHG-BLP) could be considered as a landmark development in banking with the poor.

Many researchers have supported the view that banking system has been inefficient in achieving the goal of financial inclusion.

- **Sheokand (2000)** in his work titled- "Re-orienting banking with the poor: The SHG-Bank Linkage Way" discussed the failure of Indian banking system in providing financial services to poor people. In view of this, National Bank for Agriculture and Rural Development (NABARD) an apex development bank initiated Self Help Group-Bank Linkage programme in 1992. It was one of the major step taken in view of achievement of financial inclusion mission. The Regional Rural Bank's security-oriented individual banking system was replaced by the provisioning of credit to focused groups. In his findings, SHG-Bank linkage model has been successful in achieving the socio-economic empowerment of poor masses.
- **Jindal (2005)** in a discussion on "Microfinance and SHGs: Role of Government institutions" places importance on the scaling up of the SHGs movement through active collaboration between the Government, NGOs and other civil society organizations.
- **Rosenberg (2004)** stated that in order to achieve full potential, microfinance must become a fully integrated part of a developing country's mainstream financial system rather than being confined to a niche of the development community.
- **Gurumoorthy (2000)** stressed on the importance of Self-Help groups as a viable alternative to achieve the objectives of rural development and to get community participation in all rural development programmes.
- **Rutherford (2002)** in his paper – **"Finance for the poor: from microcredit to micro financial services"** reviews the achievements of the 'microfinance revolution. It finds that there are many opportunities to improve and innovate. It argues that financial services for the poor are essentially a matter of helping the poor turn their savings into sums large enough to satisfy a wide range of business, consumption, personal, social and asset-building needs. The range of such 'swaps' should be wide enough to cater for short, medium and long-term needs, and they must be delivered in ways which are convenient, appropriate, safe and affordable. Providing poor people with effective financial services helps them deal with vulnerability and can thereby help reduce poverty. However, the relationship is driven by complex livelihood imperatives and is not simple. Microfinance is not a magic sky-hook that reaches down to pluck the poor out of poverty. It can, however, be a strategically vital platform that the poor can use to raise their own prospects for an escape from poverty.
- **Morduch (2005)** highlighted the difference between microfinance and microcredit. Microcredit refers to small loans given to the poor people. While microfinance is a broader term which includes efforts to collect savings from low-income households, provide consumption loans and insurance along with micro-credit.
- **Sriram (2002)** explained that the financial sector in India by the end of 1980s was largely supply and target driven. The government sponsored poverty alleviation schemes experienced poor recovery rates with misutilization of subsidy and lack of observation of repayment ethics. The repayment rate under the Integrated Rural Development Programme (IRDP) remained less than one-third and created 40 million bank defaulters. In 1989, with the first official loan waiver, credit discipline was throw to the wind. This created cynicism amongst bankers about the credit worthiness of poor people. Also, a dominant perspective was developed that the finance for poor people was a social obligation and not a potential business opportunity.
- **Harper (2002)** studied the differences, outreach and sustainability of the SHG banking system and Grameen banking system of providing microfinance. SHG bank linkage and Grameen banking systems dominated the microfinance markets in India and Bangladesh respectively. In SHG bank linkage system 10 to 20 members formed a group and this group became an autonomous financial organisation, received loans from the bank in group name and the group members carried all saving and lending transactions on their own behalf. Thus, SHG was effectively a micro bank. But

in Grameen banking system microfinance participants organised themselves into groups of five members and each member maintained her individual saving and loan account with microfinance organization and the main function of the group was to facilitate the financial intermediation process. It was also found that both systems were best suited to their prevailing environments. SHG bank linkage system was more flexible, independence creating and imparted freedom of saving and borrowing according to the member's requirements, so was suitable in the Indian context. But Grameen banking system was more rigid, autonomous, over disciplined and dependence creating system which was suitable in Bangladesh where people were relatively more homogeneous, very poor and had less experience of democracy. It was also found that SHGs were probably less likely to include poor people than Grameen Bank groups but neither system reached the poorest. It was also found that SHG members were free to manage the group financial affairs so they were more empowered but at the same time more vulnerable. Grameen groups were much better protected against internal and external threats. Their members were less vulnerable but also less empowered.

- **Singh (2003)** had explained the failure of government initiated anti-poverty programmes and the success of microfinance programme as an effective poverty alleviation strategy in India. According to him the government-implemented rural development programmes failed because these were centrally invented (lacking participation of local level institutions), politically motivated, had leakages, misappropriation and heavy administrative expenses. More than 250 million people in India remained poor, even after 50 years of independence. Failures of these institutional initiatives and learning from the success of the Grameen Bank in Bangladesh had given way to the development of microfinance programme in India in 1992. Many NGOs who were following SHG promotion approach such as Mysore Resettlement and Development Authority (MYRADA) in Karnataka, Society for Helping and Awakening Rural Poor through Education (SHARE) in Andhra Pradesh came forward in this sector. These NGOs were proving very successful in reducing poverty level of its clients and generating additional employment opportunities. Though in its young age microfinance sector had a diversified growth and multiplicity of impacts, as impact on income, employment, health, education, housing and sanitation etc. The programme was playing an important role in the process of development particularly when subsidy and grant based schemes were losing their importance.

- **Basu and Srivastava (2005)** in their Rural Finance Access Survey-2003 conducted jointly by World Bank and National Council of Applied Economic Research, India, highlighted the inadequacies in rural access to formal finance and the exploitative terms of informal finance, which provided a strong need for innovative microfinance approaches. The survey took a sample of 6000 rural households from two Indian states- Andhra Pradesh and Uttar Pradesh. The study indicated that rural banks serve primarily the needs of the richer rural borrowers and the rural poor faced severe difficulties in accessing savings and credit from the formal sector. The survey showed that 66 per cent of the large farmers had a deposit account and 44 per cent had access to credit. While only 30 per cent of the marginal/landless farmers had a bank account and 87 per cent had no access to credit from a formal source. So, they had to depend on informal sources of finance. Around 44 per cent of the households surveyed, borrowed informally at least once in preceding 12 months and the interest charged on informal loans averaged 48 per cent per annum. It was also found that the largest uses of informal loans were for meeting family emergencies (29 per cent) and social expenditures (19 per cent) arising from events such as births, marriages and deaths. Some 13 per cent of borrowers reported using informal loans for investment related purposes.

- **Yunus (2006)** in a study explained the differences between Grameen Bank and conventional banks. He explained that the Grameen Bank methodology was almost the reverse of the conventional banking methodology. Conventional banking was based on the principle that the more you have, the more you get. As a result, more than half of the population of the world was deprived of financial services of the conventional banks as conventional banking was based on collateral, focused on men, located in urban centers and owned by rich with the objective of profit maximisation. On the contrary, the Grameen Bank started with the belief that credit should be accepted as a human right, where one who did not possess anything get the highest priority in getting a loan. Grameen Bank methodology was not based on the material possession but on the potential of a person. Grameen Bank, which was owned by women, had the objective of bringing financial services to the very poor, particularly women to help them fight poverty, stay profitable and financially sound. Yunus described poor people as a 'human bonsai'. They were poor because society had denied them the real social and economic base to grow on. Grameen Bank's effort was to move them from the flowerpot to the real soil of the society.

- **Sarkar (2008)** in his paper discussed the new model of microfinance in Bangladesh and expressed the need of some institutional reforms in the microfinance development strategy of India. The Grameen Bank had introduced a more flexible credit system named as Grameen-II. Under this new system, loans of different duration suited to individual needs were provided. Besides the duration of the loan, the size of weekly instalments could be varied and the borrower could pay less during the lean season and more during the busy season. All borrowers started with a basic loan. In addition to the basic loan, the same borrowers were also granted a housing loan and a higher education loan simultaneously. The most important feature of the flexible loan was that, if borrowers were unable to repay their loans, they were no longer seen as defaulters; rather they had a legitimate way to remain within the folds of the organisation so that they may continue to receive loans. The Grameen Bank had also introduced a pension fund for its borrowers with a

minimum contribution for each borrower towards a pension deposit scheme. Further, the Grameen Bank had introduced loan insurance for its borrowers to pay off a member's debt in the event of her/his death. In this way, Grameen-II introduced a range of attractive new savings and loan products for its borrowers, which the SHG bank linkage model of India was lacking.

- **Sangwan (2008)** empirically ascertained the determinants of financial inclusion and studied the relevance of Self Help Groups (SHGs) in achieving financial inclusion. For the purpose of the study, the cross-section data of 42 Regions from different states and UTs of India was used. The coverage under financial inclusion was assessed in terms of percentage of adults having credit and saving bank accounts. It suggested that SHGs could play significant role in achieving the financial inclusion especially for women and low-income families.
- **Datta (2009)** in his work titled " Consolidating the Growth of Microfinance" ananlyzed the Microfinance: State of the sector report and concluded that the changing policy and regulatory environment has become much more favourable for the microfinance industry. It was also observed that while the sector shows signs of maturity and growing confidence there is also evidence of **"mission drift"**. This provides the basis for an analysis of some of the opportunities and challenges faced by the microfinance sector.
- **Ahlin, Lin and Maio (2009)** extensively evaluated the MFI performance in macroeconomic context in their work titled – "Where does Microfinance Flourish?" According to them Little is known about whether and how the success of microfinance institutions ("MFI"s) depends on the country-level context, in particular macroeconomic and macro-institutional features. Understanding these linkages can make MFI evaluation more accurate and, further, can help to locate microfinance in the broader picture of economic development.

Microfinance Literature on Efficiency of Microfinance Institutions (MFIs)

Porkodi and Aravazhi (2013) examined the role of microfinance in empowering people. They opined that microfinance is growing in quantitative terms but not in qualitative terms. They suggested that Microfinance Institutions should be managed with better scrutiny in terms of finance and technology as well as social responsibility. They appreciated the role of NGOs in promoting Self-Help Groups linking them with banks. The study concluded that Financial inclusion to be effective, marginal farmers and landless laborers must have unhindered access to the financial services like savings, credit, micro-insurance and remittance facilities. They recommended that Government should focus on creating an environment by:

- Providing Public Infrastructure
- Encouraging Competition
- Focusing on rules based regulation
- Wide Publicity
- Implementing the concept of financial literacy and credit counseling

Sriram M.S., appreciated the tremendous growth achieved by Microfinance in the last half decade. But he also reflected the fact that Microfinance's current region centric growth leaves a huge scope for MFI to grow in other parts of India. It should follow customer-centric flexible model as compared to current standardized product and service model.

Masood and Ahmad (2010) in their paper titled "Technical Efficiency of Microfinance Institutions in India – A Stochastic Frontier Approach) examined the efficiency level of 40 MFIs in India for the period 2005-08. They also analyzed the various determinants of efficiency. Results obtained from the study were very surprising. It showed that mean efficiency of MFIs is found to be 0.34 which clearly implies that MFIs can increase their output level by 66 percent using the same level of inputs and technology. Also, there exist large variations in the average efficiency level among 40 MFIs. A very unique results obtained was that Experience (Age) of MFIs is found to be one of the important determinant of efficiency level but size does not matter much. Also, MFIs located in the southern states are more efficient than others. Estimated coefficient of another qualitative variable shows that unregulated microfinance institutions are more efficient than regulated. Spandana, an MFI located in Hyderabad, AP is found to be highly efficient with a score of 0.89.

2. **Microfinance literature on its impact on Employment Generation:**

Microfinance programme generates self-employment opportunities in rural areas. In this programme, credit support is made available to rural entrepreneurs through the SHGs in the form of micro-loans, who otherwise are often considered non-bankable by the financial sector. The programmes which generate wage employment may not bring the BPL households out of poverty on sustained basis. In the words of Yunus (1994), "Unless designed properly, wage employment may mean being condemned to a life in squalid city slums or working for two meals a day for one's life. Wage employment is not a happy road to the reduction of poverty. Removal or reduction of poverty must be a continuous process of creation of assets, so that the asset-base of poor person becomes stronger at each economic cycle, enabling him or her to earn more and more." This perception is shared by many of the rural poor. Rahman (1996) citing Hirashima and Muqtada, 1986 notes that "in the rural areas among female workers in particular and among all workers in general, self-employment is considered to be more prestigious compared to wage employment."

The impact of any social program would be justified if the tool used is able to measure the change it has brought (positive or negative) in the lives of the target population.

There has been a long debate on the methods adopted for measuring the performance of microfinance institutions. To some experts the methods or tools adopted to measure the performance of microfinance are not appropriate.

Ample of research studies done on impact assessment of microfinance program focuses on one of the two concepts: **"Proving Impact"** and **"Improving Practice"**. A common understanding is that impact assessment is a systematic analysis of the lasting changes – positive or negative, intended or not – in people's lives brought about by an action or a series of actions **(Roche, 1999).**

Cheston and Reed (1999) in their paper titled "Measuring Transformation-Assessing and Improving the Impact of Microcredit" have described that the impact measurement studies are not fully valid. They insisted that microcredit as a poverty alleviation tool must be assessed on the basis of whether the clients of microfinance institutions have been able to transform their lives. On the contrary, the only performance indicators that were used to gauge the effectiveness of microcredit programs were the profitability of the lending institution and the quality of its portfolio. They have described the inappropriateness of these methods by commenting that- "Using profit and loss to measure the impact of microcredit is like using a speedometer to measure the temperature".

Khandker (1998) reported substitutions from wage employment to self employment in the survey of 29 districts in Bangladesh undertaken for the World Bank and the Bangladesh Institute of Development Studies (BIDS). They concluded that microfinance as delivered by Grameen Bank, BRAC and Rural Development accelerated the shift from wage employment in the informal rural sector to self-employment among the poor participants. But they added that absence of technological development had slowed down the overall increase in production and employment.

A study at international level conducted by International Labour Organisation (ILO) (1998) in its different projects concluded that microfinance had successfully increased micro-enterprises and self employment of the clients. An ILO survey of 46 Microfinance Institutions (MFIs) in 24 different countries showed that 74 per cent of MFIs had "the self-employed" as clients.

Morduch (1998) carried out a cross-sectional survey in 1991-92 of 1800 households in Bangladesh to analyse the impact of micro-financing services on the ultimate borrowers. From the study it was concluded that there was increase in consumption and education level of the households using microfinancing services as compared to the households who were not served by any microfinance program.

Puhazhendhi and Satyasai (2000) in their study commissioned by NABARD covered 560 sample households from 223 SHGs spread over 11 states across India. For assessing the impact of the programme, a comparison of pre- and post-SHG situation was made. With a view to quantify the empowerment of SHG members, economic and social empowerment index was computed for each household by using the scoring technique. The findings of this study showed 33 per cent rise in average annual income from pre- to post-SHG situation. Forty per cent of this incremental income was generated by non-farm sector activities. The estimated employment days per household worked out to 375 person days during post-SHG situation that had registered an increase of 17 per cent from pre-SHG situation. Sample households took up 200 additional economic activities by utilizing 85 per cent of the borrowed funds for productive purposes. The share of families living below the poverty line was reduced by 20 per cent in post-SHG situation. The social empowerment of sample SHG members in terms of self-confidence, involvement in decision-making, better communication, etc. improved in a significant way.

Sriram and Upadhyayula (2002) in their study titled "The Transformation of Microfinance in India: Experiences, Options and Futures" has focused on growth and transformation of microfinance organizations in India. Three issues that trigger

transformation have been identified- Size, Diversity of Services, Financial Sustainability, Focus and Taxation. They have identified some useful value attributes of Microfinance. First, Microfinance is said to be something which is done by some alternative sector apart from government or commercial sector. Secondly, Microfinance is something done exclusively with the poor. Thirdly, Microfinance grows out of developmental roots.

Till 2002, only two organizations- Sanghamithra Rural Financial Services and Indian Association of Savings and Credit (IASC) were qualified to be classified as microfinance companies as per the definition of RBI.

Kuzilwa (2005) examined the role of microcredit in the generation of employment opportunities in Tanzania. The results are based on the survey of businesses that gained access to credit from microfinance. It was observed that there was substantial increase in the output following the credit access. The owners of the enterprises who have received business training and extension advice performed better than those that did not. The study also asserted that credit is not the only barometer of success. Several other factors such as infrastructural support problems and stiff competition amongst the micro and small-scale producers serves as hindrances to the enterprises.

Borbora and Mahanta (2008) in their case study of Rashtriya Grameen Vikas Nidhi's (RGVN) credit and saving programme (CSP) in Assam examined the role of credit in generation of employment opportunities for the poor. They also assessed the role of SHGs in promoting the saving habits among the poor and the contribution of the programme in social and economic empowerment of the poor in general and of women in particular. The analysis of survey data revealed that 80 per cent of the members in the selected SHGs were from poor families. The members of the groups were engaged in gainful economic activities. It was found that the programme had succeeded in inculcating the habit of saving among the members. As many as 57.8 per cent of the members saved Rs. 200 to Rs. 500 and 42.2 per cent saved Rs. 501 to Rs. 1000 each. It also helped them to free themselves from the clutches of non-formal sources of credit. Forty-three per cent of the sample beneficiaries expanded their income generating activities. The SHGs had helped to set up a number of micro-enterprises for income generation. The focus of CSP was exclusively on rural poor and it adopted a credit delivery system designed specially for them with the support of specially trained staff and a supportive policy with no political intervention at any stage in the implementation of the programme. So, the CSP in Assam was found to be successful.

A comprehensive study has been conducted by **Agricultural finance Corporation Limited in 2008 (SIDBI)**. The results studied the impact of microfinance on several dimensions of development. The study found a positive impact on employment, vulnerability, income related effects, women empowerment and many others.

3. **Microfinance literature on its impact on Women Empowerment:**

Empowerment is an intrinsic quality of a person, which cannot be bestowed by a third party. It is considered that an empowered person's behavior undergoes a change. In a nutshell, empowerment is a process which enables one to gain power, authority and influence over others.

It is a process that allows one to gain knowledge, power, skill-sets and attitude needed to cope with the changing world and the circumstances in which one lives. Empowerment helps the person concerned to exploit the economic environment in increasing the productivity of self, family and the society on the whole.

Hashemi (1996) explained that the microfinance programme in Bangladesh had led to empowerment of women. They had used a measure of length of programme participation among Grameen Bank and BRAC (Bangladesh Rural Advancement Committee) clients to show that each year of membership increased the likelihood of a female client being empowered by 16 per cent. The survey was conducted in 1992 based on 1225 women. A composite empowerment indicator was created based on eight components: mobility, economic security, ability to make small purchases, involvement in major household decisions, and freedom from domination within the family, political and legal awareness and involvement in political campaigning and protests. A woman was considered empowered if she scored five out of eight of the subcomponents. Results showed that Grameen Bank members were seven and a half times more empowered as compared to the comparison group.

Ashe and Parrott (2001) conducted a study on the women empowerment programme in Nepal and showed that 89,000 out of 1,30,000 or 68 per cent of women in the programme experienced an increase in their decision-making roles in the areas of family planning, marriage of children, buying and selling property and sending their daughters to school. These all areas of decision-making were traditionally dominated by men.

However, **Shrestha (1998)** of the Centre for Self-help Development (CSD), Nepal reported that women were able to make small purchases of necessary items like groceries independently. But larger purchases and personal purchases, like jewellry, always required the consent of the husband, representing incomplete progress toward empowerment in this area.

Banu (2001) conceptualised empowerment as the capacity of women to reduce their socio-economic vulnerability and their dependency on their husbands or other male counterparts. They investigated the changes that had taken place in the lives of women who participated in Bangladesh Rural Advancement Committee's (BRAC) rural development programme. The primary data was collected through case studies and household surveys. In order to assess the impact over time the members were categorised in three groups according to the length of membership in BRAC, such as 1 to 11 months, 12 to 17 months, and 48 months or above. The economic dependence of women on their husbands was reduced. Women had begun to acquire positive self-perceptions of their own interests. They had become more confident in travelling and in dealing with other members of the society. It was found that empowerment was continuous process of change that was greatly influenced by the length of time a woman had been involved in BRAC.

Parveen and Leonhauser (2004) in their paper investigated the nature and extent of empowerment of rural women, factors influencing it and further outlined a strategic framework, role of SHGs, education, training and gender awareness for enhancing empowerment. For the purpose of study, qualitative and quantitative methods were integrated and primary data was collected from 156 respondents from three villages of Mymensingh district of Bangladesh during January to April 2003 by applying stratified random sampling. For the purpose of measuring women empowerment, a cumulative empowerment index (CEI) was prepared by adding the scores of six empowerment indicators, namely, contribution to household income, access to resources, ownership of assets, participation in household decision-making, perception on gender awareness and coping capacity to household shocks. The results showed that the level of women empowerment was not very satisfactory at the household level. CEI showed that 11 per cent of the respondents fell under a very low empowerment category and just 5 per cent of them belonged to high empowerment level. Eighty-two per cent of women were concentrated in very low to moderate tail of empowerment distribution. A multiple regression technique was applied to explore the effects of seven key factors of women empowerment. The regression analysis concluded that education, training and exposure to information media had the potential to increase women's empowerment. Therefore, effective initiatives undertaken by the concerned government and non-government agencies in improving women's education, skill acquisition training and access to information could enhance women's empowerment in order to achieve gender equality and development at all levels in the rural society of Bangladesh.

Gaonkar's (2004) research paper aimed at evaluating the role of SHGs in the empowerment of women. Primary data was collected from the state of Goa, India. Out of total 500 SHGs functioning in Goa 100 groups were promoted by National Co-operative Union of India (NCUI). There was an increase in income, savings and consumption expenditures. With the increase in self-confidence, the social horizon of the members had widened. It was also found that with improvements in socio-economic opportunities for women and their ability to take collective action, there had been a significant decline in gender based problems such as domestic violence, dowry, polygamy etc. Interestingly, the members were motivating other women to form SHGs so that they can also reap programme benefits.

Tracey et al. (2006) in their study examined the personal and economic empowerment of rural Indian women through self-help group participation. Data was collected from 100 rural women from the Udaipur district of the state of Rajasthan in India. These women were imparted a skill development training in stitching, embroidery, and patch work through a Sewa Mandir NGO working in Udaipur and Rajsamand districts of Rajasthan. The study was based on both the quantitative and qualitative data which was collected through questionnaires, informal interviews and discussions. The quantitative data found that working women reported enhanced meaningfulness in their

daily lives, increased personal control over spending, enhanced social networks, reduced boredom, increased decision-making power in home and enhanced independence. The inclusion of women in income-generating activities gave support to their personal and economic empowerment. Micro-enterprises and employment provided women with the means for survival, security and growth. Qualitative data revealed positive appraisal of self-worth, independence and self-confidence. The study also found that women's employment meant longer hours of work to meet strict time frames, which resulted in less time for household and family duties. Negative appraisals of pressure, challenge, excessive workloads and stress were indicated. The results showed that the immediate effects of participating in self-help groups for women included an increase in economic strength and an enhanced level of psychological well-being.

Abdul Naeem and his co-authors (2014) has studied the changes in women-entrepreneur due to the provision of microfinance services provided by BRAC, Pakistan using a cross-sectional design study covering 60 females through structured questionnaires. The main focus of the study is to answer the question that does participation in microfinance program have any role in economic and social empowerment of women entrepreneur. The research findings showed that there was significant impact of microfinance on the social and economic empowerment of women. Economic empowerment is more as compared to social empowerment.

Laha and Kuri (2014) in their study entitled –"Measuring the impact of microfinance on Women Empowerment: Across-country analysis with special reference to India has stressed on the microfinance outreach and penetration as one of the important

factor in women empowerment. A comprehensive measure of microfinance outreach has been constructed using the three indicators: Penetration, Availability and Usage. On this index, among south Asian countries, India is found to have made a good progress in outreaching its microfinance program.

Chowdhury (2005) examined empirically the impact of micro-credit on poverty in Bangladesh. The focus was on both objective and subjective poverty and particular attention was paid to the length of time, the programme participants had access to micro-credit. Objective poverty is based on the costs associated with obtaining a minimum daily adult requirement of 2,112 calories. Subjective poverty is calculated on the basis of the personal views of the household head regarding the poverty level of his family by asking whether they consider their family poor on the basis of their yearly income. The main finding of the study was that micro-credit was associated with both lowering objective and subjective poverty.

Thus, most of the above studies revealed that microfinance programme had a significant positive impact in reducing poverty, generating more employment opportunities, improvement in living standard, reduced gender inequality and improved status of women, whereas a few studies contradict the success of microfinance programme, particularly regarding the unchanged level of poverty, ineffective reach to the poorest, lower amount of bank loans, unproductive use of group loans and mistargeting of the programme. The review of literature provides an insight into both positive and negative aspects of the programme. In India, most of the studies had been carried out in central and southern regions and there is a dearth of impact of microfinance studies in northern India.

Conclusion:

In view of the availability of wide literature on Microfinance and its impact assessment, it has been observed that microfinance plays a crucial role in achieving the financial inclusion objective. But, there is no such study done in Delhi and NCR comprising Gurgaon, Faridabad. Hence this study intends to aid the policy makers in devising the customized portfolios for Delhi and NCR customers.

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An Analytical Study of Sectoral Distribution of Bank Credit in India

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Abstract- With the economic crisis, it is expected that credit and down payment growth will average later on. Credit score growth will be led by spending on the infrastructure while retail credit will display an average growth. Margin demands due to lag effect of quantity cuts between attention quantity on deposits and advances, reduced treasury gains and core fee earnings and improving in conditions for NPAs is likely to put pressure in the main point here of the financial organizations. In the light of above aspects the present document tends to analyze sectoral distribution of credit in Native India Financial industry. The document studies the styles in credit growth with a perspective to project upcoming course of growth in bank credit.
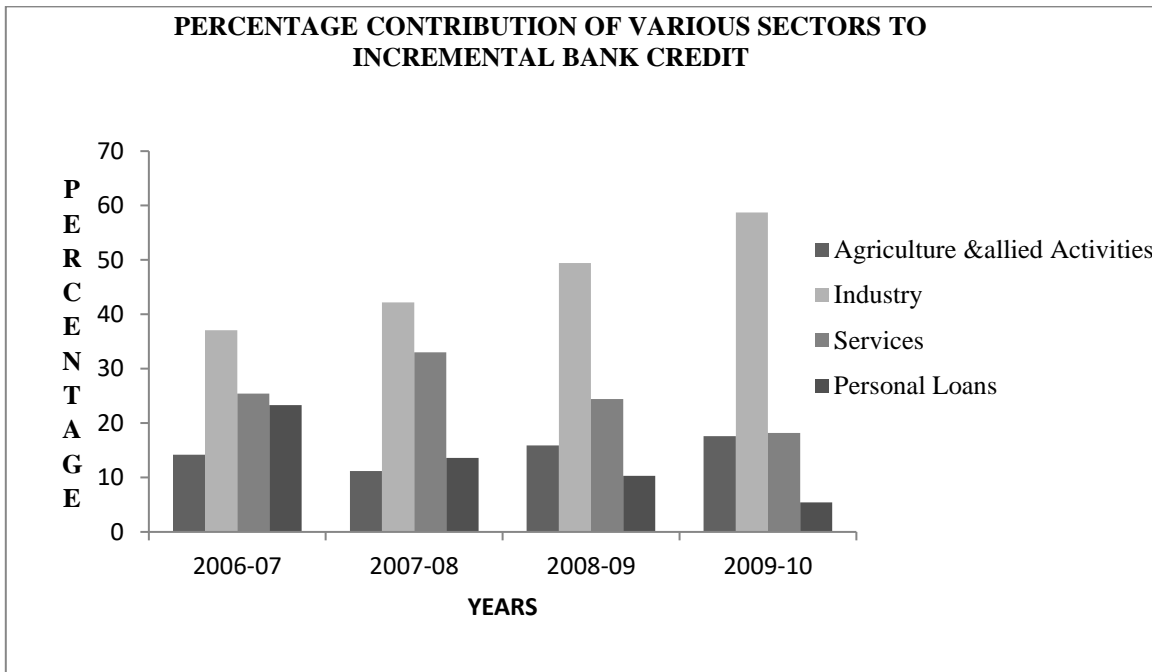
Key words: Bank Credit, Economical Institution Credit, Native India, Sectoral GDP Ratio, Sectoral Credit.

I.   Introduction

The bank loaning has extended in a variety of growing industry financial techniques, especially in Asia and Latin America, recently. Economical institution credit to the personal industry, in actual terms, was improving at a quantity between 10 and 40 % in a variety of nations by 2005 (BIS, 2006). Several aspects have contributed to the important development of bank loaning in growing financial techniques such as powerful growth, excess liquidity in banking techniques reflecting easier global and household financial conditions, and significant bank restructuring.

There has been a distinct choose up in bank credit in Native India recently. The quantity of growth in bank credit which touched a low of 14.4 % in 2002-03, multiplied to more than 30.0 % in 2004-05, the quantity which was maintained in 2005-06. The same pattern ongoing in the next decades also. The Reserve Economical institution of Native India has said that with financial growth consolidating around the pre-crisis pattern, non-food credit increased even larger at a multiplied pace during the third one fourth of FY 2010-11. The step-by-step non-food credit to down payment quantity peaked at 110.5% in mid Dec 2010. The improved credit off-take was seen across all bank categories. Even as personal industry financial organizations and international financial organizations registered high growth in credit circulation as opposed to season before, public industry financial organizations stayed the prominent lenders, accounting for nearly three-fourth of the step-by-step year-on-year credit off-take at the end of the third one fourth. Information on sectoral implementation of complete non-food credit display the improving broad-based pattern. On a year-on-year (y-o-y) foundation, non-food complete bank credit increased by 23.1 % in Dec 2010 as in contrast to a growth of 11.5 % in the corresponding period of last season. During the financial season (up to Dec 2010), non-food complete bank credit increased by 11.6 % as in contrast to a growth of 5.9 % during the corresponding period of previous season. Credit growth gained a distinct momentum during 2004-05 and the pattern continues in the financial season 2005-06. A period of credit growth provides both opportunities and challenges to policymakers. While the surge in financial intermediation is usually associated with improved growth and performance, excessive credit growth often leads to some erosion in credit quality. Policymakers, therefore, face the dilemma as to how to minimize the risks that may arise from such a decrease in credit high quality, while still allowing bank loaning to contribute to greater growth and performance. Sectoral distribution of bank credit provides a knowing of the participation of bank credit towards financial growth and financial addition as well as its part in guaranteeing financial balance.

CHART 1:

PERCENTAGE CONTRIBUTION OF VARIOUS SECTORS TO INCREMENTAL BANK CREDIT

Source: Evaluation on Trends and Improvement of Financial, 2009-10

II. Objectives of Study

➢ To study the magnitude and styles of bank credit to various categories of non meals areas in Native India.
➢ To establish the casual connection between bank credit to non meals industry and financial growth in Native India.

III. Research Methodology

The objective of this document is to analyze the causal connection between the money growths to the non meals areas in Native India during the period 2005-06 to 2009-10. This analysis is investigative in nature. This analysis is in accordance with the secondary data which is gathered from the various Reviews on Trend and Improvement of Financial in Native India. The gathered data have been tabulated to analyze the situation of credit growth in various non meals areas. The analysis investigates the styles and patterns of the money growth in non meals industry. Various mathematical tools such as mean, conventional difference, ANOVA, several evaluation etc. are used to analyze the behavior of credit growth to various non meals areas.

IV. Hypothesis

H¬01: Zero speculation is that there is no factor exists between the team indicates.

H¬02: Zero speculation is that there is no factor in the variability of bank credit, non-food credit and its elements during the period under study.

H¬03: Zero speculation is that there is no factor in the growth of various elements of credit growth in non-food areas.

V. Literature Review

The connection between the size of a country's financial industry and its quantity of economic growth has been the topic of analysis since last few decades. However, the scientific proof on the effect of fund upon financial growth has been mixed and stayed a debated topic. There is a significant literary works on the part of credit industry frictions for financial growth:

Greenwood and Jovanovic (1990), Bencivenga and Cruz (1991), Marcet and Marimon (1992), Galor and Zeira (1993), Azariadis and Chakraborty (1999) were of common perspective that an advanced stage of economic action spurs financial growth. Master and Levine (1993) used different measures of bank growth for several nations and were of the perspective that banking industry growth can encourage financial growth in the lengthy run. Jayratne and Strahan (1996) showed that bank loaning high quality
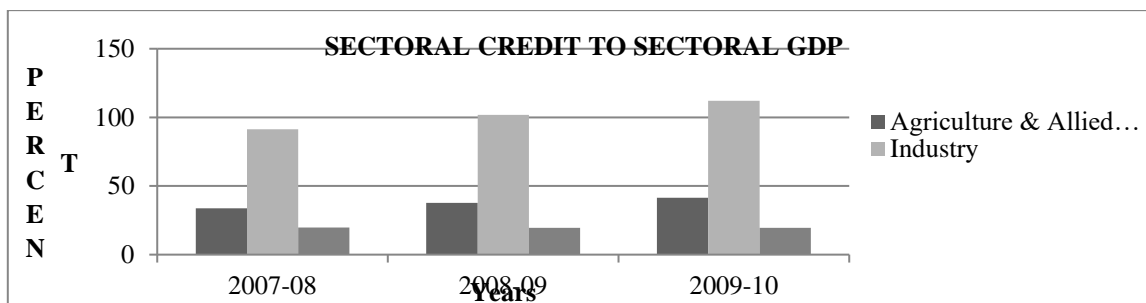
more than doubled leading to greater growth when individual states in USA raised inter-state branching restrictions. Levine (2002) emphasized that the banking system is important and critical in financial growth and highlighted certain circumstances when financial organizations can actively encourage innovation and upcoming growth by determining and funding productive investments. Some of the authors have provided adverse proof of economic industry action upon financial growth in the short-term, although the effect becomes beneficial and important in the lengthy run. Favara (2003) discovered a powerful connection between household credit by financial organizations and other financial organizations as a amount of GDP and financial growth after controlling for the effect of improving prices, government consumption to GDP, initial GDP per capita, household investment to GDP, regular decades of school of the population aged 15 and over, business awareness to GDP, black-market premium and dummy legal origin aspects. The sample consisted of 85 nations for the period 1960-1998. Beck and Levine (2004) discovered that both marketplaces and financial organizations did indeed play a beneficial and part in impacting financial growth, even when selected management aspects were added to the design. However, the connection between financial aspects and financial growth broke down, in particular for the banking varying when using annual data. They tentatively suggested that this was due to "credit surges" that had also been discovered to be good predictors of banking crises and subsequent financial slowdowns. Loayza and Rancière (2006) empirically proved that the connection between financial aspects and financial growth is important and beneficial in the long-run through a design with household credit by financial organizations and other financial organizations as an amount of GDP as their financial growth varying and a variety of other well established management aspects. Saci, Giorgioni and Merc (2009) estimated the connection for 30 creating nations and discovered that the varying, household credit by financial organizations and other financial organizations as an amount of GDP has a considerably adverse coefficient with stock exchange traded value over GDP. Vazakidis and Adamopoulos (2009) investigated the connection between credit market development and financial growth for France for the period 1965-2007 using a Vector Mistake Correction Model (VECM). The scientific outcomes indicated that financial growth had a beneficial effect on credit industry growth, while quantity of improving prices had a damaging effect. Mishra, Das and Pradhan(2009) were of the perspective that the major aspects behind this significant growth of bank credit are improved asset high quality, reduction in banks' gross/net NPAs, a pick-up in financial growth, moderation in improving prices and improving prices expectations, decrease in actual attention levels, improving earnings of houses and improved competition with the access of new personal industry financial organizations. Besides, the distinct growth in bank credit recently could also be attributed to aspects such as financial deepening from a low base, structural shifts in supply elasticity, development of performance of credit marketplaces and policy initiatives to improve the circulation of credit to areas such as farming and method and little business owners.

VI.   Analysis And Interpretation

SECTORAL CREDIT SCORE TO SECTORAL GDP RATIO

The sectoral credit to sectoral GDP quantity was the biggest for the commercial industry (at 112 per cent) followed by farming (and allied activities) (at 41.4 per cent) and then solutions (at 19.6 per cent) in 2009-10. During the previous times several decades, the quantity was on an improving pattern for commercial and farming areas, while it was almost stagnant for the solutions industry.

CHART 2:

Source: Evaluation on Trends and Improvement of Financial, 2009-10

TABLE 1: Economical Institution Credit Score to Gdp Ratio in Select Countries (Percentage)

Country	1960	1970	1980	1981-85*	1986-90*	1991-95*	1996-00*	2001-06*
1	2	3	4	5	6	7	8	9
Argentina	21.7	25.2	33.0	43.0	47.1	25.1	32.2	44.1
Australia	41.6	39.0	39.0	39.1	56.8	73.2	84.7	103.6
Belgium	33.0	38.4	53.6	61.6	69.0	130.8	139.1	109.9
Brazil	30.8	36.8	43.0	50.7	156.5	110.2	68.1	75.0
Canada	28.6	47.9	84.8	92.4	97.0	115.0	119.4	205.0
France	58.8	79.4	112.6	110.3	94.6	101.4	102.2	107.6
China	..	..	53.6	60.2	81.2	92.6	109.2	138.6
India	7.1	9.2	17.6	18.3	20.1	19.9	21.2	33.5@
Indonesia	..	10.7	8.2	13.7	31.2	48.5	59.3	48.9
Ireland	28.9	35.2	39.3	54.5	54.8	56.5	93.9	134.9
Italy	..	86.3	89.0	85.7	85.6	96.8	92.1	103.7
Japan	60.3	136.3	191.3	212.8	251.6	274.7	298.6	300.1
Russian Federation	..	..	..	..	..	27.7	32.1	24.6
Singapore	..	24.8	52.4	87.5	83.1	73.9	90.3	82.8
South Africa	..	88.6	76.4	88.2	94.8	118.5	144.5	157.7
Sri Lanka	20.1	30.2	50.0	45.2	42.4	33.4	39.0	43.7
Sweden	52.7	78.8	90.6	104.0	117.9	125.8	99.0	114.4
United Kingdom	44.7	49.5	36.6	48.4	98.8	117.2	126.4	156.5
United States	105.5	118.0	120.2	126.5	150.4	163.6	195.3	216.1
World	75.8	88.4	95.2	108.3	132.6	142.8	155.4	163.3

Note: Information corresponds with calendar decades. In situation of Native India data correspond with end Goal.
Source: Guide of statistics on the Native India Economic system, RBI.
*Average; @Average of 2001 to 2007 period

It is evident from the Desk 1 that bank credit to GDP quantity stayed reduced in evaluation of globe's regular quantity and it stayed too little in evaluation of creating nations like Sri Lanka. Lower bank credit to GDP quantity is a cause of concern for Native India.

Sectoral Submission of Economical Institution Credit

Sectoral distribution of bank credit provides a knowing of the participation of bank credit towards financial growth and financial addition as well as its part in guaranteeing financial balance. Economical institution credit witnessed a slowdown on a year-on-year foundation during 2009-10 continuing with the pattern observed in previous times. However, there were signs of choose up in growth of bank credit in common, and commercial credit in particular, following the recovery in the actual industry. On the year-on-year foundation, the main drivers of

non-food bank credit during the period of study were the areas of industry and farming. There was a considerable slow-down in credit to the solutions industry and financial loans during the period of study. The common pattern in the previous times several decades has been the building up of the participation from commercial credit to the rise in complete bank credit. Between 2006-07 and 2009-10, the amount contribution of commercial credit to complete bank credit improved continuously from 37.1 % to 58.7 % (Chart 1). There was also an improving pattern in the participation of credit to farming and allied actions.

TABLE 2: SECTORAL SUBMISSION OF ECONOMICAL INSTITUTION CREDIT SCORE (Variations Over The Year)

SECTOR	2005-06	2006-07	2007-08	2008-09	2009-10
	Amount	Amount	Amount	Amount	Amount
Agriculture and Allied Activities	49,606	56,426	44,966	63,313	76,758
Industry (Small, Medium, Large)	1,26,804	1,46,890	1,69,536	1,96,046	2,55,424

Personal Loans	1,03,733	96,486	54,730	40,861	23,546
Of which Housing	51,273	45,791	26,802	19,242	21,620
Other Services Of which :	1,18,254	96,596	1,32,429	96,803	79,394
Wholesale Trade	8,025	10,422	5,559	11,676	19,506
Real Estate	13,147	18,483	19,235	29,072	-363
NBFC	11,463	14,722	30,094	19,897	19,068
Total Non Food Bank Gross Credit	3,98,396	3,96,399	4,01,650	3,97,021	4,35,122

Source: Various RBI Reviews on Trends and progress of Banking

CHART 3:

TABLE 3: Descriptives For Credit Score Increase India

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Agriculture and Allied Activities	5	58213.8000	12476.81699	5579.80219	42721.7855	73705.8145	44966.00	76758.00
Industry	5	178940.0000	49940.50887	22334.07453	116930.6681	240949.3319	126804.00	255424.00
Personal Loans	5	63871.2000	34970.84813	15639.43873	20449.1569	107293.2431	23546.00	103733.00
Other Services	5	104695.2000	20742.70536	9276.41984	78939.7295	130450.6705	79394.00	132429.00
			Total	20	101430.0500	128528.0452	23546.00	255424.00

The table 3 provides the descriptive for credit growth in each industry. The mean is maximum in situation of industry and followed by other solutions. The smallest mean is in situation of farming and allied actions. It indicates the common increase in credit growth is maximum in situation of industry. The conventional difference is maximum again in situation of industry and smallest in situation of farming & allied actions, which depicts that the variation in credit growth is maximum in situation of industry and smallest in situation of farming & allied actions.

TABLE 4: Anova Outcomes For Credit Score Increase India

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.648E10	3	1.549E10	14.404	.000
Within Groups	1.721E10	16	1.076E9		
Total	6.370E10	19			

TABLE 5: Post Hoc Lsd T-Test Of Multiple Comparisons

(I) Sector	(J) Sector	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Agriculture and allied activities	Industry	-1.20726E5	20743.54221	.000	-164700.5450	-76751.8550
	Personal loans	-5657.40000	20743.54221	.789	-49631.7450	38316.9450
	Other services	-4.64814E4	20743.54221	.040	-90455.7450	-2507.0550
Industry	Agriculture and allied activities	1.20726E5	20743.54221	.000	76751.8550	164700.5450
	Personal loans	1.15069E5	20743.54221	.000	71094.4550	159043.1450
	Other services	74244.80000*	20743.54221	.003	30270.4550	118219.1450
Personal loans	Agriculture and allied activities	5657.40000	20743.54221	.789	-38316.9450	49631.7450
	Industry	-1.15069E5	20743.54221	.000	-159043.1450	-71094.4550
	Other services	-40824.00000	20743.54221	.067	-84798.3450	3150.3450
Other services	Agriculture and allied activities	46481.40000*	20743.54221	.040	2507.0550	90455.7450
	Industry	-7.42448E4	20743.54221	.003	-118219.1450	-30270.4550
	Personal loans	40824.00000	20743.54221	.067	-3150.3450	84798.3450

The table 4 provides the outcomes for sum of pieces between categories and within categories. This table also reveals the F quantity. The F value is acquired by splitting the Mean rectangle between the categories by mean rectangle within categories. The acquired value is F=14.404 and p-value is .000 leader stages. This falls well below the .05 leader stage, which is usually accepted as the maximum for establishing mathematical significance, so we can conclude that factor exist between the team indicates. Also, the leader stage .000 tells us the odds are 0 in 1000 that the differences we discovered occurred by chance alone. Hence the second null speculation is rejected. However, even though we know that at least one of our team indicates is considerably different from another team mean, the F figure does not indicate which categories vary considerably and which do not. To obtain this information, we measured the several evaluations which are presented in Desk 5. The several evaluations output provides the outcomes of Fisher's LSD t-test. The outcomes display that p value is important in situation of indicates of farming & allied actions and industry and also between other solutions and farming & allied actions as the p values are less than the approval stage of .05. It indicates the growth is homogenous in situation of farming & allied actions with industry and other solutions. Whereas the financial loans considerably vary with farming & allied actions and other solutions.
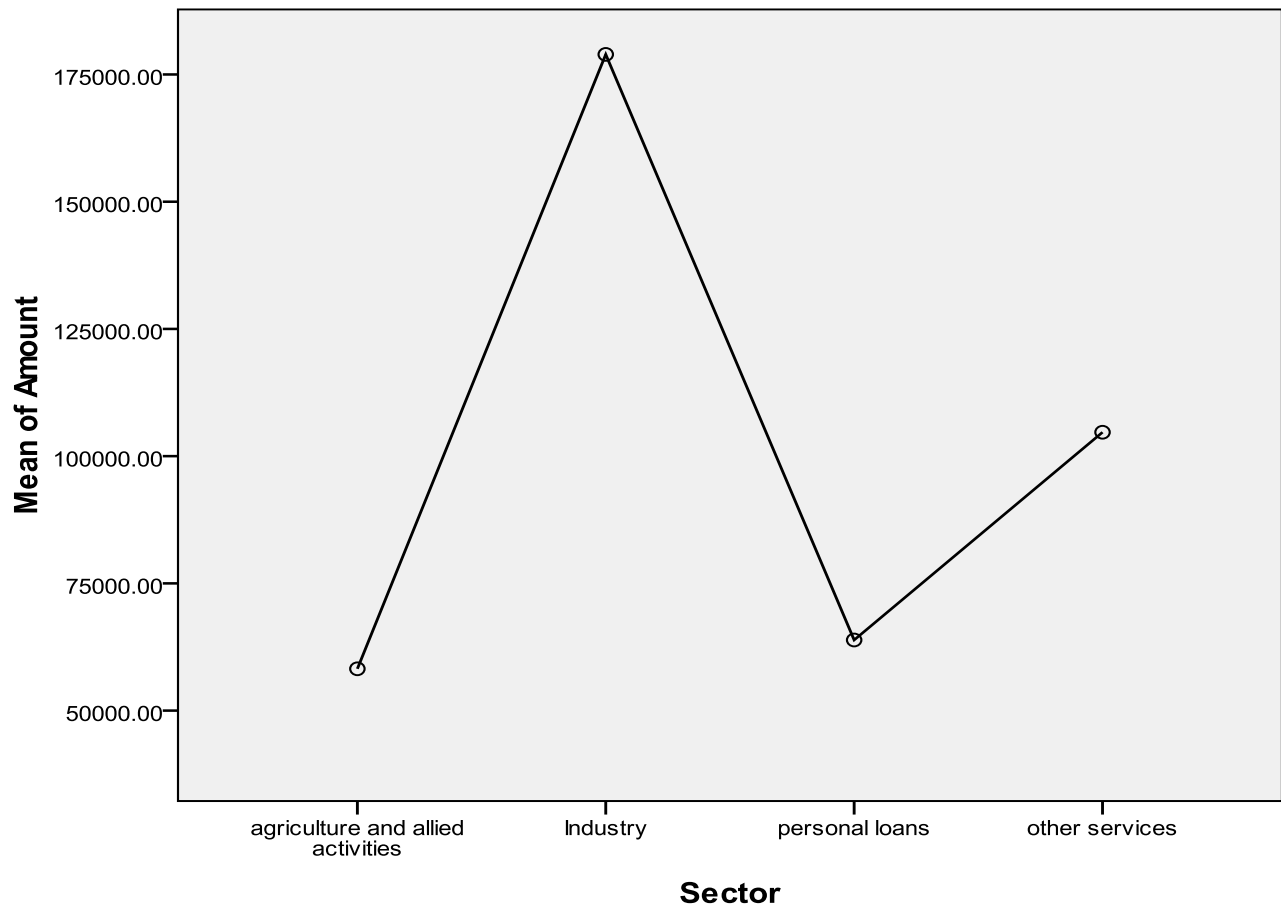
CHART 4: MEANS PLOTS

Chart 4 graphically displays the common credit growth in different areas. The X –axis symbolizes each of the four groups: farming & allied actions, industry, financial loans and other solutions. The Y-axis symbolizes indicates of quantity. In this situation, the farming 7 allied actions had the shortest latency, closely followed by financial loans. The industry had the biggest latency. This graph also shows that the indicates of various areas vary with each other.

VII.   Conclusion

Across areas, credit to the commercial Sector has extended at a fast clip over previous times several decades. This fast growth in credit has been the culmination of a variety of aspects, including greater corporate utilizing, improved capital industry access and the introduction of new products and credit risk management methodologies, in part triggered by improved international bank access. As well, fast credit expansion has brought important benefits, helping channel savings to houses and investors and supporting financial industry growth and financial growth.

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A Way to Trust Deportment for Security in Distributed Systems

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Abstract – **A distributed system is a decentralized network consisting of a collection of autonomous computers that communicate with each other by exchanging messages. These systems are scalable and fault tolerant, and they allow easy resource sharing, concurrent processing, and transparent operation. With the rapid growth of the information age, open distributed systems have become increasingly popular. The need for protection and security in a distributed environment has never been greater. The conventional approach to security has been to enforce a system-wide policy, but this approach will not work for large distributed systems where entirely new security issues and concerns are emerging. Existing authorization mechanisms fail to provide powerful and robust tools for handling security at the scale necessary for today's Internet. We argue that a new model is needed that shifts the emphasis from "system as enforcer" to user-definable policies. Users ought to be able to select the level of security they need and pay only the necessary overhead. Moreover, they must be responsible for their own security. This research is being carried out in the context of the trust-management approach to distributed-system security developed as an answer to the inadequacy of traditional authorization mechanisms with a very popular architecture analyzed of Java by SUN. In this paper, we introduce the concept of trust management, explain its basic principles. We also survey the current research on trust management in distributed systems and explore some open research areas and examine existing authorization mechanisms and their inadequacies.**

*Keyword*s-- **Java, SUN, Trust Management**

I. INTRODUCTION

Trust is an important issue in distributed systems. Transactions in distributed systems can cross domains and organizations and not all domains can be trusted to the same level. Even within the same domain, user's trustworthiness can differ. A flexible and general-purpose trust management system can maintain current and consistent trustworthiness information for the different entities in a distributed system. In e-commerce, for example, a trust-management system lets a buyer and seller become acquainted with each other and estimate the risk of participating in a transaction, thus minimizing the loss. In *P2P* systems, where each entity acts as both client and server and is expected to contribute to the system, trust management can help reduce free riding, which can seriously degrade P2P system performance. Finally, in mobile ad hoc networks—a type of distributed system that has no infrastructure and lets nodes move freely, trust management can mitigate node's selfish misbehavior such as dropping or refusing to forward packets for other nodes to save its battery power while still requiring other node's services.

Much research exists on trust management and reputation management. We don't distinguish trust management from reputation management because both can be generalized as dynamic rating systems. Here, we survey the current research on trust management in distributed systems and explore some open research areas.

Trust-management engines avoid the need to resolve "iden-tities" in an authorization decision. Instead, they express privileges and restrictions in a programming language. This allows for increased flexibility and expressibility, as well as standardization of modern, scalable security mechanisms. Further advantages of the trust-management approach include proofs that requested transactions comply with local policies and system architectures that encourage developers and administrators to consider an application's security policy carefully and specify it explicitly.

A. TRUST MODELS

Trust is a complex subject, and no unanimous definition of trust exists. The Merriam-Webster's Dictionary defines trust as "assured reliance on the character, ability, strength, or truth of someone or something." Dictionary.com describes trust as the "firm reliance on the integrity, ability, or character of a person or thing." We define trust as the belief that an entity is capable of acting reliably, dependably, and securely in a particular case. Trust management entails collecting the information necessary to establish a trust relationship and dynamically monitoring and adjusting the existing trust relationship. The various models for describing trust and trust establishment in distributed systems include public-key cryptography, the resurrecting duckling model, and the distributed trust model.

1) PUBLIC-KEY CRYPTOGRAPHY

Many networked services have security mechanisms based on cryptographic techniques such as the Pretty Good Privacy (PGP) 6 or X.5097 certificate systems, which implicitly use the trust-management concept. A public-key certificate is a digital certificate issued by a trusted third party to certify a public key's ownership. A certificate contains an entity's identity, public key, and other information, such as the trusted third party's digital signature. Service users are assumed to know the trusted third party's public key so that they can verify the certificate. The trusted third party only vouches for the association between an identity and a public key. It doesn't guarantee the entity's trustworthiness. In X.509, the trusted third party is a certificate authority (CA), which is usually a trustworthy entity for issuing certificates (VeriSign, for example). Another CA might also certify a particular CA.

When a user generates a public/ private key pair, it registers its public key with a CA and has the CA certify it. If the same CA certifies two users and they want to communicate securely, they need only exchange their certificates. If different CAs certifies two users, they must resort to higher-level CAs, which certify their CAs until they reach a common CA. So, X.509 uses a hierarchical structure, which constructs a tree of trust.

PGP doesn't use a CA. Instead, every entity certifies the binding of IDs and public keys for other entities. For example, an entity A might think it has good knowledge of an entity B and is willing to sign B's certificate. An entity might assign a degree of trust—unknown, untrusted, marginally trusted, or fully trusted—to its certifiers. The user chooses how to use the certificate. User C might be confident about A's trustworthiness and accept B's certificate, which A has signed. A pessimistic user might only accept certificates certified by fully trusted entities, whereas an optimistic user might trust marginally trusted signers. Traditional certificate schemes like X.509 and PGP only bind public keys to identities. Because binding an identity to access rights or authorized actions is outside the certificate framework, a certificate framework only provides partial trust management.

2) RESURRECTING DUCKLING MODEL

Ross Anderson and Frank Stajano's resurrecting duckling model also has a hierarchical structure. The entities in a network have a master-slave relationship. The master entity is the mother duck and the slave entity is the duckling. A slave entity recognizes the first entity that sends it a secret key through an out-of-band secret channel (through physical contact, for example) as its master in a process called imprinting. The master passes instructions and access control lists to its slaves, and the slaves always abide by their master. The master, a time-out, or a specific event can break the relationship between a master and a slave. After that, other entities can imprint, or resurrect, the slave. A slave entity can also become a master to other entities through the imprinting process. Thus, the relationship among nodes is a tree-like trust relationship. An entity controls all the entities in its subtree. Breaking the relation between two entities causes the relationships in the entire subtree to break. This model is appropriate for devices that can't perform public-key cryptography. However, the model requires an out-of-band secret channel to deliver the secret key, which might not be feasible in some networks, such as ad hoc networks.

3) DISTRIBUTED TRUST MODEL

The distributed trust model assumes asymmetrical trust.

Stephen Hailes and Alfarez Abdul-Rahman developed a distributed recommendation-based trust model. They propose conditional transitivity of trust, which hypothesizes that trust is transitive under some conditions.

For example, if A trusts B, and B trusts C, we can't simply conclude that A trusts C, because trust generally isn't transitive. Abdul-Rahman and Hailes claim that we can conclude that A trusts C if the following conditions are true:

• B recommends its trust in C to A explicitly;
• A trusts B as a recommender; and

• A can judge B's recommendation and decide how much it will trust C, irrespective of B's trust in C.

Although, using trust management is a recent research field, there are many works in this area. We also survey the current research on trust management in distributed systems and explore some open research areas and examine existing authorization mechanisms and their inadequacies. There are three popular architectures for distributed systems applications and their security implications. The architectures analyzed are Java by Sun, CORBA by the OMG, and COM+ from Microsoft. It is extremely important for developers to consider the security implications when designing distributed applications, as many of these applications offer access to crucial resources: financial, medical, and military information, just to name a few [2].

The model's motivation comes from human society, where human beings get to know each other via direct interaction and through a grapevine of relationships. The same is true in distributed systems. In a large distributed system, every entity can't obtain first-hand information about all other entities. As an option, entities can rely on second-hand information or recommendations. However, because recommendations have uncertainty or risk, entities need to know how to cope with second-hand information. The distributed trust model assumes asymmetrical trust. It defines two types of trust relationships: direct trust and recommender trust. It categorizes a trust relationship between two entities in terms of different interactions. Trust in one category is independent of trust in other categories. This model uses continuous trust values for direct trust and recommender trust and can define values. Other researchers fix trust value within the range (0, 1). The recommendation protocol is straightforward. For example, entity A needs a service from entity D (say car service). A knows nothing about the quality of D's service so A asks B for a recommendation with respect to the car service category, assuming that A trusts B's recommendation within this category. When B receives this request and finds that it doesn't know D either, B forwards A's request to C, which has D's trustworthiness information within the car service category. C sends a reply to A with D's trust value. The path A _ B _ C _ D is the recommendation path.

We use the following formula to calculate the trust value from the returned value : $tv\_T = [rtv(1)/4]\_[rtv(2)/4]\_...\_[rtv(i)/4]\_...\_[rtv(n)/4]\_tv(T)$, where rtv(i) is the trust value of the ith recommender in the recommendation path, tv(T) is the trust value of target T returned by the last recommender, and tv_T is the calculated trust value of target T.

When multiple recommendation paths exist between the requester and the target, the target's eventual trust value is the average of the values calculated from different paths.

This model has some weaknesses:
- It doesn't consider false recommendations and assumes that a recommender with a good recommender trust value always makes reliable recommendations, which might not be true.
- It doesn't provide a mechanism for monitoring and reevaluating trust, which is dynamic.

Trust shouldn't be considered a binary concept (that is, either to trust or not to trust). Hailes and Abdul-Rahman quantified trust as a multiple value concept. Many trust-management systems use the same approach. The key challenge then is how to process the trust values to minimize the influence of false recommendations.

B. TRUST MANAGEMENT

Trust Management, introduced by Blaze et al. [BFL96], is a unified approach to specifying and interpreting security policies, credentials, and relationships that allows direct authorization of security-critical actions. In particular, a trust- management system combines the notion of specifying security policy with the mechanism for specifying security credentials. Credentials describe specific delegations of trust among public keys; unlike traditional certificates, which bind keys to names, trust-management credentials bind keys directly to authorizations to perform specific tasks. Trust-management systems support delegation, and policy specification and refinement at the different layers of a policy hierarchy, thus solving to a large degree the consistency and scalability problems inherent in traditional Access Control Lists (ACL). Furthermore, trust-management systems are by design extensible and can express policies for different types of applications.

1) TRUST MANAGEMENT IN MOBILE AD HOC NETWORKS

P2P systems assume that the network layer is reliable and that data delivery, such as request and response, can be guaranteed. This isn't true for ad hoc networks. Therefore, it isn't directly possible to apply the previous approaches to trust management in ad hoc networks. An ad hoc network relies on all participants actively contributing to network activities such as routing and packet forwarding. An ad hoc network's special characteristics— such as limited memory, battery power, and bandwidth—can cause nodes to act selfishly (refuse to participate in routing and provide services to other nodes, for example). Trust management can help mitigate this selfishness and ensure the efficient utilization of network resources.

2) MONITORING-BASED TRUST-MANAGEMENT SYSTEMS

In ad hoc networks, a node can only sense the packets transmitted within its transmission range. Sonya Buchegger and Jean-Yves Le Boudec's Confidant (Cooperation of Nodes, Fairness in Dynamic Ad Hoc Networks) protocol promotes cooperation in ad hoc networks by detecting and isolating malicious nodes.

Each node in the network runs the Confidant protocol. Confidant's monitor component observes the behavior of neighbor nodes to detect misbehavior, such as packet dropping. This requires nodes to run in promiscuous mode. When the monitor finds misbehavior, it notifies the reputation system, which manages a table containing nodes and their ratings. The rating is a number within a certain range depending on the implementation. If the number of times a node misbehaves exceeds a threshold, the reputation system updates the node's rating. If a node's rating falls below a threshold, the system considers it a malicious node. The reputation system maintains a blacklist containing the malicious nodes. When forwarding packets, nodes avoid next-hop nodes on the blacklist.

When the reputation system detects a malicious node, it notifies the trust manager to broadcast an alarm message in the network. Trust managers also receive alarms from other trust managers. A trust manager only distributes and accepts alarms from senders on its friends list. (Establishing friendship is a research topic. One possible method is the resurrecting duckling model.) Each trust manager maintains a table with the trust levels of received alarms.

The path manager ranks the path according to the ratings of the nodes on the path. It deletes all paths containing malicious nodes and drops route requests received from malicious nodes.Buchegger and Boudec didn't discuss how to compute reputation values. In addition, Confidant can't prevent malicious nodes from disseminating false information about other nodes, and trustworthy nodes can lie.Sergio Marti and his colleagues proposed two methods to improve an ad hoc network's throughput in the presence of misbehaving nodes: a watchdog method and a path rater method. They assumed that a wireless interface supports the promiscuous mode.

The watchdog is a misbehaving node locator running on every node that maintains a buffer of recently sent packets. After overhearing a packet, the watchdog com pares it with the packets in the buffer to see if there's a match. If there is, the packet has been forwarded and the watchdog removes the packet from the buffer. If a packet stays in the buffer for longer than a certain period, the watchdog increases a failure count for the node responsible for forwarding the packet. If the count exceeds a threshold value, the watchdog considers that node as misbehaving.

A path rater at a node maintains a rating for every other node that it knows in the network. To pick a route that is most likely to be reliable, it computes a path metric by averaging the rating of the nodes on the paths and chooses the path with the highest metric. It assigns misbehaving nodes a very low rating, and thus excludes them from routing.

Because of ad hoc networks' characteristics, the proposed approaches can't accurately detect misbehaving nodes in situations such as packet collisions and collusion of malicious nodes.

3) EVIDENCE-BASED TRUST MANAGEMENT

Eschenauer and his colleagues present a framework for trust management in ad hoc networks based on evidence distribution. They consider trust as a set of relationships established with the support of evidence. In their framework, evidence can be anything a policy requires to establish a trust relationship, such as public key, address, and identity. Any entity can generate evidence for itself and for other entities. Evidence can be obtained either online or offline, such as through physical contact.

One way to generate evidence is through public-key cryptography. An entity can create a piece of evidence, define its valid time, sign it with the entity's private key, and disseminate it to others. To verify this piece of evidence, other entities will need the originator's public key and certificate. In the Internet, entities can use X.509. However, in an ad hoc network, where there is no CA, PGP might be an option. An entity can invalidate its evidence by generating a revocation certificate at any time.

Eschenauer and colleague's approach also lets an entity revoke other entities evidence by generating and disseminating contradictory evidence. However, allowing such actions is open to attack. A malicious entity can distribute bogus evidence to invalidate other node's legitimate evidence, which can cause chaos in the network. A malicious entity might generate fake evidence for its own purposes—for example, to impersonate other nodes.

To prevent these attacks, Eschenauer and his colleagues proposed using redundant and independent evidence from various sources. However, they didn't discuss how to evaluate evidence, which is important for trust management. Also, because each node's trustworthiness is not dynamically adjusted, the framework is mainly useful for authentication.

4) TRUST MANAGEMENT IN E-COMMERCE

Trust or reputation management is an important issue in e-commerce, where traders might have never met and know nothing about each other's trustworthiness. This lack of information about traders' reputations causes uncertainty and mistrust, which influences the e-market's economic efficiency.

Considerable research has explored trust and reputation management in e-commerce. One possibility is to build a centralized system, like a credit history agency, to manage users' reputations. However, this approach neglects personal preferences and standards. Online auction and shopping sites, such as eBay and Amazon.com, use reputation management. eBay assigns sellers a

rating of 1, 0, or –1 for trustworthiness after one interaction, and computes a seller's reputation as the accumulation of all the ratings received within the past 180 days. New eBay users receive a reputation of 0. Amazon.com rates both sellers and buyers after each interaction. It calculates reputation as the average of all the feedback ratings received during the system's use. A new Amazon.com user has no reputation value. Users can easily misbehave in e-marketing. After cheating and obtaining a bad reputation, a user can simply discard a current identity, obtain a new one, and reenter the market. This kind of misbehavior causes low economic and system utilization efficiency. To solve this problem, Amazon.com and eBay apply pseudonyms. New users must register with some personal information so the system can trace their real identity. At the same time, pseudonyms provide anonymity.

III. METHODOLOGY OF DISTRIBUTED SYSTEMS – JAVA

The Java architecture for distributed systems computing was designed taking security requirements into consideration. Developers need to create programs that are executed on remote distributed systems. An architecture needed to be put in place, however, that would not leave these systems vulnerable to malicious code. This was accomplished through the Java architecture. The source code is written and then converted to byte code and is stored as a class file, which is interpreted by the Java Virtual Machine (JVM) on the client. Class loaders then load any additional classes that are needed by the applications. Several security checks are put between the remote server distributing the program, and the client executing it, such as the "sandbox" security model, them byte code verifier, the applet class loader, the security manager, and through other security measures that can be implemented through Java's security APIs.

A PROPOSED MODEL

1) SANDBOX SECURITY MODEL

In a distributed architecture, the end users would ultimately be responsible for determining which applets to run on their systems. Most of these users would not be able to determine whether a particular applet should be trusted or not. In order to have all applets run in a protected environment, the sandbox security model was developed. Applets that run from a remote site would be permitted only limited access to the system, while code run locally would have full access. If the applet is signed and trusted, then it can run with full local system access. Permissions can be set by a security policy that allows the administrator to define how the applets should be run.

II.

Figure 1: Java Model.

A. BYTE CODE VERIFIER

The byte code verifier looks at the class files that are to be executed and analyzes them based on specific checks. The code will be verified by three or four passes (MageLang Institute, 1998) depending on whether or not any methods are invoked. Gollmann (2001) states that some of the checks performed are to ensure that the proper format is used for the class, to prevent stack overflow, to maintain type integrity, to verify that the data does not change between types, and that no illegal references to other classes are made. Hartel and Moreau (2001) further state that the byte code verifier ensures that jumps do not lead to illegal instructions, that method signatures are valid, access control, initialization of objects, and that "subroutines used to implement exceptions and synchronized statements are used in "FIFO order".

B. APPLET CLASS LOADER

As a Java application is executed, additional classes may be called. These classes are not loaded until they are needed. When they are called the applet class loader is responsible for loading the specified applets. Classes in Java are organized by name spaces, and each class loader is responsible for one name space. The class loaders are therefore responsible to protect the integrity of the classes in its name space (Gollmann, 2001). Java has built-in classes that reside locally, however, that are loaded automatically without any security checks. The path to these classes is indicated by the CLASSPATH environment variable.

C. SECURITY MANAGER

When writing applications, developers often wish to protect variables and methods from being modified by classes that do not belong to the group of classes they have written. In order to create this division, classes are grouped into packages. When a variable or method is declared in a class, it can be private (access only through same class), protected (access through class or subclass), public (any class can access), or they may chose not to use any of the former, in which case only classes within the same package will have access. Depending on the package that a class belongs to, the class will have different access to the other classes in the package, so security could be compromised if an unauthorized class attaches itself to the package. The security manager makes sure that only classes that actually belong to the package in question are able to declare themselves in this package. The security settings are configured through a security policy. Browsers and applet viewers have a security manager, but by default Java applications do not (Sun Microsystems, n/d). Java has provided developers the means to create their own security manager. To create it, the developer must create a subclass of the SecurityManager class, and override whichever methods are necessary to implement the required security. For example, the developer may decide to impose a stricter policy for reading and writing files. This could be attained through overriding the read and write methods already defined in the superclass.

D. API SECURITY

Java offers further security through several security APIs. Among the different APIs provided, the developer can make use of signed applets, digital signatures, message digests, and key management. When an applet is signed it is given full access to the system as if it were run locally. As mentioned in the section on the security manager, the security policy defines what permissions are given to an application or applet when executed. The default Java Runtime Environment provides digital signatures, message digests, and key management, and encryption can be implemented through the Java Cryptography Extension (JCE).

E. OUTSTANDING ISSUES

As with any system, whether it has been designed around security or not, the Java distributed architecture contains several outstanding security problems. One problem is with the CLASSPATH system environment variable. As mentioned previously, the CLASSPATH variable is used to determine the location of the built-in Java system classes. If the CLASSPATH variable is altered, it could point to a set of altered classes that may execute what the original classes intended, but also insert malicious code. The code would be executed, and the user may not notice any difference in the behavior of the application.

Wheeler, Conyers, Luo, and Xiong (2001) found that there are several Java vulnerabilities if a computer serving Java applications is either compromised from the inside, or if an attacker is able to compromise an account on the server. They note that many of these vulnerabilities exist either because of code that provides backwards compatibility, or because of decisions made to increase the ease of implementation. In other words, the vulnerabilities are due

to design choices rather than software defects. First they found that "many critical components of the Java environment are only protected by the underlying operating system's access control mechanisms". System administrators may not be aware of the loose access controls, and critical components could be compromised, such as the key store and system classes. If the key store is compromised then signed files could be spoofed, and if the classes are modified, malicious code could be inserted. Wheeler et al. further note the ease of reverse-engineering of class files, which would allow an attacker to obtain the original source code. They

note that there are tools for obfuscation, but suggest in their work that further obfuscation would be necessary for a higher level of security.

As discussed earlier, a security policy can be set to limit the access of applications or applets to the local system. Wheeler et al. discuss that the permissions, although fine grained, can only be applied to a directory or JAR file. They state, "this is insufficient, except for the most rudimentary system". Permissions applied to the entire directory or JAR file, which violates the principle of least-privilege. They suggest finer permissions that could extend down to the class level. The security policy can also be either modified or overwritten completely through the use of the "java.security.policy" option from the command line, negating any work put into the creation of the security policy. This behavior can be turned off, but is not by default – an example of vulnerabilities being introduced for the sake of ease of implementation. They suggest that the class loader should verify that an extended security manager is loaded prior to loading any classes.

Hassler and Then (1998) discuss the possibility of using applets to perform "a degradation of service attack". Security policies can be created, and are usually part of the browser, to limit the access given to Java applets. They show in their research, however, that this does not prevent the applet from consuming sensitive resources such as CPU and memory. They suggest the implementation of a special applet that would allow other applets to be controlled, and note at the end of their work that the HotJava browser included this, but was found to be insufficient. One must wonder, however, if an average user would have the knowledge necessary to identify that a Java applet is creating the degradation of service, and how to stop it.

Finally, an outstanding issue is that of auditing. A major component of security systems is the ability to audit. Hartel and Moreau (2001) state that there is no known work presently being done to implement auditing capabilities in Java.

IV. CONCLUSION AND FUTURE WORK

In the time since trust management first appeared in the literature in [BFL96], the concept has gained broad acceptance in the security research community. Trust management has a number of important advantages over traditional approaches such as distributed ACLs, hardcoded security policies, and global identity certificates. A trust-management system provides direct authorization of the security critical actions and decouples the problems of specifying policy.

V. RESULT

This paper on trust management has focused on one of the most common distributed systems application architectures as Java. Java has several published security vulnerabilities, but knowing what they are is half the battle towards finding a remedy. The difficulty of implementation must also be considered. If the system is overly complex, security problems may exist due to implementation problems. If the architecture is too simple however, there may not be enough flexibility to create the necessary security configurations.

As an area of future work as we are examining higher-level policy languages that are even more human understandable and capable of higher levels of abstraction. Such high- level policy would be combined with network and application specific information and compiled into a set to trust-management credentials. Similarly, a tool for translating trust-management credentials into application-native forms would give us all the advantages of trust management (delegation, formal proof of compliance, etc.) while requiring minimal changes to applications.

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Android Based Irrigation Application Home Genie

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Abstract— **The advancement in Automation Systems is making life simpler and easier. Everyday more and more people are getting connected to internet and hence there is a huge demand of internet based technology solutions. IoT (Internet of Things) is latest emerging technology trend that can share information and complete tasks when you are busy with other activities. Home Automation System (HAS) is a system that uses computers or mobile devices to control basic home functions through internet from anywhere in the world without user's own presence. It thus saves user's time and energy.In this paper we present a Home Automation System(HAS) that is used for watering the plants and gardens at home without user's involvement. The system is controlled by user through mobile application which is connected to internet and communicates through the server stored on cloud.**

Keywords— Home Automation System (HAS), Internet of Things (IoT), Wi-Fi network, ESP8266 Micro-controller.

I. INTRODUCTION

Home Genie is an automatic irrigation system which switches the pump motor ON/OFF on receiving the signal from the user through android application. The advantage of using this method is to reduce human intervention and still ensure proper irrigation. This system is based on IoT. According to Global Standards Initiative on Internet of Things (IoT-GSI) IoT is global infrastructure for the information society that enables advanced services by interconnecting physical and virtual things together[7].

The application uses internet to send commands to irrigation system installed at home and hence can be controlled from anywhere in the world. Hence it greatly pull out the worries of plant lovers of not able to water their plants while they are somewhere else.

Application uses a master control feature that can be used at any time to switch water pump ON/OFF. This is very useful to users as they can operate the water pump at any time as per their need.

People in todays world have less time and are too busy in earning their livelihoods and hence have a tendency to forget things. Thus they want to manage their time efficiently by planning. Home Genie gives users this flexibility of managing their future watering by pre-setting Date and Timings for automatic irrigation. The application will automatically trigger the water pump at specified date and time and will notify the user for same.

Irrigation on a rainy day will not only result in wastage of water resource but can also lead to death of plants due to over irrigation. Keeping that in mind Home Genie uses smart weather feature that automatically cancels the preset watering if there is a prediction of good amount of rainfall and will notify user in case user himself starts the irrigation using master control.

II. RELATED WORK

The paper [1] provides a comparison between various Home Automation Systems and proposes the features for an ideal Home Automation System. The proposed system should be available to the user 24*7 and thus requires an internet connection. System should be easy to install and should have a web application and a mobile application. Adding new devices should be easy. All the above features will help establish the system commercially.

The system proposed in [2] uses various sensors like motion sensor,fire and smoke sensor, light sensor. It switches ON/ OFF devices based on the results from these sensors. The system uses cloud to store information about sensors for future analysis.

The system [3] is designed to assist handicapped and old aged people. It control various home appliances using Android device. The system has two main parts (home automation application and Arduino Mega ADK). User can send control signal to the Arduino from the application.

The smart home system proposed in this paper [4] uses technologies like wireless sensors, biometric, etc. Biometric is used as a key at the entrance, this provides increased security. .This system can be used as automation system in offices, clinics, and other places.

The system in [5] uses bluetooth technology to control the devices at home. The PC connected to bluetooth via the bluetooth module behaves as the client. It also ha sensors attached to it like light sensor. Light sensor can turn ON/OFF light based on the value it receives. It can detect other bluetooth devices in range and can check if these devices are working properly or not. The drawback of this system is low bluetooth range.

III. III. PROPOSED WORK

This paper proposes a model for home automation (specifically smart garden) that uses an application to control the ESP8266 to switch ON/OFF the pump located at a remote location. The system requires 24*7 internet connection and will help user keep check on their garden while they are away. The system will use an android application, a server and an ESP to perform the task. App uses the phone's internet connection (4G/3G/2G/EDGE or Wi-Fi, as available) to control the devices at home from anywhere, anytime. The app has preset options for setting time for future automatic watering and notifies when it automatically starts the pump. It also displays present weather conditions of specified location and has decision making capabilities as it can decide whether to switch ON the pump or not based on the weather conditions. It will send update signal to the server to switch ON/OFF the pump. ESP that is connected to Wi- Fi at home is checking the server periodically, will switch ON/OFF the pump connected to its I/O pins depending upon change in signal value received from the server. The system is intended to control devices at house garden with relatively low cost design, user-friendly interface and ease of installation. It is designed to assist and provide support to the user.

A. Features of Proposed System

- MASTER CONTROL- Allows to switch ONN and OFF motor.Overrides all other control requests

- PRESER TIMINGS- Allows pre-setting watering timings, the app will automatically switch ON and OFF the motor on specified times.

- WEATHER- The application provides weather information for specified location.

- SMART CONTROL-The app automatically uses the weather information to control the preset options, i.e., the app will not switch ON the motor if there is heavy rain in specified area.

- SERVER- The server relays information between the devices at home and the android application.

IV. IV RESULTS
V.

The proposed model in shown in figure 1 where there are mainly three components connected together through internet. These include an android application, ESP micro controller and cloud server. The Application is running on mobile phone and will be available to users. Second is the ESP micro-controller which is installed in the homes. This micro- controller circuit will connect to internet through wireless router and will continuously listen to signal from server. Lastly there is a database implemented on server stored on cloud. This database is queried through application by the user.
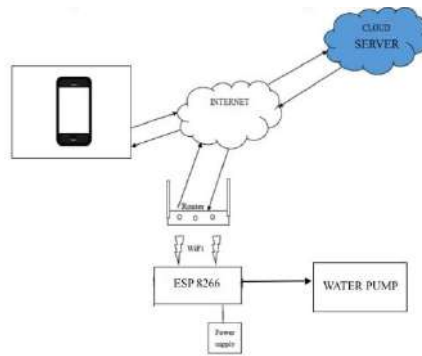
Figure 1. Proposed System Overview

A. *Android Application*

Figure 2 Home Genie Android Application

An android application made using Android Studio IDE. This application connects to internet and send signal to query the database which is saved on cloud. The signal sent is either 0 or 1 to switch OFF and ON the ESP respectively. Application offers features such as maser control that is used to trigger the water pump any time and overrides all other requests. It gives an option to add preset timings for automatically querying the database at set Date and Time saved by user. It will push notifications to notify user at such an event. Application also presents weather forecast with precipitation value for that day and will automatically cancel any preset watering if good amount of rainfall is detected.

B. *ESP 8266 Circuit*
The ESP8266 is a low-cost Wi-Fi module that provides MCU capability and full TCP/IP stack.
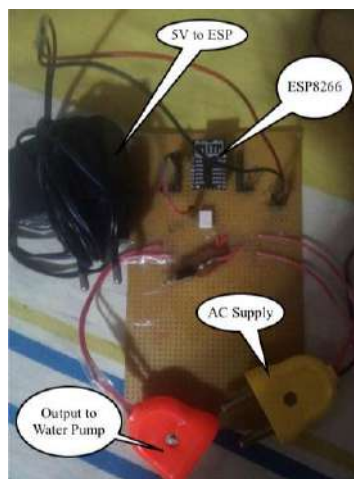

Figure 3. ESP Circuit Setup

ESP circuit is set up as shown in figure 3. This ESP is connected to internet through wireless router and continuously listens for signal from the server. A signal 1 turns ON the LED on ESP and sends a signal high to its GPIO5 pin which then completes the AC circuit of water pump made using a TRIAC and hence the water pump starts. On the other hand a signal 0 from server tells ESP to give a signal LOW on GPIO5 pin that in turn opens the circuit of water pump. ESP is provided a 5V AC supply which is regulated by a voltage regulator to regulate it within a range of 3.5 V.

C. Database on Server

A database is created on the server which stores value 0 or 1. This database is queried through the application by providing the url of script files written in PHP which are used to manipulate data on database. Two script files in PHP are implemented for data querying, one to update value on database when queried by application and other to get the current value (0 or 1) from the database to be used by ESP.

On startup the application shows the current status of water pump by querying the server. The water pump can be switched ON/OFF anytime through this master control option.
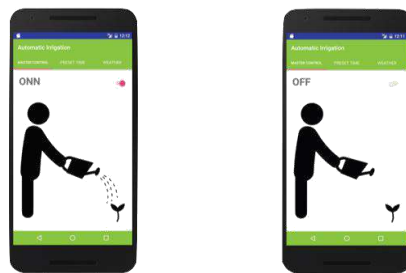

Figure 4 Master Control Feature

Application provides a feature to add preset timings where user can set date and time and application will automatically turn ON/OFF the water pump at that time. These set timings can be set on and off just like an alarm system.

Fig 5. Preset Time Feature

Application provides weather information for the current day so that user can decide weather to irrigate or not. Application also has a smart decision feature that will automatically cancels the watering in case any preset timing is saved for a day when there is good amount of rainfall.

Figure 6 Weather Forecast Feature

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VI.   VI. CONCLUSION AND FUTURE SCOPE

VII.

</div>

A.   *Conclusion*

The system for home automation (specifically smart garden) is designed. The system has been experimentally proven to work satisfactorily. It uses an android application to control the ESP8266 that switches ON/OFF the pump located at a remote location through internet. The designed system not only controls the pump but also has decision making capabilities i.e., based on weather conditions it can decide whether to switch ON the pump or not (the preset option is influenced by the decisions).

B. *Future Scope*

In future, the system can be extended to Complete Home Automation and Security. The ESP Module can be used to trigger any device and this concept will be used to extend the project to Home Automation. We will also try to find a way to increase the number of outputs as the ESP Module provides 6 Input Output pins, we will have to interface it with some other micro controller to increase the number of outputs. Different types of sensors like light, fire, heat etc can also be added. These sensors will increase the decision making power of the system.

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Crime Cases and Ways of Criminal Detection

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Abstract— In today's scenario crime rates are rising tremendously and hence we have put forward the requirement of a computer technique that helps in criminal detection and prevention. The frequent and repeated robbery, rape, murder, dowry etc. have made common citizens to have sleepless nights, the criminals may have been operated in an organized way and sometimes have nationwide or international links. The research paper of quantities instead of quality would be the best way to review the high crime rates because you are open to farther information that assist you to relate to any new crime detection The paper will deal with the same. The data is based on a record of 130 criminal cases rather than dummy data set which would otherwise lead to a wishful analysis. It is a known fact that with the increase in the criminals we have a shortage in the police force and need a computer technique that helps in criminal detection and prevention in the future crimes by the criminals. The paper will include juvenile and non-juvenile criminal cases i.e. all age groups. Graphical approach has been used in the paper plotting age vs. education. Following that, knives'-Nearest Neighbor Algorithm (k-NN) is used to find the nearest plot. Further, we use the Naïve Bays algorithm to detect the future rating for each attribute and detect the further chances for the crime to take place.

Keywords—k-Nearest Neighbor Algorithm, Naïve Bays, Memory Based Reasoning.

I. INTRODUCTION

The population growth is a global scenario, and with this growth there is a larger competition for the gain of resources and other problems like unemployment proper education, nutrition etc. to each person. This directly influences over the criminal activities. With growing crime rates we need a mechanism that could detect criminals and hence lead to prevention. In this modern lifestyle there is a need to automates the criminal identification and techniques, so that we could decrease the human work load and we could work our minds in doing something more productive and use time more efficiently. The paper uses data mining algorithms for identification, classification and future scope of crime by any criminal. This will help us develop a code through which criminal identification will be easy. The paper uses data mining algorithms for identification, classification and future scope of crime by any criminal. This will help us develop a code through which criminal identification will be easy. The algorithms used in the paper are the Apriori, *k*-NN and Naive Bayes.

II. ALGORITHM DESCRIPTION

The paper uses two data mining algorithms for the detection and prevention of future crimes described below:-

k-NN is an instance-based algorithm for learning, where any local plotted point is approximated locally depending upon the nearest point to that point i.e. all computation is deferred and classification depending on the nearest point. The *k*-NN algorithm is among the simplest and one of the most used of all machine learning algorithms. The training examples includes vectors in a multidimensional feature space, each of which having a class label. In the training of the algorithm we store the vectors with the class labels of the samples. In the

classification phase, we define k as a user-defined constant with an unlabelled vector i.e. a query or test point is classified by assigning the label that is the most frequent in the k samples used nearest to the query point.

$$\text{Distance } ((x, y), (a, b)) = \sqrt{(x - a)^2 + (y - b)^2} \quad\quad (1)$$

Other distances that may be used are 1) Manhattan Distance (x= (a, b) and y=(c, d) then Manhattan distance between x and y is |a−c|+|b−d|) and 2) Minkowski Distance is

$$d(p, q) = (\sum_{i=1}^{n} |p_i - q_i|^c)^{1/c} \quad\quad (2)$$

The Naive Bayes algorithm is a prediction and classification Algorithm. It uses Bayes' Theorem, a formula that calculates a probability by counting the frequency of values and combinations of values in the historical data. Naïve bays algorithm is used in data mining process. Data mining is a process of analysing patterns from historical information and transform it into an understandable structure for future use. Typical use of data mining process is in Science fields where analysts identifies the patterns based on historical data available and use those patterns to predict future activities. It is also used in medical fields, like whether a patient has heart disease or not from his historical data like patient's age, blood sugar level and other symptoms.

(A) Description:

Naïve bays algorithm is based on three concepts:
 Prior: Past experience
Likelihood: chance of event could happen. **Posterior**: predicting the event will occur

Prob. (B given A) = Prior * Prob. (A and B)/Prob. (A)   (3)

Example: Support you would like to determine the possibility that people over 60 ages are more prone to heart disease. In this case, prior condition (A) would be over 60 and dependent condition (B) would be having heart disease.

If there are 100 persons randomly tested for heart disease and before testing it is already known that out of them 25 are having heart disease,

Probability of A and B, (means people are tested and have heart disease previously) = 25%
If 75 of the 100 patients are over 60, then Probability of (A) = 75%
Then in this case, Bayes Theorem would predict that that 33% of the patients over 60 are likely prone to heart disease (25/75).

III. WORKING AND IMPLEMENTAION
JJJ.

The implementation of the paper includes a java code based over the k-NN algorithm, implementing memory based reasoning (MBR), firstly we need to put the attributes of the criminals on the basis of the criminal records that we have.

The attributes includes the age, punishment, education, gender of the criminal, gender of the victim. The data entered is flexible and later be changed or expanded as more the data, more better we could predict the crime. As the program runs we enter the attributes of the person who expected to be involved in any crime and depending on the prior data we could detect the crime done by that person.
For the use of the system in any other country one may need to change the prior data totally as the data is on the basis of the judicial system of India, which is different with any other country. In order to explain the working of the program we need to consider a five dimensional graph on which we plot each attribute that we have

considered i.e. age, punishment, education, gender of the criminal, gender of the victim. Now using the k-NN algorithm we find the nearest neighbor of the unknown point using the Euclidean distance formula that we have modified as:-

Distance $((v, w, x, y, z), (a, b, c, d, e)) = \sqrt{(v - a)^2 + (w - b)^2 + (x - c)^2 + (y - d)^2 + (z - e)^2}$ (4)

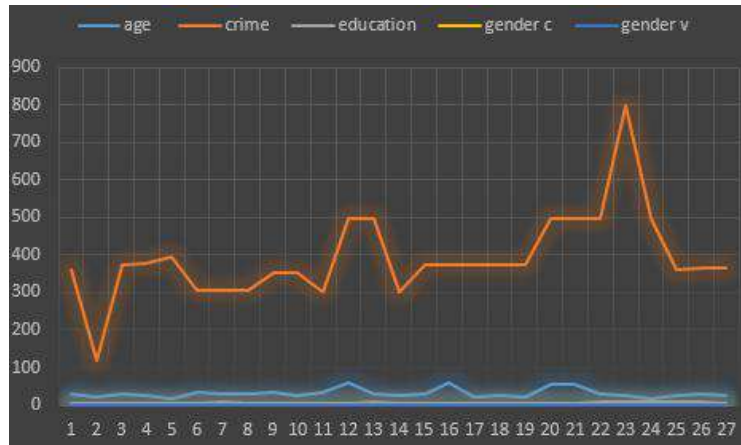A five dimensional graph won't be possible thus a simple representation on a two dimensional graph is as follows:-

Figure 1: 2D Representation of attributes of criminal

The technique allows us to determine the relation between the crime, criminal and the punishment given to the criminal, depending on the prior decisions taken by the court. Due to the privacy in the judicial system of India we are able to add only five attributes in the program that can be increased if needed in the future by making small changes and the research is restricted to only one hundred and thirty cases. The cases used in the paper are real and the information regarding them is obtained from different courts and police stations, spending lot of effort and time.

Example Result:

Figure 2: Result of murder criminal from past records

IV.   MATH

Equations of Naïve Bayes algorithm:

Prior: past experiences (p)

Likelihood: chance of event could happen (l) Posterior: predicting the event will occur (P) Evidence: number of cases where event occur alone (e)

$$P = (p*l)/e \qquad (5)$$

Euclidean distance formula:

$$\text{Distance } ((v, w, x, y, z), (a, b, c, d, e)) = \sqrt{(v - a)^2 + (w - b)^2 + (x - c)^2 + (y - d)^2 + (z - e)^2} \qquad (6)$$

C. THE CONCEPT

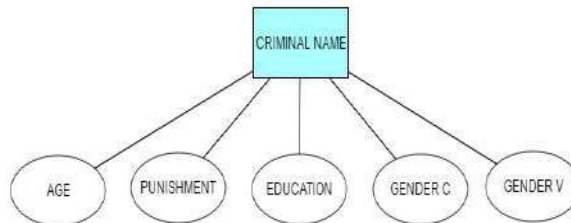We have used association rule to map criminals and the crimes.

Figure 3: criminal and attributes

For any criminal we divide its attributes and rate them, plotting it over the graph and using the k-NN algorithm we can get the nearest plot, and correspond it to the criminal, whose plot is nearest to it.

Example a new criminal's attributes are near to that of a murderer, then we could conclude that the new criminal, (according to the logic of paper) is most probably a murderer.

The paper also deals with any future detection of crime by the criminal i.e. use Naïve Bayes algorithm. According to the rating of Prior experiences, Likelihood and Evidence it provides the Posterior rating of occurring of the crime.

Specifically here we have 5 attributes i.e. 1) age of criminal, 2) punishment that he received 3) education 4) gender of criminal 5) gender of victim. We have already used the data and using that we will decide the new attribute to which category of crime does the crime belongs, depending on the information provided, more information in the database will make the implementation results more nearer to the actual result. Presently we deal with crimes like rape, murder, robbery, dowry demand etc. covering more crimes can make us cover more no. of crime and could have a usable

implementation of the research.

VI. CONCLUSION

Automatize the crime detection of a criminal and prediction of crime by the criminal. Practically the system may fail, if:

D. The data set provided is not enough.
E. The criminal may vary in terms of its attributes from the previous listed criminals.
F. Records need to be updated.
G. The attributes included may not be enough.
H. The same data not valid in any other country.
I. System gives output on the basis of past experiences only (MBR), not to be relied on it as the results may vary

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Health and Wellness – A new Market Offering

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Abstract - **Consumer is demandinghealthy convenience food andstart looking at food like a medicine. Consumer is now more proactive about what to eat and demanding healthy ingredients. Food companies are now witnessing this growing trend as consumer shifting from junk foods to healthy convenience foods. Many companies are now adapting to these shifts and many more are still considering it. This paper evaluates how consumer, changes in preference leads to food companies to change their offerings.**

Keywords: Health, Wellness, Convenience Food, Market

1 INTRODUCTION

In today's era, a consumer is incredibly dynamic and it's very complex to understand the psychology of a consumer as his behavior is affected by many influencing factors. Thus, it is an important task of the marketer to study the behavior of consumersin order to improve their marketing strategies and campaign effectively to reach theirtarget audience.Consumer involvement refers to how involved a person is in the decision making process and it depends upon the individual and personal choice. It has a crucial effect on the behavior of a consumer. Take an example of food and beverage industry, the preferences of an Indian consumer are affected by fourenablers i.e. product, price, quality and income. In addition, quality of a product is judged by four parameters such sensory, health, process and convenience.

Food consumption patterns are changing all over the world.Over, the last decade, people has become more health conscious. Due to the growing awareness related to health and wellness and increase in the lifestyle disease.Now-a-days people are following the preventive rather than a curative approach. "eat healthy and live healthy "is today's mantra of healthy life. Healthier food has gradually enteredinto the Indian market and gaining market share as consumers are inclined towards in eating nutritional food to manage the body mass index. On the other hand, it is also helps in preventing lifestyle problem such as obesity, diabetes, cardiac arrest and the accumulation of bad cholesterol level. In a country like India with diverse culture, the food and consumption patterns can be described in two ways: Firstly, in rural areas people do not get proper diet and nutrition and suffers from malnutrition and secondly, people in urban areas in India usually suffer from lifestyle disease like obesity, diabetes, hypertension and heart disease.
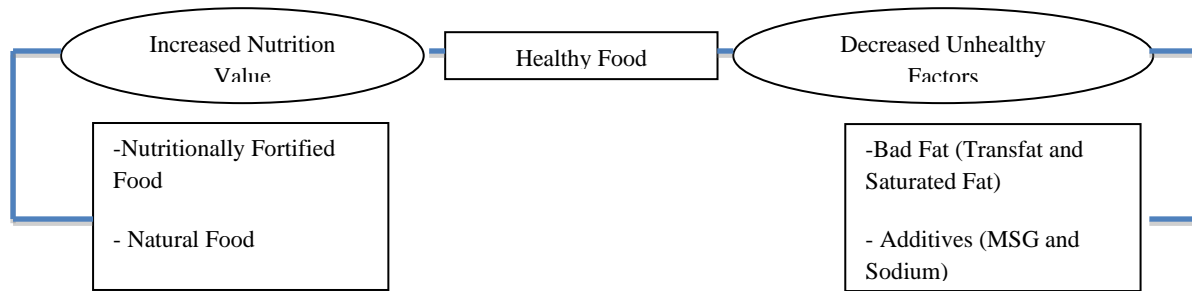
Figure 1 Classification of healthy Food

Source: Lee et al., 2011

Demand for healthier (please see the classification for health food in figure 1), natural and less processed ingredients is increasing and consequently the manufacturers and marketers are adapting to this trend by developing new products considering the latest trend. So, one can state that there is a shift in the thinking and perception of a consumer towards health and wellness (people are back to basic)this momentum has pushed food manufacturers to make hard core changes throughout their productline and depthbefore distribution.

II NEED FOR THE RESEARCH/AIM

According to Obesity Foundation India, "Obesity is due to an individual taking in more calories than they burn over an extended period of time. These "extra" calories are stored as fat. Although there are several factors that can lead to this energy imbalance in obese individuals, the main contributors are behavior, environment and genetics". India is the third most obese countries in the world and nowadays, 3% of Indians are overweight (Mail Today, 2014).

If ate only occasionally, even a deep-fried French- fry, butter dipped parantha, cheese burst pizza and cream whipped ice-cream shakes, will not lead the consumer to obesity.Traditionally, customerhas made decisions based on conventional drivers such as taste and price. However, now these days a customer is now a 'problem customer' in technical terms a problem customer is not a "problem" but he/she is more educated, learnt, knowledgeable and know what he/she eats and purchase.

It's a prime responsibility of the companies to promote healthy food as well change their offerings from junk to healthy. They should self check thenutritional content in the food and advertise food responsibly.

The objectives of conducting this research are

1. To understand the shift in the taste, choices, preferences, attitudes of an Indian customer from junk to healthy food.
2. To study how companies or a manufacturer responsively adapt the change in their product offering to marketing communication.

III LITERATURE REVIEW

India is the country of diversity in culture and so in food, in ancient India, people use to eat great millet, pearl millet, finger millet, kodo millet, Porridgejust to name a few. However, as the time progress more and more women started working, splitting of big families into nuclear, increase in the option of offerings in food, penetrating of fast food joints, increase in the dining out culture leads to increase in the dependency on the Can food. However, these days many people especially youths are now shifting their choices from eating junk food to eat healthy. Increase in awareness related to the ill effects of eating junk and what it did to your body, increase in the health related problems such as growing cases of diabetes, gastric issues. Whereas, on the other hand, many health and wellness lobbies such as gym centers, yoga, aerobics are disseminating lots of information related to the longer negative effects on the human body.

Research clearly shows that your body responds accordingly to what you eat. The 'Responsibility Deal' was launched in England in March 2011 under Public Private Partnership (PPP) to tackle the lifestyle changes as people are eating and drinking more and in anticipation they are not exercising to burn the extra calories. The Government engages the private sector and NGO partners in efforts to address public health objectives with specific focus on food, alcohol, physical activity, health at work, or behaviour change.

According to report published by Deloitte published in 2015 surveyed on 5000 respondents across the nation found that 49% respondents influence by traditional drivers and 51% respondents influenced by evolving drivers. Whereas,

the gap between respondents are only 2%, but still it shows that most of the participants are inclined towards evolving drivers. Hwang and Lorenzen (2008) analyzed that restaurant clientele showed the most optimistic attitude toward a low-calorie food and were willing to pay even more when nutrition information was provided. According to Nielsen's Global health and wellness report (2015) included 30,000 participants, around 88% consumers state that they tend to pay more to get 'healthy food' (claim to boost health and weight loss) on their plate that.

Figure 1.1: Traditional and evolving drivers
Source: Deloitte Food Value Equation Survey (2015)

Schroder and McEachern (2005) investigated the fast-food purchasing behaviour of the young class of UK with reference to McDonald's and Kentucky Fried Chicken (KFC) and concluded that Ready-To-Eat had perceived as convenient but unhealthy and therefore Ready-to-eat companies can no longer rely on convenience as USP unless the implications of same on consumers health is given equal importance.

IVRESEARCH METHODOLOGY

The study is purely based on the secondary data only which is collected through online magazines, journals, published reports and newspaper. This study is descriptive in nature as this researchdescribes the characteristics and behaviour of consumers.

V TRANSITION IN INDIA AND OTHER COUNTRIES- FROM BACK TO BASICS

The Indian Food law, The Food Safety and Standards (Packaging and Labeling) Regulations,2011, notified by the FSSAI, mandated by law to appear on food packages, includes information on the amount (per serving) or nutritional facts per 100 gm or 100ml or per serving of the product of saturated fat, cholesterol, energy value in Kcal, protein dietary fiber and other major nutrients, and provides nutrient reference values as a percentage of daily values (Ministry of health and family welfare, 2011).

Due to the change in the attitude and preferences of the consumer, Coca-Cola Company in India has seen a 4% slump in their sales. As consumers, are increasingly opting for healthy drinks over fizzy drinks such as juice and milk based drinks. It increasingly pressurizes the multinational companies (MNCs) to cut the sugar levels in all of its aerated drinks. Strategies are formed at various levels to win back the trust of those people who are moving towards maintaining a healthy lifestyle.

The company is now planning to use Stevia a natural sweetener instead of sugar in its fizzy drinks, soon they also offer Sprite Zero and also reduce sugar in Fanta.Reducing sugar is clearly a noble indication, but that does not make it healthy. Whereas, on the other hand rival company PepsiCo pledge to cut their sugar content as well as the salt across it's all the product lines (The Economic Times, 2016).Increase in awareness related to wellness most of the healthcare companies are now offering wellness programs. Startup companyPortea Medical under the name of PorteaActiv offersend to end health, fitness programs, lifestyle solutions, offering customized wellness programs in their Business to Business (B2B) segment and also source food and deliver to their fitness and wellness program subscriber.

According to s report published in Nielsen's survey conducted in 2015 on 30,000 participants, 88% consumers state that they tend to pay more to get healthy foods on their plate that claim to boost health and weight loss.According to

Deng (2009) in order toalter the image from a junk food restaurant to nutritious food restaurant, McDonald designed a new project "Happy Exercise And Love Touch Health" (HEALTH), in partnership with World Health Organisation (WHO), nutritionists, local communities, fitness centers and various media channels. The purpose of this campaign is to attract those who are health-oriented and totransform the behavior of the existing consumers (takes only junk food)to change their lifestyle by buying balanced meal.

Nestle India, also changed its marketing communication message from convenience food to healthy food and also offers Oats and Aatanoodles to those who want to eat Maggie, but would like to avoid due to refined wheat flour (Maida). Recently, Nestle Maggie came in a bad light due to the presence of Monosodium Glutamate (MSG) and lead. The lead concentration in Maggie was 17.2 parts per million (ppm), nearly seven times the permissible limit (the permissible limit of lead ranges between 0.01 ppm and 2.5 ppm, was found in the noodles) Hindustan Times, 2015.Nestle not only lost its sales and market in India due to a temporary ban,but also lost its trust among the loyal consumer.

An article published in Bloomberg (2015), Tyson Foods (USA), McDonald's major supplier revealed plans to stop using human antibiotics important to human medicine in its chickens by the end of 2017. Similarly the food chain of Chipotle's Mexican Grill restaurants, has started using of non-GMO corn and also switched its cooking oil from soybean oil to GMO-free sunflower oil and rice bran oil.
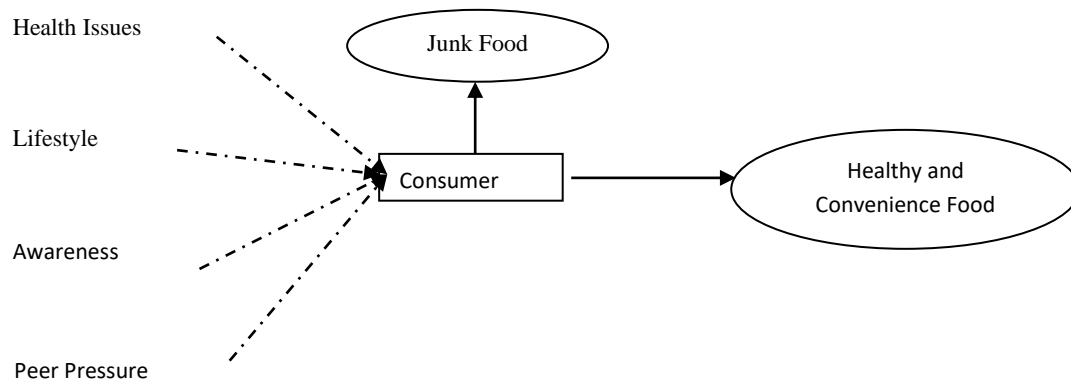

Figure 3: Drivers of consumer preference

Food manufacturers have started making initiatives to the change, by replacing artificial ingredients with natural one. For example: In Diary and juice category, there is an influx of probiotic, mineral fortified, zero fat and high fiber variants. Oatmeal is one of the likings of health conscious consumer and many more variants of oatmeal has been served such as Saffola peppy tomato, Saffola masala oats, Saffola classic, Saffola masala oats veggies twist. MTR also experimenting with their breakfast offering and now offers MTR Upma ready mix, masala upma mix, upma breakfast cup. Similarly, many Indian food giants now offer whole wheat pastas, pizzas, multigrain breads and low sugar desserts to tap the segment of health conscious consumers.

Nestle USA,also removed artificial flavours in their two product categories (1) Baby Ruth and (2) the Butterfinger which means Nestle has to reformulate 75 recipes for their 250 products. Nestle has started using natural colours instead of artificial food colouring, to get an orange hue in the middle of a Butterfinger, which is usually made by combining Yellow 5 and Red 40. Now Nestle use 'annatto' which is a natural colorant comes from the seeds of the fruit of the Achiote tree (Boscamp, 2015). The market for healthy food tends to grow at a faster pace only because of increasing awareness and the drastic shift in the lifestyle of the urban consumer. Trends in food consumption like diet which people follow to improve their health condition, health and convenience related concerns as well as the use of natural and nutritional ingredients need to penetrate the market further to bring about a paradigm shift within the product and consumption landscape.

Some more examples are given in Table 1:

Table 1: Company and their healthy offering

Company Name	Their Offering
Nestle	Introduced slim and real fruit yoghurts and ban artificial colors
Dabur	Launched health based yoghurt drink(real active)

Kellogg's	Positioned different products according to the requirements of different demographic segments.
Patanjali ayurveda	Launched Amla candies, AmlaMurraba and many more
Yakult's	Probiotic drink
Subway	Cuts artificial colourand antibiotics

As in Indian market, consumers are focusing on health and wellness products and have become very much particular about their food eating habits. This change has led to many manufacturers to focus on health and wellness products and in this concern they are making amendments in ingredients, packaging and labeling of products to ensure the Indian consumer that they are not misleading or making any false claims.

CONCLUSION

Therefore, one can state that health and wellness is an integral part of a sustainable future and it is significant for people to be healthy both physically and mentally. Companies should focus more on research and development and innovation for continuous growth. Companies will get success, if theyfollow a culture, which promotes the use of consumer insights to create new product categories. This research clearly indicates that most of the companies are going towards the healthy way and reducing their use of artificial colouring and preservatives in their food offering and as well welcoming the shift of consumer choices from eat junk to eating healthy.

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Positioning of Starbucks in India: Issues and Challenges

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Abstract: Indian consumer market's magnetism is attracting various foreign players specifically in the retail sector as India has been placed at the first position in the category of countries with the best opportunity for investment in the retail sector in a survey by A.T. Kearney's 2005 on Global Retail Development. The rising disposable incomes of the middle class and youth's proportion in the total population are the main reasons which attracted Starbucks products in India. This case is an attempt to put light on various opportunities and challenges which Starbucks coffee may face in a country like India which differs in many ways from other markets where Starbucks coffee is the market leader. In a country like India which differs in many ways from other markets where Starbucks coffee is the market leader, will it face opportunities or threats?On the surface they do appear to be succeeding where others are failing. If anybody is going crack the Indian market from the outside, it could well be Starbucks.
Keywords:Brand Awareness, Opposition Share, Strategic Alliance.

I Introduction

The largest coffee house in the world, Starbucks was established by Jerry Baldwin, Gordon Bowker and Zav Siegl in Seattle, Washington (Pike Place Market) on March 30, 1971. Starbucks has its network of stores in 61 countries, with 20,366 outlets in different areas of the various countries and serves around 70 million customers per week. Howard Schultz is the chairman and president of the Starbucks. In Starbucks customers enjoyed the unexpected forms of the products which are different and new, at home, and on the go.

II Related Work

Product Variety offered

More than 30 blends and single-origin premium coffees are available in the Coffee menu. The handcrafted beverages include fresh-brewed coffee, hot and iced espresso beverages, Frappuccino coffee, non-coffee blended beverages, smoothies and tazo teas. Merchandised items consist of coffee and tea-brewing equipment's, mugs, accessories, packaged goods, music, books and gifts. Fresh food is also served like baked pastries, sandwiches, salads, oatmeal, yogurt parfaits and fruit cups acc to the store.starbucks.com/
Handcrafted Beverages: Fresh-brewed coffee, hot and iced espresso beverages, Frappuccino coffee and non-coffee blended beverages, smoothies and Tazo teas. Merchandise: Coffee- and tea-brewing equipment, mugs and accessories, packaged goods, music, books and gifts. Fresh Food: Baked pastries, sandwiches, salads, oatmeal, yogurt parfaits and fruit cups. Starbucks and Seattle's best coffee brands like whole bean and ground coffee are some consumer products available at Starbucks, besides Starbucks VIA Ready Brew, Starbucks K-Cup portion packs, Tazo tea filter bags and tea latte concentrates.*www.starbucks.com/menu/drinks/evolution-fresh*

Consumer Products: Coffee and Tea: Whole bean and ground coffee (Starbucks and Seattle's Best Coffee

brands), Starbucks VIA Ready Brew, Starbucks K-Cup portion packs, Tazo tea filter bags and tea latte concentrates.

*Ready-to-Drink (RTD):*Starbucks bottled Frappuccino coffee drinks, Starbucks Discoveries chilled cup coffees, Starbucks Doubleshot espresso drinks, Starbucks Doubleshot Energy+Coffee drinks; and juiced teas. Starbuck Ice Cream: Super-premium coffee and coffee-free flavors.*www.**starbucks**.com/menu/drinks/evolution-fresh*

Markets/Revenue/Profit

(http://www.reuters.com/finance/markets.)Andhttp://www.moneycontrol.com/stocksmarketsindia/.

Starbucks have the 32,187 stores in 84 countries including 12,973 in the United States, 1,897 in China, 1,550 in Canada, 1,088 in Japan and 927 in the United Kingdom. At Starbucks there are 151,000 full time employees engaged with this brand. The total revenue of Starbucks was US$ 4,239.6 million U.S dollar (2014). Products of the Starbucks serve its menu worldwide. Starbucks act as a responsible company which takes care of the all concept related to environment and individual like, ethical sourcing, environmental stewardship and community involvement. Starbucks create a connection between the use of products with justice and with human that's term they called diversity. Starbucks mainly focus on the four areas, viz., partners (employees), customers, supplier and communities. Starbucks receive the many awards for their best performance and quality products. "No. 1 Most Popular Quick Refreshment Chain", Zagat's

Survey of National Chain Restaurants- 2009-2011, one of the Most Admired Companies in America Fortune-2003-2012, one of the World's 50 Most Innovative Companies Fast company- 2012, one of the World's Most Ethical companies Ethisphere-2007-2012, one of the 100 Best Corporate Citizens Corporate Responsibility/Business Ethics- 2000-2012. Starbucks chairman Howard S. posted a blog named let's come together, America in which they are spirit of connectedness and humanity which is powerful. It is the Starbucks new tradition to bringing people together. They spread the message "come together on customers' cup."

Revenue/ Sales growth of Starbucks (Fiscal 2015 Financial Highlights, Starbucks Coffee Company)
http://investor.starbucks.com/phoenix.zhtml?c=99518&p=irol-reportsannual.

Year	Net Revenue In billion
2007	$9.4
2008	$10.4
2009	$9.8
2010	$10.7
2011	$11.7
2012	$13.3
2013	$14.9
2014	$16.4
2015	$19.2

Starbucks Corporation Fiscal 2011, 2012 & 2013 Annual Report.

SELECTION OF MARKET- Why Starbucks Choose India

*India beverages and fast-food industry scenario:*Growth rate was recorded with double growth in Indian food and beverages sector in the last few years and some of them grow 30% annually acc to the business.mapsofindia report. Demand of fast food and beverages is increasing day by day because now the purchasing power among youth is high. India is fast emerging as a leading producer and consumers of packaged food products, non-alcoholic beverages, alcoholic beverages, dairy products and meat acc to the business.mapsofindia report to the fast food chain growing day by day now it will become second most populous country in the world. Many global chains like McDonalds, Dominos, subway, KFC, Cafe Coffee day, Barista, Costa coffee have entered in the Indian market. With the announcement of government's foreign investment reforms in Indian retail sector in 2012, Starbucks and Dunkin Donuts also penetrated the Indian market. Indian food and beverages sector is growing positively due to growing sales, reforms in organized retail sector and rapid urbanization acc to the report given by business.mapsofindia. India is the world's fifth biggest coffee producer and presently they export 70% to 80% of their production.

Positive Points- In a developing country like India most of the people are traditionally tea-drinking, so in order to attract customers coffee chains have focused on providing an ambience where people can relax and spend time with each other. With an increase in the purchasing power of the customers and due to rapid growth of globalization, more people have been employed and are earning money. With the growth and development of our economy, Indians have **become** more status seekers and crave for enjoying their weekend with friends and family.

Negative Points- Starbucks face competition from established competitors like Costa coffee, Barista and Cafe coffee day.

Global brands face the dilemma of whether to go solo or tie up with a local partner.

ENTRY MODE OF STARBUCKS IN INDIAN MARKET NOT INDIVIDUAL BUT WITH THE LEADING

BRAND TATA

*Starbucks Choose a Local Partner-*Global brands like Starbucks do to maximize their chances of success in India Starbucks choose to enter with the TATA because Tata is a leading brand in the market and people easily recall Starbucks with the help of Tata, because people have faith on this existing brand. Starbucks' decision to partner up with India's TATA Global Beverages shows a focus on leveraging multiple benefits.

The TATA Group is one of India's ethically-driven brands, India produces coffee beans in only a few places; the other sourcing option was importing the beans. But this would have hiked input costs significantly. TATA's coffee plant in Karnataka has also been contracted to supply beans to Starbucks' globally, creating mutual synergies.

Many of the foreign brand enter in Indian market and survive but some year back new Coffee leading company enter in Indian market viz; Starbucks. Government announced the foreign investment reforms in retail sector. Indian beverages market is positively growing in sales due to organized retail and rapid urbanization due to that reason in January 2012 Starbucks came to India with the Tata global beverages viz; Indian company. They entered with Tata by making 50:50 joint ventures and named as Tata Starbucks Ltd. After that Starbucks open his first store in Mumbai in October 2012 at Horniman circle of south Mumbai with a space of 120 customers and after that Starbucks open 4 more store in Mumbai at Taj Mahal palace and in Oberoi hotel and 3 stores in Delhi at Indira Gandhi International Airport.

Now, in total Starbucks have 14 outlets in New Delhi by (24 Jan.2013), 4 outlets in Gurgaon (10 July 2013), 29 outlets in Maharashtra which includes 23 outlets in Mumbai and 6 in Pune (8 Sep. 2013), 10 outlets in Bangalore (22 Nov. 2013) , 1 in Chennai (8 July 2014) and 1 in Telangana Hyderabad (1 October 2014).

As of July 2014, Starbucks operates 59 outlets in 7 cities of India. In those stores they are getting the profits. The consumption of coffee market through cafes in India is about $140 million of the country's annual sales of about $667 million. A cup of plain coffee cost about Rs 10 at a big restaurant in India and when it compared with western style café it seems to be very low and affordable coffee because the price of coffee in western cafes is 60-80 Rs and which is keeps on increasing. The partnership with Tata helps Starbucks to access some prime location for its outlets one is the Elphinstone building, which is owned by Tata sons, and Taj Mahal hotel is also Tata property.

Till now Starbucks getting the positive response from the market and they are planning to open more outlets in the India. Coffee shop industry has been growing 25% CAGR for a few years. Retail consultancy report predicts that $230 million café market in India will swell to $410 million by 2017, with the number of cafés rising from 1950 to 2900 in the next five years.

*Industry profile:*This Starbucks deals with the food and beverages industry because they are selling variety of products that are deals with food and drinks. According to 2012 report from 2009 to 2011, sales of regular soft drinks declined by 1.9% to $27 billion, the reason for this decrease the sales were changing in consumers taste. From 2001 to 2011, annual bottled-water consumption soared 56% to 26 gallons per person. At the same time, annual soda consumption fell 16%, to 44 gallons (about 281 single-serving bottles) per person. 80% of Americans consumed at least one such beverage every two weeks, Americans drink soda than drink energy drinks and coffee. One of the most popular energy drinks on the market has around 160 milligrams of caffeine, drinks contain half the caffeine of many large coffees and Starbucks coffee has 330 milligrams of caffeine, and a 16.5-ounce Panera frozen mocha has 267 milligrams. The amount of money spent by Coca-Cola, PepsiCo, and the American Beverage Association fell to $10 million in 2011.

Leading beverages Industry in India: Tea and coffee are the major sector in beverages industry these are sold in domestic market as well as overseas in market. The production capacity of coffee market is 19,600 tones which is USD 87 million market, soft drinks like juice constitute USD 1 million producing 284 million per years. Pepsi and cola-cola also two leading brand in Indian market. Minerals water market produces 65 million, 4.9 each month. Tea and coffee have shown the excellent growth in the Indian beverages market.

Challenges Starbucks facing in conquering Indian context-

Starbucks entered in the Indian market but they have to face many challenges from existing players like Costa Coffee, Barista and Café Coffee day. Others factors which act as a barriers for the Starbucks are changing habit of customers, external environment of business which includes various political, legal, Social, technological and environmental factors, Climate changes, internal factors which includes training, infrastructure, better facility, variety of products. because here India's largest coffee chain is café coffee day and it has nearly 1,200 outlets and the strategy of café coffee day is to open one outlet in every third day and this was also followed by the Barista which have the more than 200 outlets in the Indian market and Barista also have its own plans and strategy to expand its business at huge level. Next is the costa coffee which entered in Indian market in 2008, they have 75 stores and in future they are planning to increase this four-fold over the next three years. So, if Starbucks want to survive in the Indian market they have to cop up with various challenges in the Indian market.

Competitor's analysis (Indian market major sales players) - Café Coffee day

Café coffee day has a 15 year head start in the market so it deal with the consumers taste, sensitivity regarding price and know the dynamics of market.

Today café coffee day captures the 65% market in terms of market share and stores and the future plan of café coffee day is to expand its outlets and planning to open 2000 outlets by the end of 2014. So for Starbucks it's now difficult to lead in the market and operate many outlets in India because café coffee day increasing the gap among both of them.

The menu at CCD is effective when relate with pricing, menu mainly focus on sweet sugary drinks preferred by teens and location captured by them is the area of every youth hub like IT/ITES offices + educational institutions, CCD is tough competition.

Barista

Barista Lavazza (slightly more premium than CCD) & Crème (catering to higher end clientele), it has about 200 outlets notching up about 300 crores in revenue per annum. With Barista there are some disturbance occurs with the management which give negative impact, it result in lack of focus, conflicting strategy and non-cohesive operational code. They have though managed to retain (not maintain) the first guitar each outlet sanctioned. It has progressively lost market share to CCD and has allowed Costa to gain a foot hold among the up end of market.

Costa

Costa is the 3rd competitor for the Starbucks after CCD and Barista; it is affecting the market leader (CCD) but eating the shares of Opposition (Barista). A non-starter itself, failing inexplicably to capitalize in terms of swiftness of expansion and increasing market share, whilst Barista was fighting its inner demons. Over the last 5 years has managed to notch up only 50 outlets, mainly in metros, catering to almost exclusively premier clientele. Starbucks has always stressed on uniformity of processes and preparations. This could backfire in India as it did in Israel where consumers ditched Starbucks.

Brand awareness is also one of the challenges for star bucks, people are not aware. There are political, economic, social, technological, legal and environmental factors.

Compatibility, 'Coffee is not my cup of tea- India is a tea drinking country. India is one of the largest tea producers in the world, though over 70% of the tea is consumed within India. Tea is culturally rooted in India. Starbucks will have to identify a product mix that balances catering to their customers (tea and Indian cuisine) with doing what they do best as a company (coffee first, tea second). The more they focus on coffee initially, the more they risk alienating their customers.

Indian consumer being price conscious- While CCD may charge around Rs 40 for a coffee and the wayside shops charge Rs 10, Starbucks $2.5 for a short latte would seem to be very expensive.

*Political factors-*In India there are some political factors which gave the impact on them they are regulation for controlling of business and the spending power of consumers and other businesses. The political environment in India as a whole, the bureaucracy complications, it is safer for Starbucks to enter India via a joint venture or a strategic alliance with an Indian company that can provide a buffer from possible political tension. Furthermore, Starbucks can face some opposition from the existing competitors (CCD, Barista, etc.) through the use of political influence and delaying tactics.

Economic factors- In the metro and big cities Starbucks entry will be easy because in that place environment for Starbucks is favorable. Mumbai is regarded as the country's financial center and accommodates many foreign financial organizations as well as many IT companies. Delhi and Bangalore, other major cities with population totaling just below 20 million, are call-center hubs and many international IT companies are situated there. But star bucks have to face the problem in others area where people don't prefer coffee. The price is one of the factors because for Indian people spending around 125 and more than that for just a cup of coffee is not in their favor. But the Indian Government is still working on improving unfavorable factors such as widespread poverty, inadequate physical and social infrastructure, bureaucracy, limited non-agricultural employment opportunities, regulatory and foreign direct investment controls, insufficient access to quality basic and higher education, and the imbalance of rural-to-urban migration. The Indian population is still heavy tea drinkers. The consumption of tea per person in 2000 was reported to 44 liters in comparison to 1.2 liters of coffee. Another good substitute is the instant coffee. It is reported that 65 % of households bought instant coffee and only 18 % bought filter coffee.

Environmental factors- coffee beans are the main thing which maintains the quality of coffee. There are many factors which are kept in mind while growing coffee. Sufficient water & trees and a diverse flora & fauna are important for growing coffee beans. But in India, increasing population and economic development will lead to a number of environmental issues like uncontrolled growth, urbanization, industrialization, intensification of the agriculture and destruction of the forest. The growing population has an adverse effect on natural resources and the environment. And also weather in India does not remain same during whole year. Here hot summers stay for a long time that is also one of the reason people doesn't prefer strong coffee, because in US and Europe the temperature remain low, which results in more demand for strong and hot coffee.

Legal factors- The coffee retail market in India consists of mainly homegrown brands. The biggest ones are Coffee Café Day (CCD), followed by Qwiky's and Barista Coffee. These companies are considered as threats to Starbuck's entry in the Indian market because they are offering similar and sometimes identical products. CCD, for instance, the company which pioneered the concept of specialty coffee in India, has wide range of café formats with almost identical concept used by Starbucks. Besides, CCD has presence all around the India. The same company also sells merchandise and is involved in heavy marketing, such as establishing relations with the Indian movie and television series industry. Furthermore, CCD's best-seller – the cold Frappe – is a direct competition to Starbuck's Frappuccino.

It is also mentioned that the infrastructure in India is weakly developed, which might results in difficulties or larger amounts of costs incurred in the business operations of Starbucks. In addition the retail environment in India is largely unorganized and dominated by small and individually owned businesses.

Opportunities for Starbucks in Indian context-

Starbucks offer the different types of products like in burgers there are three varieties; breakfast burger, lunch burger & dinner burger, to avoid the disturbance Starbucks use a different type of strategy they make a different cabin for children at Starbucks, better and advance infrastructure, and free Wi-Fi facility for the customers, the reasons for that is today the standard of living of Indian people increasing day by day as people are focusing more on education, the expansion of western brands created liking for these brands, expansion to new market and product.

Positioning StrategyUsed by Starbucksin Indian Market

For the best positioning of their brand in Indian market they done a survey in which they include the IIM Bangalore and asked the attributes which they consider important while go for a coffee. As the outcomes display that **Ambience, service quality, Taste, Price and Service Time** are amongst the 5 most important aspects that café visitors look for and Starbucks have all these attributes which help to make Starbucks successful in Indian market.

Price skimming strategy, Starbucks cut the prices of coffee to maintain their position in the market and to make the customers base. Now, Starbucks cutting the prices of packaged coffee sold in grocery stores by 10% with an interest to attract the new customers and in order to remain in the competition. The price will drop from $9.99 to $8.99 for a 12-ounce bag of Starbucks. It will help them to enhance the value that they have given to their existing packaged coffee customers and hopefully increase the frequency and attract new customers. Last time Starbucks charges the $2.55 profit per beg but that time it will drop to $1.55 Starbucks already has plenty of $6 barista-brewed drinks to capture the top of that market, but a bag of $10 coffee is very much in the middle." Plus, "Starbucks has been working hard to grab grocery-store shoppers' dollars by expanding the array of products it has available in those stores," wrote Mary Beth Quirk at Consumerist. Dunkin' Donuts have been lowering their prices, so the pressure is on Starbucks to do the same." Starbucks strength lies in the high end market, however, in the tough economy; it is looking at expanding its base by capturing the low-end market.

Starbucks is also expanding aggressively in markets and economies which traditionally do not go for high end coffee. On an average, Starbucks's lattes cost $5 a cup. Starbucks has already slashed its prices for the Indian market. In India, Starbucks comets with popular chains like Café Coffee Day and Barista's Lavazza. Apart from that, small coffee and tea haunts are very popular in India, which sell at very low prices. Starbucks charges substantially lower in India than its China rates. Starbucks' price cut will amount to a 65% cut in its profit margin. The Starbucks price cut move comes after its competitors started the trend a few months ago, due to the decreasing cost of the commodity. In February, Starbucks coffee to cost an average of Rs125 – higher than the Rs60-75 that Café Coffee Day charges but lower than the Rs150 other international chains in India charge and now Starbucks charge 80 Rs for coffee. Like the Success in China they are getting because they understand customer's needs- China traditionally has been a tea-drinking country but we turned them into coffee drinkers." In 1999 Starbucks entered in China and presently having more than 570 stores in 48 cities.

By 2015, it plans more than 1,500 stores in 70-plus cities. Starbucks exciting growth story in China could be identified with its ability to customize Chinese food items such as a traditional local Chinese food for the Dragon Boat Festival and few other favorites. Corporate executives in China love the Starbucks store ambiance and the free unlimited Wi-Fi facility. So same strategy they are applying in Indian market.

Questions

1. India is a country where people prefer tea over coffee. What strategies will you suggest to Starbucks to overcome the challenge imposed by customer's taste and preference?
2. Starbucks enjoys a reputation of premium brand with high prices, is now attempting to offer the products at lower prices in India. Do you think this low pricing strategy will work in India without harming the brand image of Starbucks?

3. In a growing economy like India, what opportunities you see for Starbucks even in the presence of competitors like Café Coffee day, Barista, Costa Coffee etc.
4. Do you think the Starbucks' strategy for uniformity of processes and preparation will work in a country with diversified sub cultures like India.

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Total Quality Management and Services Marketing

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Abstract- Total quality management (TQM) represents a major philosophical revolution in the management of organizations. Currently TQM is being applied to a diversity of sectors, including the health, education, banking, transportation, hotels, and profit and non-profit, organizations in the service sector. There are two reasons for this. Firstly, services have become an important part of the economy. Second, service quality has become a key factor in achieving competitive advantage for both manufacturing and service organizations. Also, quality improvement leads to increase in sales, optimal production and distribution of services, profitability, better salaries for employees, and high morale. The objective of this paper is to shed some light on the current TQM practices of service organizations. TQMS is expected to face problems in implementing it, because intangibility of services, the heterogeneous nature of the service processes, and various customer requirements, etc.

*Keyword*s-- **TQM, Service Sector**

I. INTRODUCTION

India is one of the world's major emerging economies where services have become an important part of the financial system. The significance of services has led to focus attention on the effective management of service organizations and, thus, the emergence of service management as a discipline. Due to its holistic approach to quality, total quality management (TQM) is generally considered as a framework that supports service management. Hence, TQM has been widely applied in service organizations in recent years although its origin is in manufacturing.

II. CHARACTERISTICS OF SERVICES

Services have defined in so many ways but with no general agreement. Kotler defines services as any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may be tied to a physical product. Several researchers have identified four characteristics of services that distinguish services from manufacturing organizations. These are: intangibility, inseparability, heterogeneity and perishability (Dean and Evans, 1994; Dotchin and Oakland, 1994; Parasuraman et al., 1985; Sasser et al., 1978). As services are intangible, they cannot precisely specifications for uniform quality and measurement of performance. The inseparability and heterogeneity of services mean that there is less managerial control over quality, since the services cannot be tested and assured before delivery and standardised during the delivery. It is also difficult to predict, and hence influence, how the customer would perceive and evaluate the service quality. The final characteristic of perishability implies that service organizations need to retain excess capacity to meet the fluctuating demands of customers.

III. CONCEPT OF TOTAL QUALITY MANAGEMENT

The phrase total quality management (TQM) has become a common part of today's business language. It generally means a quest for excellence, creating the right attitudes and controls to make prevention of defects possible and optimize customer satisfaction by increased efficiency and effectiveness. Definitions of TQM are as broad as the literature associated with it. Schonberger defines it as "quality of goods, services, of time, of

place, of equipment and tools, of processes, of people, of environment and safety, of information and measurements." TQM is an approach to doing business that attempts to maximize the competitiveness of an organization through the continual improvement of the quality of its products, services, people, processes, and environments (Goetsch and Davis, 1995). It is a customer-oriented management system, which seeks to meet or exceed customer expectations by providing defect-free goods or services the first time, on time, all the time.

While the original concepts of TQM defined by Deming and Juran found their base in manufacturing industries, the developed nations have now come to benefit from short learning curves, available technology and cheap labour to undercut prices. There is a much greater emphasis on service industries, which in turn brings different challenges. In recent years, some service organizations in different service industries such as healthcare, insurance, hospitality among others have shown interest in TQM (Hasan and Kerr, 2003). This interest may attribute to the positive impact of TQM on the strategic and operational facets of organizational performance (Reed et al., 1996; Zahiri et al., 1994).

IV. OBJECTIVES OF THE STUDY

The main objective of study is:
 I.   To study the emergence of total quality management in services.
 II.   To study the TQM effects in promotional avenues in the organization.

V. DRIVING FORCES FOR TQM IMPLEMENTATION IN SERVICE SECTOR

The adoption of TQM results in better quality of service facilitating to increase the market share and profitability. It enhances the image of the company by treating a loyal customer base and helps to attract high quality human resource to have a career in the organization. It is indeed important for service businesses where human resource is the key to long-term success. Quality improvement leads to increase in sales, optimal production and distribution of services, better salaries and promotional avenues to employees, and high morale. Last, the cultural change would help service business to attend to the needs of customers in an improved manner, thus promoting customers' delight. Other drives include the following:

◆ Growth in Services: There has been a substantial growth in services in last two decades. Healthcare services, business services, accounting, engineering, architectural services, and hospitality services have grown at approximately double the rate of other industries since mid-1980s (Rowdy and Martin, 2001). Ghobadian et al state that the service sector has become the dominant element of the economy in the industrialized nations. The service activities in the US accounted for a 20 percent of the Gross Domestic Product, employing 53 percent of the US workforce in 2001 (Statistical Abstract of US, 2002). The trend signifying the increasing importance of the service sector is expected to be strengthen in the future (Lemark and Reed)

◆ Complexity of Problems: The second major trend inducing more attention to the service operations is the seriousness and complexity of problems within modern society. These include the population explosion, and its concentration in urban areas, the coexistence of affluence and poverty, rising expectations for better health and education, concern about pollution of the physical environment and a growing hostility towards the modus operandi of the traditional institutions. Increasingly, there seems to be a belief that the appropriate quality technology can put to work to solve current social problems.

◆ Government Recognizing Benefits of TQM: It has shown that there is a positive relationship between export performance and economic growth. To succeed in the world market, services must be competitive both in quality and in price. Implementation of TQM in service concerns enhances quality and reduces cost, thus increasing their competitiveness in international markets. Increased exports boost the foreign exchange earnings that, in turn, facilitate economic development by enabling the acquisition of needed capital goods. Improved quality of services also makes them more attractive to domestic consumers, thereby boosting increased consumption at home. Therefore, quality improvement can contribute to breaking the vicious cycle of poverty that has plagued most developing countries. Awareness of the implications of improving quality through TQM adoption is therefore, prompting government to push for its implementation in service organizations.

◆ Quality-Productivity-Profitability Connection: It has shown that adopting the TQM process leads to improvements in the overall quality of an organization's services, and that such improvements result in increased productivity and profitability. Achieving improved organizational performance through TQM implementation enables managers to get personal recognition and reward for their achievements. Therefore,

managers of service organizations who are aware of TQM's potential as a cost-effective approach to improving both quality and productivity push for its implementation.

VI. RESTRAINING FORCES FOR TQM IMPLEMENTATION IN SERVICE SECTOR

Even though the TQM framework may be broadly applicable to service organizations, there are special implementation problems, Such as:

◆ **Problems in Defining Quality of Service:** Application of total quality principles and techniques in service sector has always remained a major and challenging task. The traditional definition of quality as "conformance to standards" is usually not applicable in services, since there are often no specified standards and even if these are specified, they are difficult to measure. The lack of standards thus makes it difficult to judge quality performance. The most important problems that the authors have observed in many service organizations are as follows:

◆ **Intangible Products**: The major problem associated with service business is the absence of an easily identifiable a product to which focus can direct. The factors, which govern the satisfaction of the customer, include speed and responsiveness of service, comfort and cleanliness of the facility, courtesy and helpfulness of employee and many other behavioral factors. These factors undergo a lot of variation and in fact are difficult to standardize as they depend mainly on the customer's expectations. Because of this, many service organizations find it difficult to apply total quality concepts to their business.

◆ **Inadequate Knowledge Base:** Successful TQM implementation requires that workers at all levels go through rigorous on-the-job training in behavioural, problem-solving and technical areas. However, training institutions are either inadequate or unavailable, and well-trained managerial and technical personnel are in short supply in India. The generally poor educational system also means that workers at all levels should go through extensive on-the-job training which can drive up the training costs and render TQM implementation quite expensive. These discourage some managers from initiating the TQM effort in the first place, or force a discontinuation of the process.

◆ **Ignorance Regarding Customers' Requirements**: Good service is an expectation of the individual customer, which may be unknown or unstated, and may vary from customer to customer and from time to time (Jessome, 1988). The key contributing factors to the existence of this problem are insufficient market research, inadequate use of research findings, lack of communication between management and customers, inadequate upward communications and too many levels of management.

◆ **Government Control and Bureaucratic Bottlenecks:** The state owns a large part of the service sector in India, and government plays a prominent role in economic activity. In addition, it has shown that the management of public enterprises is tainted by politics. Accordingly, a number of management decisions, including personnel recruitment, promotions, rewards and recognitions are made more from the perspective of political pragmatism than the interests of the enterprises. Such interference by government stifles the success of the TQM efforts.

It should be noted that the same forces might be strong champions of the TQM process in some firms, while they will be staunch resisters in others. Therefore, some forces, such as managers and government leaders, are shown both as drivers and as resisters in order to emphasize the different reaction they may have in different situations. It is propose that whether such forces become proponents or resisters of TQM implementation will depend on the degree of their awareness regarding the potential benefits of TQM. The government leaders and managers who are dissatisfied with the existing conditions and who are convinced of the potential benefits of TQM will push for its implementation.

VII. RESOLUTION OF RESTRAINING FORCES

Literature indicates that to improve the chances of success in introducing change, it is better to reduce the strength of the resisting forces than to increase the strength of the driving forces. The experiences of managers who have already implemented TQM also reveal that it is more effective to reduce the impact of the resisting forces than to strengthen the driving forces (Whitney, 1992).

Resolution of these restraining forces requires senior management commitment to provide necessary resources and leadership in promoting and driving the necessary change. Strategies for resolving the problems created by these factors include using information from customer complaints, researching customers' desires in similar industries, and research on intermediate customers, key client studies and comprehensive customer expectation studies. As McManus identifies, change cannot be successfully implemented without "awareness of customer requirements at all levels in the organisation, continuous improvement as the only way forward, a clear vision of the direction to follow, and top management will and determination".

Similarly, Zeithaml *et al.* consider it necessary to eliminate levels of management to allow managers to be closer to customers, to understand their needs and expectations. The type of organization best matching the above criteria is akin to the organic form described by Dawson, where people are essentially cosmopolitan, working in an environment where communication is both lateral as well as vertical, with task definition from a network of sources, and with control, which allows considerable flexibility and initiative.

VIII.   APPLICATIONS OF TQM IN VARIOUS SERVICE SYSTEMS

Service quality is a multi-dimensional construct. Thus, service quality may be viewed based on the attributes of the service delivery system, the extent of customer satisfaction and/or the interactions among the different elements of the service system which define the service encounter (Chase and Bowen, 1991; Klaus, 1985; Parasuraman *et al.*, 1988). In recent years, some service organizations in different service industries such as healthcare, hospitality among others have shown interest in TQM (Hasan and Kerr, 2003)

Yasin and Alavi (1999) conducted the research aiming at understanding the facets of effective TQM implementation in different service operational settings. The research attempted to explore current TQM implementation practices and their operational and strategic outcomes and benefits. In general, the results of the study confirmed the reported literature findings concerning outcomes and benefits of effective TQM implementation as shown in table below:

The table depicts that TQM has been very effective in the fast food, book publishing, investment-banking and other service industries. TQM had a very positive impact on all of the strategic variables presented in the research instrument. We can only hypothesize that the other firms in these industries will eventually recognize that competitors who have effectively implemented the tools and techniques of TQM are achieving exceptional strategic outcomes and begin to experiment with TQM. The reported very positive impact of TQM on market share (ranging from a positive 63.83 to 100 percent), return on investment (67.74 to 100 percent), and

Table   Level of impact of TQM on key externally measured strategic variables

	Market share (percent)	Return on investment (percent)	Competitive position (percent)
Fast food	100	100	100
Book publishing	80	70	81.82
Computer	67.57	78.38	80.56
Investment banking	86.96	88.46	95
Restaurant	70	67.74	87.50
Pharmaceutical	68	79.17	84.62
Gaming	80.95	71.43	76.19
Banking	63.83	87.23	91.67
Accounting	70.37	77.92	85
Range of impact	63.83-100 percent	67.74-100 percent	76.19-100 percent

competitive position (76.19

Source: Yasin and Alavi, 1999

to 100 percent) speaks volumes to the benefits of a well-implemented TQM program in the service industry.
 If we examine the level of positive impact that the implementation of TQM has had on the three major externally measured strategic variables of market share, return on investment (ROI), and competitive position. An examination by other firms in each industry of successfully implementing TQM tools and techniques should be a significant motivator to reconsider their decisions not to implement a TQM programme.

IX. CONCLUSION

The application of a quality improvement programme in service industry has not received much attention until recently, but efforts aimed at spreading it are increasing rapidly. Understanding the basic service philosophy and developing strategy for continual growth are the necessary requirements for future service quality goals. The role of service systems in the global economy is changing. Managing such systems successfully requires an orientation towards conceptualizing the philosophies and essentials of TQM, and coupling them with implementation for providing better quality of life to the society at large. Viewed in the above perspective, service systems must anticipate impending challenges of market changes, economic globalization, wider dissemination of information etc. They need to develop professional expertise, executive capabilities and all the more a sound business philosophy.

Given the nature of most service operations where the customer is the focal point, there is a need to have customer-focused and quality-driven strategy orientations. To manage a service process with a quality-focus is a complex affair. Therefore, the managers of service systems need to commit themselves to a concept of "management by quality first" rather than a specific ideology. With commitment, and a suitable framework to guide implementation, TQM can be successfully applied to service organizations. As such, the effective implementation of TQM in service operational settings would be expected to be the rule rather than the exception.

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Analysis of FTP and TFTP Protocols

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Abstract- This paper presents our approach to study the storage and retrieval of information between a router and a server in a simulated network on CISCO Packet Tracer. Current approach uses File Transfer Protocol (FTP) and Trivial File Transfer Protocol (TFTP) as supporting file transfer protocols for backing-up and restoring information. We study the procedure and analyze the key features of both the transferring protocols and observe the time taken to transfer the running configuration and the internetwork operating system files of the router using both the protocols for backing up as well as restoring.

I. INTRODUCTION

Data loss and it's recovery has been a matter of high concern during this era of digitization. Loss of crucial data or unintended deletion may happen due to human error, malicious intent, system failure or natural disaster. A 2008 survey found that 66% of respondents had lost files on their home PC [1]. This inspired us to study the process of backing up crucial information and retrieving it later on if required to ensure the integrity and reliability of networking. After studying the processes and possibilities to do so, this paper shall demonstrate the transferring of vital data such as the ios-files and the running configuration of a router between itself and a provided server. The simulation of the router, server and the rest of the network components was successfully carried out using Cisco Packet Tracer [5].

II. SYSTEM OVERVIEW

As shown in fig. 1, our network has several components configured to the network. The network consists of switches, routers, a dedicated server, fast access cable, serial cable and cross-over cable.
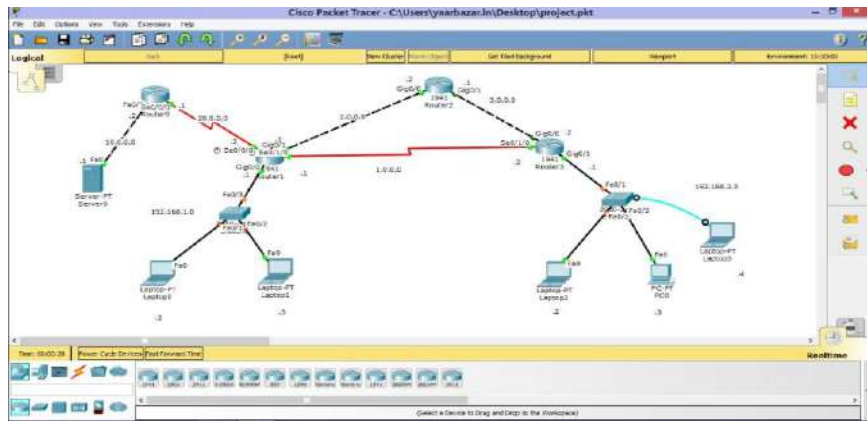
Figure 1: Simulated Network on CISCO Packet Tracer=]

III. WORK DONE

The work done can be shown in the form of an algorithm given below:

1.) Steps for TFTP server to backup and restore a configuration:

a) At the Router > prompt, issue the enable command , and provide the required password when prompted. The prompt changes to *Router#*,which indicates that the router is now in privileged mode.

b) Copy the running configuration file to the TFTP server:

CE_2#copy running-config tftp:
Address or name of remote host []? 64.104.207.171
Destination filename[ce_2-confg]?
backup_cfg_for_my_route   !!
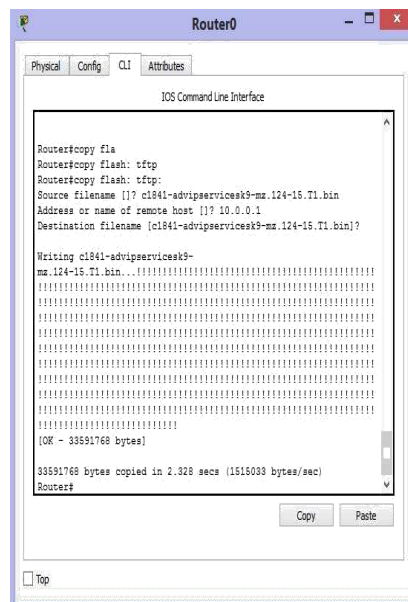1030 bytes copied in 2.489 secs (395 bytes/sec)
CE_2#

c) Open the configuration file with a text editor. Search for and remove any line that starts with "AAA".
Note: This step is to remove any security commands that can lock you out of the router.

d) Copy the configuration file from the TFTP server to a new router in privileged (enable) mode which has a   basic configuration.

These steps can be shown in the following figures.

Figure 2: Copying IOS files from router to server.


```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up


Router>en
Router#copy runni
Router#copy running-config start
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#copy runni
Router#copy running-config tftp
Router#copy running-config tftp:
Address or name of remote host []? 10.0.0.1
Destination filename [Router-confg]?

Writing running-config....!!
```

Figure 3: Copying running config from router to server


```
Router#
Router#copy tftp: runni
Router#copy tftp: running-config
Address or name of remote host []? 10.0.0.1
Source filename []? c1841-advipservicesk9-mz.124-15.T1.bin
Destination filename [running-config]?

Accessing tftp://10.0.0.1/c1841-advipservicesk9-
mz.124-15.T1.bin...
Loading c1841-advipservicesk9-mz.124-15.T1.bin from 10.0.0.1:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!
```

Figure 4: Downloading/retrieving running config from the server

2) Steps for FTP Server to Backup and Restore a Configuration:

In this procedure, an FTP server can be used in place of a TFTP server.

(a) At the Router> prompt, issue the enable command, and provide the required password when prompted.
The prompt changes to Router#, which indicates that the router is now in privileged mode.

(b) Configure the FTP username and password:
CE_2#config terminal
CE_2(config)#ip ftp username cisco
CE_2(config)#ip ftp password cisco
CE_2(config)#end
CE_2#

(c) Copy the configuration to the FTP server:
Router#copy running-config ftp:
Address or name of remote host []? 10.0.0.1
Destination filename [Router-confg]?
Writing running-config---
33591768 bytes copied in 5.379 secs (655697 bytes/sec)
Router#

(d) Open the configuration file with a text editor. Search for and remove any line that starts with "AAA".

Note: This step is to remove any security commands that can lock you out of the router.

(e)Copy the configuration file from the FTP server to a router in privileged (enable) mode which has a basic   configuration.
Router#copy ftp: running-config
Address or name of remote host [10.0.0.1]?
Source filename []? Router0_running-config
Destination filename [running-config]?
Accessing ftp://10.0.0.1/Router0_running-config...
Loading backup_cfg_for_router !
[OK – 1030 bytes]
1030 bytes copied in 9.612 (107 bytes/sec)
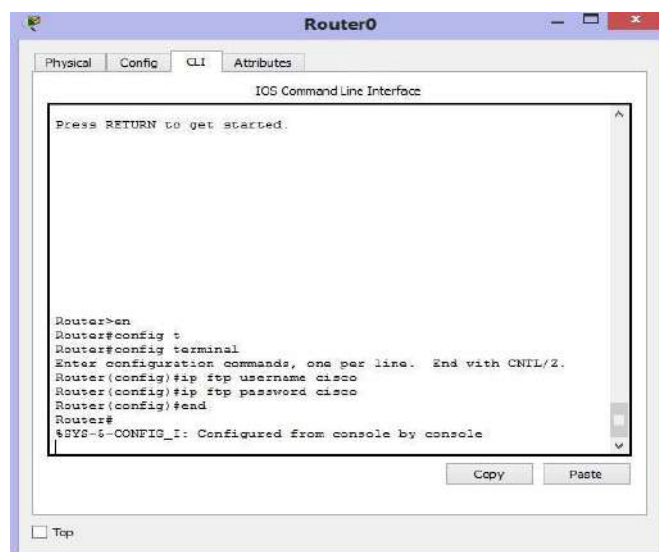Router#
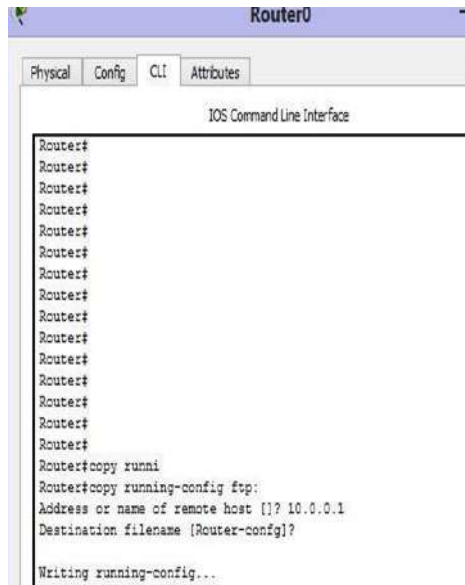

Figure 5: Configuring ftp username and password.

Figure 6: Copying/storing running configuration to the server

IV. RESULT

After execution we obtained the following result:

TABLE 1: Results of TFTP

TFTP				
BACKING-UP				
S.NO,	FILE	SIZE(bytes)	TIME(sec)	RATE(bytes/sec)
1.	IOS	33591768	2.328	1615033
2.	Running Configuration	1030	2.607	395
RESTORING				
1.	IOS	33591768	5.379	655697
2.	Running Configuration	1030	9.612	107

TABLE 2: Results of FTP

FTP				
BACKING-UP				
S.NO.	FILE	SIZE(bytes)	TIME(sec)	RATE(bytes/sec)
1.	Running Configuration	1030	3.341	308
RESTORING				
1.	Running Configuration	1030	13.213	78

Figure 7: Comparison of transferring rate observed in both protocols.

Time taken by TFTP [3, 4] to complete the transfer was lesser as compared to FTP. However user authentication adds to the advantages of FTP. **TFTP** uses **UDP** as a transport, as opposed to TCP which FTP uses, and works on **port 69 [2, 6, 7]. The speed of copying files from the router to the server was found to be higher than that of restoring the same files. Such observations were made as the ios-files and configuration are stored in the flash memory and random access memory of the router.**

VI. CONCLUSION

While studying the procedure and implementing the same we came to the conclusion that FTP should be preferred when security is desirable since TFTP does not use any kind of password protection. However, TFTP proved to be faster and easier to implement. TFTP can be referred to as a simplified version of FTP. TFTP is used mostly for backing up router configuration files like Cisco and its IOS images. FTP is widely used and preferred for transferring other files.

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On Public Private Partnerships in Canada

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I.   Introduction

In Canada Public – Private Partnerships (P3s) are a long-term performance-based approach to procuring public infrastructure where the private sector assumes a major share of the risks in terms of financing and construction and ensuring effective performance of the infrastructure, from design and planning, to long-term maintenance.This paper gives the broad framework of P3s in Canada and describes some successful project examples.

II.   Broad Framework

In practical terms, P3s in Canada meanthat:

- Governments do not pay for the asset until it is complete
- A substantial portion of the cost is paid over the life of the asset and only if it is properly maintained and performs according to specifications; and
- The costs are known upfront and span the life-cycle of the asset, meaning that taxpayers are not on the financial hook for cost overruns, delays or any performance issues over the asset's life.

P3s work by:

- Adopting a whole life-cycle approach: the private sector assumes responsibility for all or many of the phases of an asset's life-cycle. In doing so, the private sector assumes the interface risk between the phases, is fully accountable for whether the asset delivers, and is incented to produce the most effective result over the lifespan of the asset. The all-too-familiar problems of poor design, sub-standard construction or inadequate or deferred maintenance become the responsibility of the private sector
- Paying based on performance: the private sector is paid only on performance; in the majority of our projects no payment is made until substantial completion, and a significant portion is paid only over the life of the asset based on clear performance criteria. This aligns financial incentives for on-time, on-budget delivery and for the achievement of performance standards during the useful life of the asset. Moreover, since payments are made only on performance the private sector partner must raise significant financing for the construction of the asset. Lenders and equity participants provide a level of due diligence and oversight that brings enormous discipline to the process.
- Specifying the what, not the how: in a P3, the public sector specifies what it wants and leaves as much scope as possible to the private sector to develop the best solution to deliver results. This focus on the what -- rather than the how -- enables the private sector to develop the most innovative solutions.

III.   Applicability of P3s

Public- Private Partnerships (P3s) are a tool in the toolbox to deliver the public infrastructure investments Canadians need. They are not the right solution in every case, but when applied to the right projects, can provide many benefits. P3s work because they engage the expertise and innovation of the private sector and the discipline and incentives of capital markets to deliver public infrastructure projects. In a nut shell it can be summarised that

- P3 projects consider the whole life cycle of the asset
- P3 projects engage the expertise of the private sector
- P3 projects ensure private sector capital is at risk, bringing capital market discipline and incentives

P3S are the right choice when:

- The benefits exceed the costs. This requires thorough Value for Money analysis. Our experience demonstrates that this upfront work produces better projects even if a P3 approach is not the preferred option, as it requires a more systematic consideration of costs, risks, and performance expectations.
- Successful P3s tend to be large, complex projects that transfer the risks of some, or all, of the components of the project (design, build, finance, operation and/or maintenance) to the private sector and deliver positive Value for Money.
- Value for Money is assessed by comparing the estimated total costs of delivering a public infrastructure project using a P3 delivery method to the costs of delivering the project using a traditional delivery method.

The P3 model is appropriate when the following conditions apply:

- There is a major project, requiring effective risk management throughout the lifecycle;
- There is an opportunity to leverage private sector expertise;
- The structure of the project could allow the public sector to define its performance needs as outputs/outcomes that can be contracted for in a way that ensures the delivery of the infrastructure in the long term;
- The risk allocation between the public and private sectors can be clearly identified and contractually assigned;
- The value of the project is sufficiently large to ensure that procurement costs are not disproportionate; The technology and other aspects of the project are proven and not susceptible to short-term obsolescence; and
- The planning horizons are long-term, with assets intended to be used over long periods and are capable of being financed on a lifecycle basis.

Risk Transfer in P3s:

Risks arise in all projects, regardless of the procurement approach. In a P3, project risks are transferred to the party best able to manage them. By making the private sector responsible for managing more risk, governments reduce their own financial burden. The private sector bids a fixed price for the bundled contract, and must pay out of pocket should any unforeseen expenses arise e.g.) cost escalation, construction defects, unexpected maintenance requirements, etc.

The private sector is interested in P3s because as compared to traditional procurement, P3 projects provide the private sector with a greater role in the design, building, financing, and/or operation of public infrastructure and offer a unique business opportunity, allowing private companies to deliver a broad range of services in different industrial sectors over a long term concession period (typically 20 to 30 years). The private sector is interested in P3s because they provide an opportunity to work with stable, bankable partners in governments, and they provide a long-term revenue stream, among other reasons.

Some examples of the Public Private Partnership in Canada:

1. The transition of AECL's nuclear laboratories to a government-owned, contractor-operated (GoCo) model is the second phase of the restructuring that has already seen the sale of AECL's former CANDU Reactor Division to SNC-Lavalin subsidiary Candu Energy.
   CNL was established as a wholly owned subsidiary of AECL in November 2014 in preparation for the transition to the GoCo management model. Contracts are now being finalized after which CNL's shares will be transferred to CNEA. The share transfer is expected to take place in the early autumn.
   CNL's activities are located across several sites, primarily the Chalk River laboratories in Ontario and the Whiteshell Laboratories in Manitoba, and include the 135 MWt NRU (National Research Universal) reactor. The facilities are used for isotope production; reactor component and fuel examination; nuclear instrumentation and dosimetry services; materials and reactor-chemistry research; and training of nuclear professionals. CNL's mandate covers three core

missions: federal waste and decommissioning responsibilities; providing nuclear expertise to support federal government needs; and the commercial provision of services to users of its facilities.

The GoCo model aims to create value and reduce risks and costs for taxpayers while continuing to fulfil the core mandate, and is similar to models in operation in the UK and the USA. CNEA president and CEO Mark Lesinski pointed to the consortium's extensive experience across CNL's three key missions and also the GoCo management model.

"CNEA brings a successful track record and extensive nuclear experience that will bring enormous benefits to the decommissioning and clean-up program and in ensuring that Canada's world-class nuclear science and technology capabilities continue to grow", he said.

CNL president and CEO Robert Walker welcomed the announcement of the preferred bidder as "good news for the future of the Canadian nuclear sector and Canadian nuclear science and technology", adding that CNEA would bring "private sector rigour and efficiency" to CNL's management and operation.

AECL remains responsible for the management of CNL until the share transfer takes place. AECL interim president Jon Lundy said the company would be looking to CNEA to leverage existing expertise and to create value at the laboratories.

2. The delivery of public safety services on behalf of government of Ontario by a private not for profit self funded organization.
   Since 1997, the Technical Standards and Safety Authority (TSSA) have delivered public safety services on behalf of the government of Ontario in four key sectors:

   • boilers and pressure vessels, and operating engineers;
   • elevating devices, amusement devices and ski lifts;
   • fuels; and,
   • upholstered and stuffed articles.

   TSSA is a not-for-profit, self-funded organization dedicated to enhancing public safety. With headquarters in Toronto, TSSA employs approximately 380 staff, 70 percent of whom work in operations. Governed by a 13-member board of directors, TSSA is accountable to the Ontario government, the residents of Ontario and its other stakeholders.
   TSSA funds its operations by charging its industry customers a fee for the services it provides.

IV.   Concluding Remarks

In this paper the procedures adopted in Canada to identify fit cases for planning and executing P3s have been outlined. The broad frame work discussed is applicable on all classes of P3s. Applicability of P3s mode has been pointed out. Paper ends with some successfully carried out projects.

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A Meta analysis and Systematic Review on Microfinance and its Impact

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Abstract - **All economic activities are directed to serve the demand and supply function of scarce resources. One of the largest economic activities is the movement of funds from those who have excess (lenders) to those who have limited (borrowers). This phenomenon has given rise to the emergence of banking services. Although the transfer of funds were done earlier also, but formal banking services has defined the role of borrowers and lenders in an economy in more clear and precise terms. Banking Services in India started in the late 18th Century. Till its inception, banking services has tried their best to include everyone into their scope. But due to several constraints such as illiteracy, complex formalities and regional disparities, a large number of people especially rural masses are still out of the ambit of financial services. This has given rise to the terms – "Financial Inclusion" and "Microfinance". The present paper attempts to review the literature available on impact studies of microfinance programs.**

Keywords – **Microfinance, Financial Inclusion, Employment Generation, Women Empowerment**

Financial inclusion refers to the unrestrained access to the financial services to the vast sections of society, thereby bringing everyone under the umbrella of financial services. Prime Minister of India Sh. Narendra Modi has also stressed on financial inclusion by initiating a scheme known as Jan Dhan Yojna. This scheme highlights the importance of including every citizen under the scope of financial services.

Reports have shown that banks have collected more than Rs. 1500 crore under this scheme as deposits from new customers. More than 3 crore savings bank accounts have been opened in just three weeks since the launch of the scheme. However, it is also estimated that only 20% of the savings accounts opened under the scheme have a positive bank balance whereas only 80 % are still empty.

There is widespread literature available on various dimensions of microfinance. Some has worked on its structure while others have worked on its impact. Hence, literature review for microfinance can be grouped under three heads:

- Microfinance literature on its origin and operations
- Microfinance literature on its impact on Employment Generation
- Microfinance literature on its impact on Women Empowerment

1. **Microfinance literature on its Origin and Operations:**

There is vast literature available on the emergence of Microfinance. Many studies have been done to justify its origin and need in Indian as well as Global context. Global and Indian context have one common instance that origin of microfinance is not traced exactly. Microfinance existed in the global world in some informal ways as "chit-funds" in India, "arisan" in Indonesia and so on. **(Siebel, 2005)**
Indian Microfinance history is characterized in three stages:
1. Money Lenders
2. Chit Funds or Rotating Savings and Credit Associations(ROSCAs)

3. Merchant Bankers

These stages evolved from a non-formal system to a more formal and organized system. Very recent in this area is Rural Finance in the form of Non Banking Financial System-Microfinance Institutions (NBFC-MFIs).

In 1988-89, NABARD undertook a survey of 43 NGOs spread over eleven states in India to study the functioning of the SHGs and possibilities of collaboration between the banks and SHGs in the mobilisation of rural savings and improving the credit delivery to the poor. Encouraged by the results of field level experiments in group based approach for lending to the poor, NABARD launched a pilot project of linking 500 SHGs with banks in 1991-92 in partnership with non-governmental organisations (NGOs) for promoting and grooming self-help groups of socio-economically homogeneous members. In order to meet their credit requirements, in July 1991 RBI issued a circular to the commercial banks to extend credit to the SHGs formed under the pilot project of NABARD. During the project period different NGOs like Association of Sarva Seva Farms (ASSEFA), Madras; People's Rural Education Movement (PREM), Behrampur; Professional Assistance for Development Action (PRADAN), Madurai; and Community Development Society (CDS), Kerala promoted hundreds of groups. The results were very encouraging. In February 1992, the launching of pilot phase of the SHG- Bank Linkage Programme (SHG-BLP) could be considered as a landmark development in banking with the poor.

Many researchers have supported the view that banking system has been inefficient in achieving the goal of financial inclusion.

- **Sheokand (2000)** in his work titled- "Re-orienting banking with the poor: The SHG-Bank Linkage Way" discussed the failure of Indian banking system in providing financial services to poor people. In view of this, National Bank for Agriculture and Rural Development (NABARD) an apex development bank initiated Self Help Group-Bank Linkage programme in 1992. It was one of the major step taken in view of achievement of financial inclusion mission. The Regional Rural Bank's security-oriented individual banking system was replaced by the provisioning of credit to focused groups. In his findings, SHG-Bank linkage model has been successful in achieving the socio-economic empowerment of poor masses.
- **Jindal (2005)** in a discussion on "Microfinance and SHGs: Role of Government institutions" places importance on the scaling up of the SHGs movement through active collaboration between the Government, NGOs and other civil society organizations.
- **Rosenberg (2004)** stated that in order to achieve full potential, microfinance must become a fully integrated part of a developing country's mainstream financial system rather than being confined to a niche of the development community.
- **Gurumoorthy (2000)** stressed on the importance of Self-Help groups as a viable alternative to achieve the objectives of rural development and to get community participation in all rural development programmes.
- **Rutherford (2002)** in his paper – **"Finance for the poor: from microcredit to micro financial services"** reviews the achievements of the 'microfinance revolution. It finds that there are many opportunities to improve and innovate. It argues that financial services for the poor are essentially a matter of helping the poor turn their savings into sums large enough to satisfy a wide range of business, consumption, personal, social and asset-building needs. The range of such 'swaps' should be wide enough to cater for short, medium and long-term needs, and they must be delivered in ways which are convenient, appropriate, safe and affordable. Providing poor people with effective financial services helps them deal with vulnerability and can thereby help reduce poverty. However, the relationship is driven by complex livelihood imperatives and is not simple. Microfinance is not a magic sky-hook that reaches down to pluck the poor out of poverty. It can, however, be a strategically vital platform that the poor can use to raise their own prospects for an escape from poverty.
- **Morduch (2005)** highlighted the difference between microfinance and microcredit. Microcredit refers to small loans given to the poor people. While microfinance is a broader term which includes efforts to collect savings from low-income households, provide consumption loans and insurance along with micro-credit.
- **Sriram (2002)** explained that the financial sector in India by the end of 1980s was largely supply and target driven. The government sponsored poverty alleviation schemes experienced poor recovery rates with misutilization of subsidy and lack of observation of repayment ethics. The repayment rate under the Integrated Rural Development Programme (IRDP) remained less than one-third and created 40 million bank defaulters. In 1989, with the first official loan waiver, credit discipline was throw to the wind. This created cynicism amongst bankers about the credit worthiness of poor people. Also, a dominant perspective was developed that the finance for poor people was a social obligation and not a potential business opportunity.
- **Harper (2002)** studied the differences, outreach and sustainability of the SHG banking system and Grameen banking system of providing microfinance. SHG bank linkage and Grameen banking systems dominated the microfinance markets in India and Bangladesh respectively. In SHG bank linkage system 10 to 20 members formed a group and this group became an autonomous financial organisation, received loans from the bank in group name and the group members carried all saving and lending transactions on their own behalf. Thus, SHG was effectively a micro bank. But

in Grameen banking system microfinance participants organised themselves into groups of five members and each member maintained her individual saving and loan account with microfinance organization and the main function of the group was to facilitate the financial intermediation process. It was also found that both systems were best suited to their prevailing environments. SHG bank linkage system was more flexible, independence creating and imparted freedom of saving and borrowing according to the member's requirements, so was suitable in the Indian context. But Grameen banking system was more rigid, autonomous, over disciplined and dependence creating system which was suitable in Bangladesh where people were relatively more homogeneous, very poor and had less experience of democracy. It was also found that SHGs were probably less likely to include poor people than Grameen Bank groups but neither system reached the poorest. It was also found that SHG members were free to manage the group financial affairs so they were more empowered but at the same time more vulnerable. Grameen groups were much better protected against internal and external threats. Their members were less vulnerable but also less empowered.

- **Singh (2003)** had explained the failure of government initiated anti-poverty programmes and the success of microfinance programme as an effective poverty alleviation strategy in India. According to him the government-implemented rural development programmes failed because these were centrally invented (lacking participation of local level institutions), politically motivated, had leakages, misappropriation and heavy administrative expenses. More than 250 million people in India remained poor, even after 50 years of independence. Failures of these institutional initiatives and learning from the success of the Grameen Bank in Bangladesh had given way to the development of microfinance programme in India in 1992. Many NGOs who were following SHG promotion approach such as Mysore Resettlement and Development Authority (MYRADA) in Karnataka, Society for Helping and Awakening Rural Poor through Education (SHARE) in Andhra Pradesh came forward in this sector. These NGOs were proving very successful in reducing poverty level of its clients and generating additional employment opportunities. Though in its young age microfinance sector had a diversified growth and multiplicity of impacts, as impact on income, employment, health, education, housing and sanitation etc. The programme was playing an important role in the process of development particularly when subsidy and grant based schemes were losing their importance.

- **Basu and Srivastava (2005)** in their Rural Finance Access Survey-2003 conducted jointly by World Bank and National Council of Applied Economic Research, India, highlighted the inadequacies in rural access to formal finance and the exploitative terms of informal finance, which provided a strong need for innovative microfinance approaches. The survey took a sample of 6000 rural households from two Indian states- Andhra Pradesh and Uttar Pradesh. The study indicated that rural banks serve primarily the needs of the richer rural borrowers and the rural poor faced severe difficulties in accessing savings and credit from the formal sector. The survey showed that 66 per cent of the large farmers had a deposit account and 44 per cent had access to credit. While only 30 per cent of the marginal/landless farmers had a bank account and 87 per cent had no access to credit from a formal source. So, they had to depend on informal sources of finance. Around 44 per cent of the households surveyed, borrowed informally at least once in preceding 12 months and the interest charged on informal loans averaged 48 per cent per annum. It was also found that the largest uses of informal loans were for meeting family emergencies (29 per cent) and social expenditures (19 per cent) arising from events such as births, marriages and deaths. Some 13 per cent of borrowers reported using informal loans for investment related purposes.

- **Yunus (2006)** in a study explained the differences between Grameen Bank and conventional banks. He explained that the Grameen Bank methodology was almost the reverse of the conventional banking methodology. Conventional banking was based on the principle that the more you have, the more you get. As a result, more than half of the population of the world was deprived of financial services of the conventional banks as conventional banking was based on collateral, focused on men, located in urban centers and owned by rich with the objective of profit maximisation. On the contrary, the Grameen Bank started with the belief that credit should be accepted as a human right, where one who did not possess anything get the highest priority in getting a loan. Grameen Bank methodology was not based on the material possession but on the potential of a person. Grameen Bank, which was owned by women, had the objective of bringing financial services to the very poor, particularly women to help them fight poverty, stay profitable and financially sound. Yunus described poor people as a 'human bonsai'. They were poor because society had denied them the real social and economic base to grow on. Grameen Bank's effort was to move them from the flowerpot to the real soil of the society.

- **Sarkar (2008)** in his paper discussed the new model of microfinance in Bangladesh and expressed the need of some institutional reforms in the microfinance development strategy of India. The Grameen Bank had introduced a more flexible credit system named as Grameen-II. Under this new system, loans of different duration suited to individual needs were provided. Besides the duration of the loan, the size of weekly instalments could be varied and the borrower could pay less during the lean season and more during the busy season. All borrowers started with a basic loan. In addition to the basic loan, the same borrowers were also granted a housing loan and a higher education loan simultaneously. The most important feature of the flexible loan was that, if borrowers were unable to repay their loans, they were no longer seen as defaulters; rather they had a legitimate way to remain within the folds of the organisation so that they may continue to receive loans. The Grameen Bank had also introduced a pension fund for its borrowers with a

minimum contribution for each borrower towards a pension deposit scheme. Further, the Grameen Bank had introduced loan insurance for its borrowers to pay off a member's debt in the event of her/his death. In this way, Grameen-II introduced a range of attractive new savings and loan products for its borrowers, which the SHG bank linkage model of India was lacking.

- **Sangwan (2008)** empirically ascertained the determinants of financial inclusion and studied the relevance of Self Help Groups (SHGs) in achieving financial inclusion. For the purpose of the study, the cross-section data of 42 Regions from different states and UTs of India was used. The coverage under financial inclusion was assessed in terms of percentage of adults having credit and saving bank accounts. It suggested that SHGs could play significant role in achieving the financial inclusion especially for women and low-income families.

- **Datta (2009)** in his work titled " Consolidating the Growth of Microfinance" ananlyzed the Microfinance: State of the sector report and concluded that the changing policy and regulatory environment has become much more favourable for the microfinance industry. It was also observed that while the sector shows signs of maturity and growing confidence there is also evidence of **"mission drift"**. This provides the basis for an analysis of some of the opportunities and challenges faced by the microfinance sector.

- **Ahlin, Lin and Maio (2009)** extensively evaluated the MFI performance in macroeconomic context in their work titled – "Where does Microfinance Flourish?" According to them Little is known about whether and how the success of microfinance institutions ("MFI"s) depends on the country-level context, in particular macroeconomic and macro-institutional features. Understanding these linkages can make MFI evaluation more accurate and, further, can help to locate microfinance in the broader picture of economic development.

Microfinance Literature on Efficiency of Microfinance Institutions (MFIs)

Porkodi and Aravazhi (2013) examined the role of microfinance in empowering people. They opined that microfinance is growing in quantitative terms but not in qualitative terms. They suggested that Microfinance Institutions should be managed with better scrutiny in terms of finance and technology as well as social responsibility. They appreciated the role of NGOs in promoting Self-Help Groups linking them with banks. The study concluded that Financial inclusion to be effective, marginal farmers and landless laborers must have unhindered access to the financial services like savings, credit, micro-insurance and remittance facilities. They recommended that Government should focus on creating an environment by:

- Providing Public Infrastructure
- Encouraging Competition
- Focusing on rules based regulation
- Wide Publicity
- Implementing the concept of financial literacy and credit counseling

Sriram M.S., appreciated the tremendous growth achieved by Microfinance in the last half decade. But he also reflected the fact that Microfinance's current region centric growth leaves a huge scope for MFI to grow in other parts of India. It should follow customer-centric flexible model as compared to current standardized product and service model.

Masood and Ahmad (2010) in their paper titled "Technical Efficiency of Microfinance Institutions in India – A Stochastic Frontier Approach) examined the efficiency level of 40 MFIs in India for the period 2005-08. They also analyzed the various determinants of efficiency. Results obtained from the study were very surprising. It showed that mean efficiency of MFIs is found to be 0.34 which clearly implies that MFIs can increase their output level by 66 percent using the same level of inputs and technology. Also, there exist large variations in the average efficiency level among 40 MFIs. A very unique results obtained was that Experience (Age) of MFIs is found to be one of the important determinant of efficiency level but size does not matter much. Also, MFIs located in the southern states are more efficient than others. Estimated coefficient of another qualitative variable shows that unregulated microfinance institutions are more efficient than regulated. Spandana, an MFI located in Hyderabad, AP is found to be highly efficient with a score of 0.89.

2. **Microfinance literature on its impact on Employment Generation:**

Microfinance programme generates self-employment opportunities in rural areas. In this programme, credit support is made available to rural entrepreneurs through the SHGs in the form of micro-loans, who otherwise are often considered non-bankable by the financial sector. The programmes which generate wage employment may not bring the BPL households out of poverty on sustained basis. In the words of Yunus (1994), "Unless designed properly, wage employment may mean being condemned to a life in squalid city slums or working for two meals a day for one's life. Wage employment is not a happy road to the reduction of poverty. Removal or reduction of poverty must be a continuous process of creation of assets, so that the asset-base of poor person becomes stronger at each economic cycle, enabling him or her to earn more and more." This perception is shared by many of the rural poor. Rahman (1996) citing Hirashima and Muqtada, 1986 notes that "in the rural areas among female workers in particular and among all workers in general, self-employment is considered to be more prestigious compared to wage employment."

The impact of any social program would be justified if the tool used is able to measure the change it has brought (positive or negative) in the lives of the target population.

There has been a long debate on the methods adopted for measuring the performance of microfinance institutions. To some experts the methods or tools adopted to measure the performance of microfinance are not appropriate.

Ample of research studies done on impact assessment of microfinance program focuses on one of the two concepts: **"Proving Impact"** and **"Improving Practice"**. A common understanding is that impact assessment is a systematic analysis of the lasting changes – positive or negative, intended or not – in people's lives brought about by an action or a series of actions **(Roche, 1999).**

Cheston and Reed (1999) in their paper titled "Measuring Transformation-Assessing and Improving the Impact of Microcredit" have described that the impact measurement studies are not fully valid. They insisted that microcredit as a poverty alleviation tool must be assessed on the basis of whether the clients of microfinance institutions have been able to transform their lives. On the contrary, the only performance indicators that were used to gauge the effectiveness of microcredit programs were the profitability of the lending institution and the quality of its portfolio. They have described the inappropriateness of these methods by commenting that- "Using profit and loss to measure the impact of microcredit is like using a speedometer to measure the temperature".

Khandker (1998) reported substitutions from wage employment to self employment in the survey of 29 districts in Bangladesh undertaken for the World Bank and the Bangladesh Institute of Development Studies (BIDS). They concluded that microfinance as delivered by Grameen Bank, BRAC and Rural Development accelerated the shift from wage employment in the informal rural sector to self-employment among the poor participants. But they added that absence of technological development had slowed down the overall increase in production and employment.

A study at international level conducted by International Labour Organisation (ILO) (1998) in its different projects concluded that microfinance had successfully increased micro-enterprises and self employment of the clients. An ILO survey of 46 Microfinance Institutions (MFIs) in 24 different countries showed that 74 per cent of MFIs had "the self-employed" as clients.

Morduch (1998) carried out a cross-sectional survey in 1991-92 of 1800 households in Bangladesh to analyse the impact of micro-financing services on the ultimate borrowers. From the study it was concluded that there was increase in consumption and education level of the households using microfinancing services as compared to the households who were not served by any microfinance program.

Puhazhendhi and Satyasai (2000) in their study commissioned by NABARD covered 560 sample households from 223 SHGs spread over 11 states across India. For assessing the impact of the programme, a comparison of pre- and post-SHG situation was made. With a view to quantify the empowerment of SHG members, economic and social empowerment index was computed for each household by using the scoring technique. The findings of this study showed 33 per cent rise in average annual income from pre- to post-SHG situation. Forty per cent of this incremental income was generated by non-farm sector activities. The estimated employment days per household worked out to 375 person days during post-SHG situation that had registered an increase of 17 per cent from pre-SHG situation. Sample households took up 200 additional economic activities by utilizing 85 per cent of the borrowed funds for productive purposes. The share of families living below the poverty line was reduced by 20 per cent in post-SHG situation. The social empowerment of sample SHG members in terms of self-confidence, involvement in decision-making, better communication, etc. improved in a significant way.

Sriram and Upadhyayula (2002) in their study titled "The Transformation of Microfinance in India: Experiences, Options and Futures" has focused on growth and transformation of microfinance organizations in India. Three issues that trigger

transformation have been identified- Size, Diversity of Services, Financial Sustainability, Focus and Taxation. They have identified some useful value attributes of Microfinance. First, Microfinance is said to be something which is done by some alternative sector apart from government or commercial sector. Secondly, Microfinance is something done exclusively with the poor. Thirdly, Microfinance grows out of developmental roots.

Till 2002, only two organizations- Sanghamithra Rural Financial Services and Indian Association of Savings and Credit (IASC) were qualified to be classified as microfinance companies as per the definition of RBI.

Kuzilwa (2005) examined the role of microcredit in the generation of employment opportunities in Tanzania. The results are based on the survey of businesses that gained access to credit from microfinance. It was observed that there was substantial increase in the output following the credit access. The owners of the enterprises who have received business training and extension advice performed better than those that did not. The study also asserted that credit is not the only barometer of success. Several other factors such as infrastructural support problems and stiff competition amongst the micro and small-scale producers serves as hindrances to the enterprises.

Borbora and Mahanta (2008) in their case study of Rashtriya Grameen Vikas Nidhi's (RGVN) credit and saving programme (CSP) in Assam examined the role of credit in generation of employment opportunities for the poor. They also assessed the role of SHGs in promoting the saving habits among the poor and the contribution of the programme in social and economic empowerment of the poor in general and of women in particular. The analysis of survey data revealed that 80 per cent of the members in the selected SHGs were from poor families. The members of the groups were engaged in gainful economic activities. It was found that the programme had succeeded in inculcating the habit of saving among the members. As many as 57.8 per cent of the members saved Rs. 200 to Rs. 500 and 42.2 per cent saved Rs. 501 to Rs. 1000 each. It also helped them to free themselves from the clutches of non-formal sources of credit. Forty-three per cent of the sample beneficiaries expanded their income generating activities. The SHGs had helped to set up a number of micro-enterprises for income generation. The focus of CSP was exclusively on rural poor and it adopted a credit delivery system designed specially for them with the support of specially trained staff and a supportive policy with no political intervention at any stage in the implementation of the programme. So, the CSP in Assam was found to be successful.

A comprehensive study has been conducted by **Agricultural finance Corporation Limited in 2008 (SIDBI)**. The results studied the impact of microfinance on several dimensions of development. The study found a positive impact on employment, vulnerability, income related effects, women empowerment and many others.

3. **Microfinance literature on its impact on Women Empowerment:**

Empowerment is an intrinsic quality of a person, which cannot be bestowed by a third party. It is considered that an empowered person's behavior undergoes a change. In a nutshell, empowerment is a process which enables one to gain power, authority and influence over others.

It is a process that allows one to gain knowledge, power, skill-sets and attitude needed to cope with the changing world and the circumstances in which one lives. Empowerment helps the person concerned to exploit the economic environment in increasing the productivity of self, family and the society on the whole.

Hashemi (1996) explained that the microfinance programme in Bangladesh had led to empowerment of women. They had used a measure of length of programme participation among Grameen Bank and BRAC (Bangladesh Rural Advancement Committee) clients to show that each year of membership increased the likelihood of a female client being empowered by 16 per cent. The survey was conducted in 1992 based on 1225 women. A composite empowerment indicator was created based on eight components: mobility, economic security, ability to make small purchases, involvement in major household decisions, and freedom from domination within the family, political and legal awareness and involvement in political campaigning and protests. A woman was considered empowered if she scored five out of eight of the subcomponents. Results showed that Grameen Bank members were seven and a half times more empowered as compared to the comparison group.

Ashe and Parrott (2001) conducted a study on the women empowerment programme in Nepal and showed that 89,000 out of 1,30,000 or 68 per cent of women in the programme experienced an increase in their decision-making roles in the areas of family planning, marriage of children, buying and selling property and sending their daughters to school. These all areas of decision-making were traditionally dominated by men.

However, **Shrestha (1998)** of the Centre for Self-help Development (CSD), Nepal reported that women were able to make small purchases of necessary items like groceries independently. But larger purchases and personal purchases, like jewellry, always required the consent of the husband, representing incomplete progress toward empowerment in this area.

Banu (2001) conceptualised empowerment as the capacity of women to reduce their socio-economic vulnerability and their dependency on their husbands or other male counterparts. They investigated the changes that had taken place in the lives of women who participated in Bangladesh Rural Advancement Committee's (BRAC) rural development programme. The primary data was collected through case studies and household surveys. In order to assess the impact over time the members were categorised in three groups according to the length of membership in BRAC, such as 1 to 11 months, 12 to 17 months, and 48 months or above. The economic dependence of women on their husbands was reduced. Women had begun to acquire positive self-perceptions of their own interests. They had become more confident in travelling and in dealing with other members of the society. It was found that empowerment was continuous process of change that was greatly influenced by the length of time a woman had been involved in BRAC.

Parveen and Leonhauser (2004) in their paper investigated the nature and extent of empowerment of rural women, factors influencing it and further outlined a strategic framework, role of SHGs, education, training and gender awareness for enhancing empowerment. For the purpose of study, qualitative and quantitative methods were integrated and primary data was collected from 156 respondents from three villages of Mymensingh district of Bangladesh during January to April 2003 by applying stratified random sampling. For the purpose of measuring women empowerment, a cumulative empowerment index (CEI) was prepared by adding the scores of six empowerment indicators, namely, contribution to household income, access to resources, ownership of assets, participation in household decision-making, perception on gender awareness and coping capacity to household shocks. The results showed that the level of women empowerment was not very satisfactory at the household level. CEI showed that 11 per cent of the respondents fell under a very low empowerment category and just 5 per cent of them belonged to high empowerment level. Eighty-two per cent of women were concentrated in very low to moderate tail of empowerment distribution. A multiple regression technique was applied to explore the effects of seven key factors of women empowerment. The regression analysis concluded that education, training and exposure to information media had the potential to increase women's empowerment. Therefore, effective initiatives undertaken by the concerned government and non-government agencies in improving women's education, skill acquisition training and access to information could enhance women's empowerment in order to achieve gender equality and development at all levels in the rural society of Bangladesh.

Gaonkar's (2004) research paper aimed at evaluating the role of SHGs in the empowerment of women. Primary data was collected from the state of Goa, India. Out of total 500 SHGs functioning in Goa 100 groups were promoted by National Co-operative Union of India (NCUI). There was an increase in income, savings and consumption expenditures. With the increase in self-confidence, the social horizon of the members had widened. It was also found that with improvements in socio-economic opportunities for women and their ability to take collective action, there had been a significant decline in gender based problems such as domestic violence, dowry, polygamy etc. Interestingly, the members were motivating other women to form SHGs so that they can also reap programme benefits.

Tracey et al. (2006) in their study examined the personal and economic empowerment of rural Indian women through self-help group participation. Data was collected from 100 rural women from the Udaipur district of the state of Rajasthan in India. These women were imparted a skill development training in stitching, embroidery, and patch work through a Sewa Mandir NGO working in Udaipur and Rajsamand districts of Rajasthan. The study was based on both the quantitative and qualitative data which was collected through questionnaires, informal interviews and discussions. The quantitative data found that working women reported enhanced meaningfulness in their

daily lives, increased personal control over spending, enhanced social networks, reduced boredom, increased decision-making power in home and enhanced independence. The inclusion of women in income-generating activities gave support to their personal and economic empowerment. Micro-enterprises and employment provided women with the means for survival, security and growth. Qualitative data revealed positive appraisal of self-worth, independence and self-confidence. The study also found that women's employment meant longer hours of work to meet strict time frames, which resulted in less time for household and family duties. Negative appraisals of pressure, challenge, excessive workloads and stress were indicated. The results showed that the immediate effects of participating in self-help groups for women included an increase in economic strength and an enhanced level of psychological well-being.

Abdul Naeem and his co-authors (2014) has studied the changes in women-entrepreneur due to the provision of microfinance services provided by BRAC, Pakistan using a cross-sectional design study covering 60 females through structured questionnaires. The main focus of the study is to answer the question that does participation in microfinance program have any role in economic and social empowerment of women entrepreneur. The research findings showed that there was significant impact of microfinance on the social and economic empowerment of women. Economic empowerment is more as compared to social empowerment.

Laha and Kuri (2014) in their study entitled –"Measuring the impact of microfinance on Women Empowerment: Across-country analysis with special reference to India has stressed on the microfinance outreach and penetration as one of the important

factor in women empowerment. A comprehensive measure of microfinance outreach has been constructed using the three indicators: Penetration, Availability and Usage. On this index, among south Asian countries, India is found to have made a good progress in outreaching its microfinance program.

Chowdhury (2005) examined empirically the impact of micro-credit on poverty in Bangladesh. The focus was on both objective and subjective poverty and particular attention was paid to the length of time, the programme participants had access to micro-credit. Objective poverty is based on the costs associated with obtaining a minimum daily adult requirement of 2,112 calories. Subjective poverty is calculated on the basis of the personal views of the household head regarding the poverty level of his family by asking whether they consider their family poor on the basis of their yearly income. The main finding of the study was that micro-credit was associated with both lowering objective and subjective poverty.

Thus, most of the above studies revealed that microfinance programme had a significant positive impact in reducing poverty, generating more employment opportunities, improvement in living standard, reduced gender inequality and improved status of women, whereas a few studies contradict the success of microfinance programme, particularly regarding the unchanged level of poverty, ineffective reach to the poorest, lower amount of bank loans, unproductive use of group loans and mistargeting of the programme. The review of literature provides an insight into both positive and negative aspects of the programme. In India, most of the studies had been carried out in central and southern regions and there is a dearth of impact of microfinance studies in northern India.

Conclusion:

In view of the availability of wide literature on Microfinance and its impact assessment, it has been observed that microfinance plays a crucial role in achieving the financial inclusion objective. But, there is no such study done in Delhi and NCR comprising Gurgaon, Faridabad. Hence this study intends to aid the policy makers in devising the customized portfolios for Delhi and NCR customers.

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An Analytical Study of Sectoral Distribution of Bank Credit in India

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Abstract- **With the economic crisis, it is expected that credit and down payment growth will average later on. Credit score growth will be led by spending on the infrastructure while retail credit will display an average growth. Margin demands due to lag effect of quantity cuts between attention quantity on deposits and advances, reduced treasury gains and core fee earnings and improving in conditions for NPAs is likely to put pressure in the main point here of the financial organizations. In the light of above aspects the present document tends to analyze sectoral distribution of credit in Native India Financial industry. The document studies the styles in credit growth with a perspective to project upcoming course of growth in bank credit.**
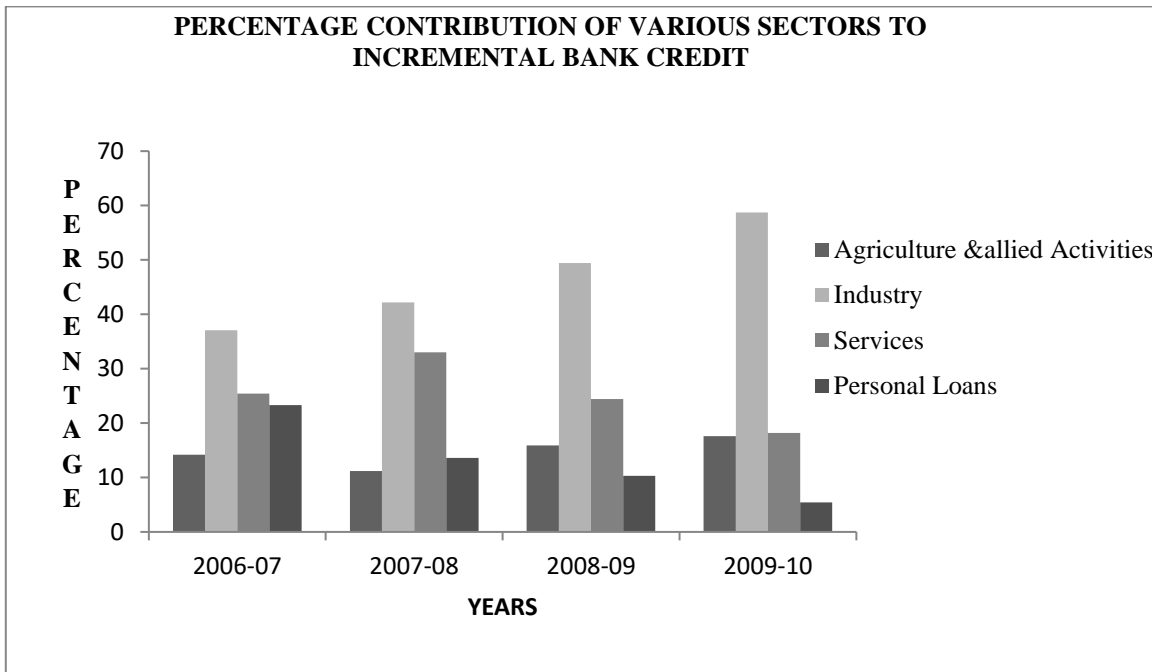
Key words: Bank Credit, Economical Institution Credit, Native India, Sectoral GDP Ratio, Sectoral Credit.

I.   Introduction

The bank loaning has extended in a variety of growing industry financial techniques, especially in Asia and Latin America, recently. Economical institution credit to the personal industry, in actual terms, was improving at a quantity between 10 and 40 % in a variety of nations by 2005 (BIS, 2006). Several aspects have contributed to the important development of bank loaning in growing financial techniques such as powerful growth, excess liquidity in banking techniques reflecting easier global and household financial conditions, and significant bank restructuring.

There has been a distinct choose up in bank credit in Native India recently. The quantity of growth in bank credit which touched a low of 14.4 % in 2002-03, multiplied to more than 30.0 % in 2004-05, the quantity which was maintained in 2005-06. The same pattern ongoing in the next decades also. The Reserve Economical institution of Native India has said that with financial growth consolidating around the pre-crisis pattern, non-food credit increased even larger at a multiplied pace during the third one fourth of FY 2010-11. The step-by-step non-food credit to down payment quantity peaked at 110.5% in mid Dec 2010. The improved credit off-take was seen across all bank categories. Even as personal industry financial organizations and international financial organizations registered high growth in credit circulation as opposed to season before, public industry financial organizations stayed the prominent lenders, accounting for nearly three-fourth of the step-by-step year-on-year credit off-take at the end of the third one fourth. Information on sectoral implementation of complete non-food credit display the improving broad-based pattern. On a year-on-year (y-o-y) foundation, non-food complete bank credit increased by 23.1 % in Dec 2010 as in contrast to a growth of 11.5 % in the corresponding period of last season. During the financial season (up to Dec 2010), non-food complete bank credit increased by 11.6 % as in contrast to a growth of 5.9 % during the corresponding period of previous season. Credit growth gained a distinct momentum during 2004-05 and the pattern continues in the financial season 2005-06. A period of credit growth provides both opportunities and challenges to policymakers. While the surge in financial intermediation is usually associated with improved growth and performance, excessive credit growth often leads to some erosion in credit quality. Policymakers, therefore, face the dilemma as to how to minimize the risks that may arise from such a decrease in credit high quality, while still allowing bank loaning to contribute to greater growth and performance. Sectoral distribution of bank credit provides a knowing of the participation of bank credit towards financial growth and financial addition as well as its part in guaranteeing financial balance.

CHART 1:

PERCENTAGE CONTRIBUTION OF VARIOUS SECTORS TO INCREMENTAL BANK CREDIT

Source: Evaluation on Trends and Improvement of Financial, 2009-10

II. Objectives of Study

➢ To study the magnitude and styles of bank credit to various categories of non meals areas in Native India.
➢ To establish the casual connection between bank credit to non meals industry and financial growth in Native India.

III. Research Methodology

The objective of this document is to analyze the causal connection between the money growths to the non meals areas in Native India during the period 2005-06 to 2009-10. This analysis is investigative in nature. This analysis is in accordance with the secondary data which is gathered from the various Reviews on Trend and Improvement of Financial in Native India. The gathered data have been tabulated to analyze the situation of credit growth in various non meals areas. The analysis investigates the styles and patterns of the money growth in non meals industry. Various mathematical tools such as mean, conventional difference, ANOVA, several evaluation etc. are used to analyze the behavior of credit growth to various non meals areas.

IV. Hypothesis

H¬01: Zero speculation is that there is no factor exists between the team indicates.

H¬02: Zero speculation is that there is no factor in the variability of bank credit, non-food credit and its elements during the period under study.

H¬03: Zero speculation is that there is no factor in the growth of various elements of credit growth in non-food areas.

V. Literature Review

The connection between the size of a country's financial industry and its quantity of economic growth has been the topic of analysis since last few decades. However, the scientific proof on the effect of fund upon financial growth has been mixed and stayed a debated topic. There is a significant literary works on the part of credit industry frictions for financial growth:

Greenwood and Jovanovic (1990), Bencivenga and Cruz (1991), Marcet and Marimon (1992), Galor and Zeira (1993), Azariadis and Chakraborty (1999) were of common perspective that an advanced stage of economic action spurs financial growth. Master and Levine (1993) used different measures of bank growth for several nations and were of the perspective that banking industry growth can encourage financial growth in the lengthy run. Jayratne and Strahan (1996) showed that bank loaning high quality
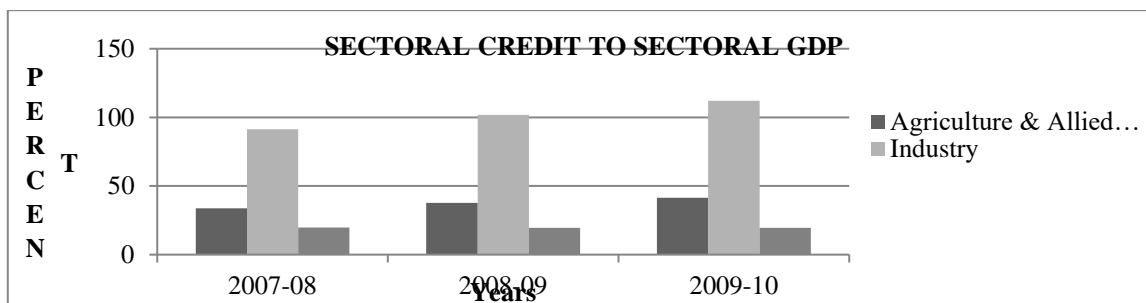
more than doubled leading to greater growth when individual states in USA raised inter-state branching restrictions. Levine (2002) emphasized that the banking system is important and critical in financial growth and highlighted certain circumstances when financial organizations can actively encourage innovation and upcoming growth by determining and funding productive investments. Some of the authors have provided adverse proof of economic industry action upon financial growth in the short-term, although the effect becomes beneficial and important in the lengthy run. Favara (2003) discovered a powerful connection between household credit by financial organizations and other financial organizations as a amount of GDP and financial growth after controlling for the effect of improving prices, government consumption to GDP, initial GDP per capita, household investment to GDP, regular decades of school of the population aged 15 and over, business awareness to GDP, black-market premium and dummy legal origin aspects. The sample consisted of 85 nations for the period 1960-1998. Beck and Levine (2004) discovered that both marketplaces and financial organizations did indeed play a beneficial and part in impacting financial growth, even when selected management aspects were added to the design. However, the connection between financial aspects and financial growth broke down, in particular for the banking varying when using annual data. They tentatively suggested that this was due to "credit surges" that had also been discovered to be good predictors of banking crises and subsequent financial slowdowns. Loayza and Rancière (2006) empirically proved that the connection between financial aspects and financial growth is important and beneficial in the long-run through a design with household credit by financial organizations and other financial organizations as an amount of GDP as their financial growth varying and a variety of other well established management aspects. Saci, Giorgioni and Merc (2009) estimated the connection for 30 creating nations and discovered that the varying, household credit by financial organizations and other financial organizations as an amount of GDP has a considerably adverse coefficient with stock exchange traded value over GDP. Vazakidis and Adamopoulos (2009) investigated the connection between credit market development and financial growth for France for the period 1965-2007 using a Vector Mistake Correction Model (VECM). The scientific outcomes indicated that financial growth had a beneficial effect on credit industry growth, while quantity of improving prices had a damaging effect. Mishra, Das and Pradhan(2009) were of the perspective that the major aspects behind this significant growth of bank credit are improved asset high quality, reduction in banks' gross/net NPAs, a pick-up in financial growth, moderation in improving prices and improving prices expectations, decrease in actual attention levels, improving earnings of houses and improved competition with the access of new personal industry financial organizations. Besides, the distinct growth in bank credit recently could also be attributed to aspects such as financial deepening from a low base, structural shifts in supply elasticity, development of performance of credit marketplaces and policy initiatives to improve the circulation of credit to areas such as farming and method and little business owners.

VI.   Analysis And Interpretation

SECTORAL CREDIT SCORE TO SECTORAL GDP RATIO

The sectoral credit to sectoral GDP quantity was the biggest for the commercial industry (at 112 per cent) followed by farming (and allied activities) (at 41.4 per cent) and then solutions (at 19.6 per cent) in 2009-10. During the previous times several decades, the quantity was on an improving pattern for commercial and farming areas, while it was almost stagnant for the solutions industry.

CHART 2:

Source: Evaluation on Trends and Improvement of Financial, 2009-10

TABLE 1: Economical Institution Credit Score to Gdp Ratio in Select Countries (Percentage)

Country	1960	1970	1980	1981-85*	1986-90*	1991-95*	1996-00*	2001-06*
1	2	3	4	5	6	7	8	9
Argentina	21.7	25.2	33.0	43.0	47.1	25.1	32.2	44.1
Australia	41.6	39.0	39.0	39.1	56.8	73.2	84.7	103.6
Belgium	33.0	38.4	53.6	61.6	69.0	130.8	139.1	109.9
Brazil	30.8	36.8	43.0	50.7	156.5	110.2	68.1	75.0
Canada	28.6	47.9	84.8	92.4	97.0	115.0	119.4	205.0
France	58.8	79.4	112.6	110.3	94.6	101.4	102.2	107.6
China	..	..	53.6	60.2	81.2	92.6	109.2	138.6
India	7.1	9.2	17.6	18.3	20.1	19.9	21.2	33.5@
Indonesia	..	10.7	8.2	13.7	31.2	48.5	59.3	48.9
Ireland	28.9	35.2	39.3	54.5	54.8	56.5	93.9	134.9
Italy	..	86.3	89.0	85.7	85.6	96.8	92.1	103.7
Japan	60.3	136.3	191.3	212.8	251.6	274.7	298.6	300.1
Russian Federation	..	..	..	..	..	27.7	32.1	24.6
Singapore	..	24.8	52.4	87.5	83.1	73.9	90.3	82.8
South Africa	..	88.6	76.4	88.2	94.8	118.5	144.5	157.7
Sri Lanka	20.1	30.2	50.0	45.2	42.4	33.4	39.0	43.7
Sweden	52.7	78.8	90.6	104.0	117.9	125.8	99.0	114.4
United Kingdom	44.7	49.5	36.6	48.4	98.8	117.2	126.4	156.5
United States	105.5	118.0	120.2	126.5	150.4	163.6	195.3	216.1
World	75.8	88.4	95.2	108.3	132.6	142.8	155.4	163.3

Note: Information corresponds with calendar decades. In situation of Native India data correspond with end Goal.
Source: Guide of statistics on the Native India Economic system, RBI.
*Average; @Average of 2001 to 2007 period

It is evident from the Desk 1 that bank credit to GDP quantity stayed reduced in evaluation of globe's regular quantity and it stayed too little in evaluation of creating nations like Sri Lanka. Lower bank credit to GDP quantity is a cause of concern for Native India.

Sectoral Submission of Economical Institution Credit

Sectoral distribution of bank credit provides a knowing of the participation of bank credit towards financial growth and financial addition as well as its part in guaranteeing financial balance. Economical institution credit witnessed a slowdown on a year-on-year foundation during 2009-10 continuing with the pattern observed in previous times. However, there were signs of choose up in growth of bank credit in common, and commercial credit in particular, following the recovery in the actual industry. On the year-on-year foundation, the main drivers of

non-food bank credit during the period of study were the areas of industry and farming. There was a considerable slow-down in credit to the solutions industry and financial loans during the period of study. The common pattern in the previous times several decades has been the building up of the participation from commercial credit to the rise in complete bank credit. Between 2006-07 and 2009-10, the amount contribution of commercial credit to complete bank credit improved continuously from 37.1 % to 58.7 % (Chart 1). There was also an improving pattern in the participation of credit to farming and allied actions.

TABLE 2: SECTORAL SUBMISSION OF ECONOMICAL INSTITUTION CREDIT SCORE (Variations Over The Year)

SECTOR	2005-06	2006-07	2007-08	2008-09	2009-10
	Amount	Amount	Amount	Amount	Amount
Agriculture and Allied Activities	49,606	56,426	44,966	63,313	76,758
Industry (Small, Medium, Large)	1,26,804	1,46,890	1,69,536	1,96,046	2,55,424

Personal Loans	1,03,733	96,486	54,730	40,861	23,546
Of which Housing	51,273	45,791	26,802	19,242	21,620
Other Services Of which :	1,18,254	96,596	1,32,429	96,803	79,394
Wholesale Trade	8,025	10,422	5,559	11,676	19,506
Real Estate	13,147	18,483	19,235	29,072	-363
NBFC	11,463	14,722	30,094	19,897	19,068
Total Non Food Bank Gross Credit	3,98,396	3,96,399	4,01,650	3,97,021	4,35,122

Source: Various RBI Reviews on Trends and progress of Banking

CHART 3:

TABLE 3: Descriptives For Credit Score Increase India

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Agriculture and Allied Activities	5	58213.8000	12476.81699	5579.80219	42721.7855	73705.8145	44966.00	76758.00
Industry	5	178940.0000	49940.50887	22334.07453	116930.6681	240949.3319	126804.00	255424.00
Personal Loans	5	63871.2000	34970.84813	15639.43873	20449.1569	107293.2431	23546.00	103733.00
Other Services	5	104695.2000	20742.70536	9276.41984	78939.7295	130450.6705	79394.00	132429.00
			Total	20	101430.0500	128528.0452	23546.00	255424.00

The table 3 provides the descriptive for credit growth in each industry. The mean is maximum in situation of industry and followed by other solutions. The smallest mean is in situation of farming and allied actions. It indicates the common increase in credit growth is maximum in situation of industry. The conventional difference is maximum again in situation of industry and smallest in situation of farming & allied actions, which depicts that the variation in credit growth is maximum in situation of industry and smallest in situation of farming & allied actions.

TABLE 4: Anova Outcomes For Credit Score Increase India

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.648E10	3	1.549E10	14.404	.000
Within Groups	1.721E10	16	1.076E9		
Total	6.370E10	19			

TABLE 5: Post Hoc Lsd T-Test Of Multiple Comparisons

(I) Sector	(J) Sector	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Agriculture and allied activities	Industry	-1.20726E5	20743.54221	.000	-164700.5450	-76751.8550
	Personal loans	-5657.40000	20743.54221	.789	-49631.7450	38316.9450
	Other services	-4.64814E4	20743.54221	.040	-90455.7450	-2507.0550
Industry	Agriculture and allied activities	1.20726E5	20743.54221	.000	76751.8550	164700.5450
	Personal loans	1.15069E5	20743.54221	.000	71094.4550	159043.1450
	Other services	74244.80000*	20743.54221	.003	30270.4550	118219.1450
Personal loans	Agriculture and allied activities	5657.40000	20743.54221	.789	-38316.9450	49631.7450
	Industry	-1.15069E5	20743.54221	.000	-159043.1450	-71094.4550
	Other services	-40824.00000	20743.54221	.067	-84798.3450	3150.3450
Other services	Agriculture and allied activities	46481.40000*	20743.54221	.040	2507.0550	90455.7450
	Industry	-7.42448E4	20743.54221	.003	-118219.1450	-30270.4550
	Personal loans	40824.00000	20743.54221	.067	-3150.3450	84798.3450

The table 4 provides the outcomes for sum of pieces between categories and within categories. This table also reveals the F quantity. The F value is acquired by splitting the Mean rectangle between the categories by mean rectangle within categories. The acquired value is F=14.404 and p-value is .000 leader stages. This falls well below the .05 leader stage, which is usually accepted as the maximum for establishing mathematical significance, so we can conclude that factor exist between the team indicates. Also, the leader stage .000 tells us the odds are 0 in 1000 that the differences we discovered occurred by chance alone. Hence the second null speculation is rejected. However, even though we know that at least one of our team indicates is considerably different from another team mean, the F figure does not indicate which categories vary considerably and which do not. To obtain this information, we measured the several evaluations which are presented in Desk 5. The several evaluations output provides the outcomes of Fisher's LSD t-test. The outcomes display that p value is important in situation of indicates of farming & allied actions and industry and also between other solutions and farming & allied actions as the p values are less than the approval stage of .05. It indicates the growth is homogenous in situation of farming & allied actions with industry and other solutions. Whereas the financial loans considerably vary with farming & allied actions and other solutions.
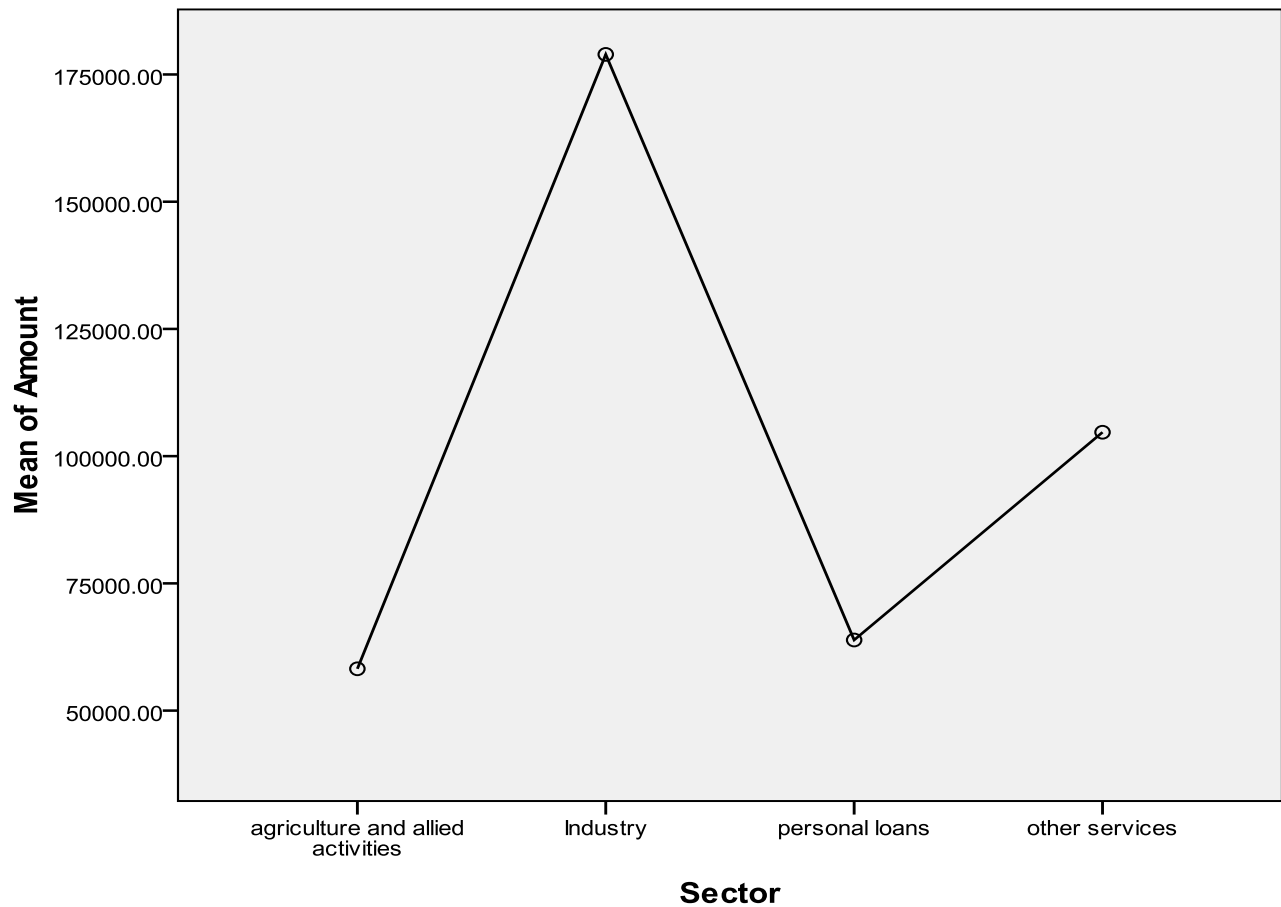
CHART 4: MEANS PLOTS

Chart 4 graphically displays the common credit growth in different areas. The X –axis symbolizes each of the four groups: farming & allied actions, industry, financial loans and other solutions. The Y-axis symbolizes indicates of quantity. In this situation, the farming 7 allied actions had the shortest latency, closely followed by financial loans. The industry had the biggest latency. This graph also shows that the indicates of various areas vary with each other.

VII.   Conclusion

Across areas, credit to the commercial Sector has extended at a fast clip over previous times several decades. This fast growth in credit has been the culmination of a variety of aspects, including greater corporate utilizing, improved capital industry access and the introduction of new products and credit risk management methodologies, in part triggered by improved international bank access. As well, fast credit expansion has brought important benefits, helping channel savings to houses and investors and supporting financial industry growth and financial growth.

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A Way to Trust Deportment for Security in Distributed Systems

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Abstract – **A distributed system is a decentralized network consisting of a collection of autonomous computers that communicate with each other by exchanging messages. These systems are scalable and fault tolerant, and they allow easy resource sharing, concurrent processing, and transparent operation. With the rapid growth of the information age, open distributed systems have become increasingly popular. The need for protection and security in a distributed environment has never been greater. The conventional approach to security has been to enforce a system-wide policy, but this approach will not work for large distributed systems where entirely new security issues and concerns are emerging. Existing authorization mechanisms fail to provide powerful and robust tools for handling security at the scale necessary for today's Internet. We argue that a new model is needed that shifts the emphasis from "system as enforcer" to user-definable policies. Users ought to be able to select the level of security they need and pay only the necessary overhead. Moreover, they must be responsible for their own security. This research is being carried out in the context of the trust-management approach to distributed-system security developed as an answer to the inadequacy of traditional authorization mechanisms with a very popular architecture analyzed of Java by SUN. In this paper, we introduce the concept of trust management, explain its basic principles. We also survey the current research on trust management in distributed systems and explore some open research areas and examine existing authorization mechanisms and their inadequacies.**

Keywords-- **Java, SUN, Trust Management**

I. INTRODUCTION

rust is an important issue in distributed systems. Transactions in distributed systems can cross domains and organizations and Tnot all domains can be trusted to the same level. Even within the same domain, user's trustworthiness can differ. A flexible and general-purpose trust management system can maintain current and consistent trustworthiness information for the different entities in a distributed system. In e-commerce, for example, a trust-management system lets a buyer and seller become acquainted with each other and estimate the risk of participating in a transaction, thus minimizing the loss. In *P2P* systems, where each entity acts as both client and server and is expected to contribute to the system, trust management can help reduce free riding, which can seriously degrade P2P system performance. Finally, in mobile ad hoc networks—a type of distributed system that has no infrastructure and lets nodes move freely, trust management can mitigate node's selfish misbehavior such as dropping or refusing to forward packets for other nodes to save its battery power while still requiring other node's services.

Much research exists on trust management and reputation management. We don't distinguish trust management from reputation management because both can be generalized as dynamic rating systems. Here, we survey the current research on trust management in distributed systems and explore some open research areas.

Trust-management engines avoid the need to resolve "iden-tities" in an authorization decision. Instead, they express privileges and restrictions in a programming language. This allows for increased flexibility and expressibility, as well as standardization of modern, scalable security mechanisms. Further advantages of the trust-management approach include proofs that requested transactions comply with local policies and system architectures that encourage developers and administrators to consider an application's security policy carefully and specify it explicitly.

A. TRUST MODELS

Trust is a complex subject, and no unanimous definition of trust exists. The Merriam-Webster's Dictionary defines trust as "assured reliance on the character, ability, strength, or truth of someone or something." Dictionary.com describes trust as the "firm reliance on the integrity, ability, or character of a person or thing." We define trust as the belief that an entity is capable of acting reliably, dependably, and securely in a particular case. Trust management entails collecting the information necessary to establish a trust relationship and dynamically monitoring and adjusting the existing trust relationship. The various models for describing trust and trust establishment in distributed systems include public-key cryptography, the resurrecting duckling model, and the distributed trust model.

1) PUBLIC-KEY CRYPTOGRAPHY

Many networked services have security mechanisms based on cryptographic techniques such as the Pretty Good Privacy (PGP) 6 or X.5097 certificate systems, which implicitly use the trust-management concept. A public-key certificate is a digital certificate issued by a trusted third party to certify a public key's ownership. A certificate contains an entity's identity, public key, and other information, such as the trusted third party's digital signature. Service users are assumed to know the trusted third party's public key so that they can verify the certificate. The trusted third party only vouches for the association between an identity and a public key. It doesn't guarantee the entity's trustworthiness. In X.509, the trusted third party is a certificate authority (CA), which is usually a trustworthy entity for issuing certificates (VeriSign, for example). Another CA might also certify a particular CA.

When a user generates a public/ private key pair, it registers its public key with a CA and has the CA certify it. If the same CA certifies two users and they want to communicate securely, they need only exchange their certificates. If different CAs certifies two users, they must resort to higher-level CAs, which certify their CAs until they reach a common CA. So, X.509 uses a hierarchical structure, which constructs a tree of trust.

PGP doesn't use a CA. Instead, every entity certifies the binding of IDs and public keys for other entities. For example, an entity A might think it has good knowledge of an entity B and is willing to sign B's certificate. An entity might assign a degree of trust—unknown, untrusted, marginally trusted, or fully trusted—to its certifiers. The user chooses how to use the certificate. User C might be confident about A's trustworthiness and accept B's certificate, which A has signed. A pessimistic user might only accept certificates certified by fully trusted entities, whereas an optimistic user might trust marginally trusted signers. Traditional certificate schemes like X.509 and PGP only bind public keys to identities. Because binding an identity to access rights or authorized actions is outside the certificate framework, a certificate framework only provides partial trust management.

2) RESURRECTING DUCKLING MODEL

Ross Anderson and Frank Stajano's resurrecting duckling model also has a hierarchical structure. The entities in a network have a master-slave relationship. The master entity is the mother duck and the slave entity is the duckling. A slave entity recognizes the first entity that sends it a secret key through an out-of-band secret channel (through physical contact, for example) as its master in a process called imprinting. The master passes instructions and access control lists to its slaves, and the slaves always abide by their master. The master, a time-out, or a specific event can break the relationship between a master and a slave. After that, other entities can imprint, or resurrect, the slave. A slave entity can also become a master to other entities through the imprinting process. Thus, the relationship among nodes is a tree-like trust relationship. An entity controls all the entities in its subtree. Breaking the relation between two entities causes the relationships in the entire subtree to break. This model is appropriate for devices that can't perform public-key cryptography. However, the model requires an out-of-band secret channel to deliver the secret key, which might not be feasible in some networks, such as ad hoc networks.

3) DISTRIBUTED TRUST MODEL

The distributed trust model assumes asymmetrical trust.

Stephen Hailes and Alfarez Abdul-Rahman developed a distributed recommendation-based trust model. They propose conditional transitivity of trust, which hypothesizes that trust is transitive under some conditions.

For example, if A trusts B, and B trusts C, we can't simply conclude that A trusts C, because trust generally isn't transitive. Abdul-Rahman and Hailes claim that we can conclude that A trusts C if the following conditions are true:
• B recommends its trust in C to A explicitly;
• A trusts B as a recommender; and

• A can judge B's recommendation and decide how much it will trust C, irrespective of B's trust in C.

Although, using trust management is a recent research field, there are many works in this area. We also survey the current research on trust management in distributed systems and explore some open research areas and examine existing authorization mechanisms and their inadequacies. There are three popular architectures for distributed systems applications and their security implications. The architectures analyzed are Java by Sun, CORBA by the OMG, and COM+ from Microsoft. It is extremely important for developers to consider the security implications when designing distributed applications, as many of these applications offer access to crucial resources: financial, medical, and military information, just to name a few [2].

The model's motivation comes from human society, where human beings get to know each other via direct interaction and through a grapevine of relationships. The same is true in distributed systems. In a large distributed system, every entity can't obtain first-hand information about all other entities. As an option, entities can rely on second-hand information or recommendations. However, because recommendations have uncertainty or risk, entities need to know how to cope with second-hand information. The distributed trust model assumes asymmetrical trust. It defines two types of trust relationships: direct trust and recommender trust. It categorizes a trust relationship between two entities in terms of different interactions. Trust in one category is independent of trust in other categories. This model uses continuous trust values for direct trust and recommender trust and can define values. Other researchers fix trust value within the range (0, 1). The recommendation protocol is straightforward. For example, entity A needs a service from entity D (say car service). A knows nothing about the quality of D's service so A asks B for a recommendation with respect to the car service category, assuming that A trusts B's recommendation within this category. When B receives this request and finds that it doesn't know D either, B forwards A's request to C, which has D's trustworthiness information within the car service category. C sends a reply to A with D's trust value. The path A _ B _ C _ D is the recommendation path.

We use the following formula to calculate the trust value from the returned value : tv_T = [rtv(1)/4] _ [rtv(2)/4] _ ... _ [rtv(i)/4] _ ... _ [rtv(n)/4] _ tv(T), where rtv(i) is the trust value of the ith recommender in the recommendation path, tv(T) is the trust value of target T returned by the last recommender, and tv_T is the calculated trust value of target T.

When multiple recommendation paths exist between the requester and the target, the target's eventual trust value is the average of the values calculated from different paths.

This model has some weaknesses:

- It doesn't consider false recommendations and assumes that a recommender with a good recommender trust value always makes reliable recommendations, which might not be true.
- It doesn't provide a mechanism for monitoring and reevaluating trust, which is dynamic.

Trust shouldn't be considered a binary concept (that is, either to trust or not to trust). Hailes and Abdul-Rahman quantified trust as a multiple value concept. Many trust-management systems use the same approach. The key challenge then is how to process the trust values to minimize the influence of false recommendations.

B. TRUST MANAGEMENT

Trust Management, introduced by Blaze et al. [BFL96], is a unified approach to specifying and interpreting security policies, credentials, and relationships that allows direct authorization of security-critical actions. In particular, a trust-management system combines the notion of specifying security policy with the mechanism for specifying security credentials. Credentials describe specific delegations of trust among public keys; unlike traditional certificates, which bind keys to names, trust-management credentials bind keys directly to authorizations to perform specific tasks. Trust-management systems support delegation, and policy specification and refinement at the different layers of a policy hierarchy, thus solving to a large degree the consistency and scalability problems inherent in traditional Access Control Lists (ACL). Furthermore, trust-management systems are by design extensible and can express policies for different types of applications.

1) TRUST MANAGEMENT IN MOBILE AD HOC NETWORKS

P2P systems assume that the network layer is reliable and that data delivery, such as request and response, can be guaranteed. This isn't true for ad hoc networks. Therefore, it isn't directly possible to apply the previous approaches to trust management in ad hoc networks. An ad hoc network relies on all participants actively contributing to network activities such as routing and packet forwarding. An ad hoc network's special characteristics— such as limited memory, battery power, and bandwidth—can cause nodes to act selfishly (refuse to participate in routing and provide services to other nodes, for example). Trust management can help mitigate this selfishness and ensure the efficient utilization of network resources.

2) MONITORING-BASED TRUST-MANAGEMENT SYSTEMS

In ad hoc networks, a node can only sense the packets transmitted within its transmission range. Sonya Buchegger and Jean-Yves Le Boudec's Confidant (Cooperation of Nodes, Fairness in Dynamic Ad Hoc Networks) protocol promotes cooperation in ad hoc networks by detecting and isolating malicious nodes.

Each node in the network runs the Confidant protocol. Confidant's monitor component observes the behavior of neighbor nodes to detect misbehavior, such as packet dropping. This requires nodes to run in promiscuous mode. When the monitor finds misbehavior, it notifies the reputation system, which manages a table containing nodes and their ratings. The rating is a number within a certain range depending on the implementation. If the number of times a node misbehaves exceeds a threshold, the reputation system updates the node's rating. If a node's rating falls below a threshold, the system considers it a malicious node. The reputation system maintains a blacklist containing the malicious nodes. When forwarding packets, nodes avoid next-hop nodes on the blacklist.

When the reputation system detects a malicious node, it notifies the trust manager to broadcast an alarm message in the network. Trust managers also receive alarms from other trust managers. A trust manager only distributes and accepts alarms from senders on its friends list. (Establishing friendship is a research topic. One possible method is the resurrecting duckling model.) Each trust manager maintains a table with the trust levels of received alarms.

The path manager ranks the path according to the ratings of the nodes on the path. It deletes all paths containing malicious nodes and drops route requests received from malicious nodes. Buchegger and Boudec didn't discuss how to compute reputation values. In addition, Confidant can't prevent malicious nodes from disseminating false information about other nodes, and trustworthy nodes can lie. Sergio Marti and his colleagues proposed two methods to improve an ad hoc network's throughput in the presence of misbehaving nodes: a watchdog method and a path rater method. They assumed that a wireless interface supports the promiscuous mode.

The watchdog is a misbehaving node locator running on every node that maintains a buffer of recently sent packets. After overhearing a packet, the watchdog com pares it with the packets in the buffer to see if there's a match. If there is, the packet has been forwarded and the watchdog removes the packet from the buffer. If a packet stays in the buffer for longer than a certain period, the watchdog increases a failure count for the node responsible for forwarding the packet. If the count exceeds a threshold value, the watchdog considers that node as misbehaving.

A path rater at a node maintains a rating for every other node that it knows in the network. To pick a route that is most likely to be reliable, it computes a path metric by averaging the rating of the nodes on the paths and chooses the path with the highest metric. It assigns misbehaving nodes a very low rating, and thus excludes them from routing.

Because of ad hoc networks' characteristics, the proposed approaches can't accurately detect misbehaving nodes in situations such as packet collisions and collusion of malicious nodes.

3) EVIDENCE-BASED TRUST MANAGEMENT

Eschenauer and his colleagues present a framework for trust management in ad hoc networks based on evidence distribution. They consider trust as a set of relationships established with the support of evidence. In their framework, evidence can be anything a policy requires to establish a trust relationship, such as public key, address, and identity. Any entity can generate evidence for itself and for other entities. Evidence can be obtained either online or offline, such as through physical contact.

One way to generate evidence is through public-key cryptography. An entity can create a piece of evidence, define its valid time, sign it with the entity's private key, and disseminate it to others. To verify this piece of evidence, other entities will need the originator's public key and certificate. In the Internet, entities can use X.509. However, in an ad hoc network, where there is no CA, PGP might be an option. An entity can invalidate its evidence by generating a revocation certificate at any time.

Eschenauer and colleague's approach also lets an entity revoke other entities evidence by generating and disseminating contradictory evidence. However, allowing such actions is open to attack. A malicious entity can distribute bogus evidence to invalidate other node's legitimate evidence, which can cause chaos in the network. A malicious entity might generate fake evidence for its own purposes—for example, to impersonate other nodes.

To prevent these attacks, Eschenauer and his colleagues proposed using redundant and independent evidence from various sources. However, they didn't discuss how to evaluate evidence, which is important for trust management. Also, because each node's trustworthiness is not dynamically adjusted, the framework is mainly useful for authentication.

4) TRUST MANAGEMENT IN E-COMMERCE

Trust or reputation management is an important issue in e-commerce, where traders might have never met and know nothing about each other's trustworthiness. This lack of information about traders' reputations causes uncertainty and mistrust, which influences the e-market's economic efficiency.

Considerable research has explored trust and reputation management in e-commerce. One possibility is to build a centralized system, like a credit history agency, to manage users' reputations. However, this approach neglects personal preferences and standards. Online auction and shopping sites, such as eBay and Amazon.com, use reputation management. eBay assigns sellers a

rating of 1, 0, or –1 for trustworthiness after one interaction, and computes a seller's reputation as the accumulation of all the ratings received within the past 180 days. New eBay users receive a reputation of 0. Amazon.com rates both sellers and buyers after each interaction. It calculates reputation as the average of all the feedback ratings received during the system's use. A new Amazon.com user has no reputation value. Users can easily misbehave in e-marketing. After cheating and obtaining a bad reputation, a user can simply discard a current identity, obtain a new one, and reenter the market. This kind of misbehavior causes low economic and system utilization efficiency. To solve this problem, Amazon.com and eBay apply pseudonyms. New users must register with some personal information so the system can trace their real identity. At the same time, pseudonyms provide anonymity.

III. METHODOLOGY OF DISTRIBUTED SYSTEMS – JAVA

The Java architecture for distributed systems computing was designed taking security requirements into consideration. Developers need to create programs that are executed on remote distributed systems. An architecture needed to be put in place, however, that would not leave these systems vulnerable to malicious code. This was accomplished through the Java architecture. The source code is written and then converted to byte code and is stored as a class file, which is interpreted by the Java Virtual Machine (JVM) on the client. Class loaders then load any additional classes that are needed by the applications. Several security checks are put between the remote server distributing the program, and the client executing it, such as the "sandbox" security model, them byte code verifier, the applet class loader, the security manager, and through other security measures that can be implemented through Java's security APIs.

A PROPOSED MODEL

1) SANDBOX SECURITY MODEL

In a distributed architecture, the end users would ultimately be responsible for determining which applets to run on their systems. Most of these users would not be able to determine whether a particular applet should be trusted or not. In order to have all applets run in a protected environment, the sandbox security model was developed. Applets that run from a remote site would be permitted only limited access to the system, while code run locally would have full access. If the applet is signed and trusted, then it can run with full local system access. Permissions can be set by a security policy that allows the administrator to define how the applets should be run.

II.

Figure 1: Java Model.

A. BYTE CODE VERIFIER

The byte code verifier looks at the class files that are to be executed and analyzes them based on specific checks. The code will be verified by three or four passes (MageLang Institute, 1998) depending on whether or not any methods are invoked. Gollmann (2001) states that some of the checks performed are to ensure that the proper format is used for the class, to prevent stack overflow, to maintain type integrity, to verify that the data does not change between types, and that no illegal references to other classes are made. Hartel and Moreau (2001) further state that the byte code verifier ensures that jumps do not lead to illegal instructions, that method signatures are valid, access control, initialization of objects, and that "subroutines used to implement exceptions and synchronized statements are used in "FIFO order".

B. APPLET CLASS LOADER

As a Java application is executed, additional classes may be called. These classes are not loaded until they are needed. When they are called the applet class loader is responsible for loading the specified applets. Classes in Java are organized by name spaces, and each class loader is responsible for one name space. The class loaders are therefore responsible to protect the integrity of the classes in its name space (Gollmann, 2001). Java has built-in classes that reside locally, however, that are loaded automatically without any security checks. The path to these classes is indicated by the CLASSPATH environment variable.

C. SECURITY MANAGER

When writing applications, developers often wish to protect variables and methods from being modified by classes that do not belong to the group of classes they have written. In order to create this division, classes are grouped into packages. When a variable or method is declared in a class, it can be private (access only through same class), protected (access through class or subclass), public (any class can access), or they may chose not to use any of the former, in which case only classes within the same package will have access. Depending on the package that a class belongs to, the class will have different access to the other classes in the package, so security could be compromised if an unauthorized class attaches itself to the package. The security manager makes sure that only classes that actually belong to the package in question are able to declare themselves in this package. The security settings are configured through a security policy. Browsers and applet viewers have a security manager, but by default Java applications do not (Sun Microsystems, n/d). Java has provided developers the means to create their own security manager. To create it, the developer must create a subclass of the SecurityManager class, and override whichever methods are necessary to implement the required security. For example, the developer may decide to impose a stricter policy for reading and writing files. This could be attained through overriding the read and write methods already defined in the superclass.

D. API SECURITY

Java offers further security through several security APIs. Among the different APIs provided, the developer can make use of signed applets, digital signatures, message digests, and key management. When an applet is signed it is given full access to the system as if it were run locally. As mentioned in the section on the security manager, the security policy defines what permissions are given to an application or applet when executed. The default Java Runtime Environment provides digital signatures, message digests, and key management, and encryption can be implemented through the Java Cryptography Extension (JCE).

E. OUTSTANDING ISSUES

As with any system, whether it has been designed around security or not, the Java distributed architecture contains several outstanding security problems. One problem is with the CLASSPATH system environment variable. As mentioned previously, the CLASSPATH variable is used to determine the location of the built-in Java system classes. If the CLASSPATH variable is altered, it could point to a set of altered classes that may execute what the original classes intended, but also insert malicious code. The code would be executed, and the user may not notice any difference in the behavior of the application.

Wheeler, Conyers, Luo, and Xiong (2001) found that there are several Java vulnerabilities if a computer serving Java applications is either compromised from the inside, or if an attacker is able to compromise an account on the server. They note that many of these vulnerabilities exist either because of code that provides backwards compatibility, or because of decisions made to increase the ease of implementation. In other words, the vulnerabilities are due

to design choices rather than software defects. First they found that "many critical components of the Java environment are only protected by the underlying operating system's access control mechanisms". System administrators may not be aware of the loose access controls, and critical components could be compromised, such as the key store and system classes. If the key store is compromised then signed files could be spoofed, and if the classes are modified, malicious code could be inserted. Wheeler et al. further note the ease of reverse-engineering of class files, which would allow an attacker to obtain the original source code. They

note that there are tools for obfuscation, but suggest in their work that further obfuscation would be necessary for a higher level of security.

As discussed earlier, a security policy can be set to limit the access of applications or applets to the local system. Wheeler et al. discuss that the permissions, although fine grained, can only be applied to a directory or JAR file. They state, "this is insufficient, except for the most rudimentary system". Permissions applied to the entire directory or JAR file, which violates the principle of least-privilege. They suggest finer permissions that could extend down to the class level. The security policy can also be either modified or overwritten completely through the use of the "java.security.policy" option from the command line, negating any work put into the creation of the security policy. This behavior can be turned off, but is not by default – an example of vulnerabilities being introduced for the sake of ease of implementation. They suggest that the class loader should verify that an extended security manager is loaded prior to loading any classes.

Hassler and Then (1998) discuss the possibility of using applets to perform "a degradation of service attack". Security policies can be created, and are usually part of the browser, to limit the access given to Java applets. They show in their research, however, that this does not prevent the applet from consuming sensitive resources such as CPU and memory. They suggest the implementation of a special applet that would allow other applets to be controlled, and note at the end of their work that the HotJava browser included this, but was found to be insufficient. One must wonder, however, if an average user would have the knowledge necessary to identify that a Java applet is creating the degradation of service, and how to stop it.

Finally, an outstanding issue is that of auditing. A major component of security systems is the ability to audit. Hartel and Moreau (2001) state that there is no known work presently being done to implement auditing capabilities in Java.

IV. CONCLUSION AND FUTURE WORK

In the time since trust management first appeared in the literature in [BFL96], the concept has gained broad acceptance in the security research community. Trust management has a number of important advantages over traditional approaches such as distributed ACLs, hardcoded security policies, and global identity certificates. A trust-management system provides direct authorization of the security critical actions and decouples the problems of specifying policy.

V. RESULT

This paper on trust management has focused on one of the most common distributed systems application architectures as Java. Java has several published security vulnerabilities, but knowing what they are is half the battle towards finding a remedy. The difficulty of implementation must also be considered. If the system is overly complex, security problems may exist due to implementation problems. If the architecture is too simple however, there may not be enough flexibility to create the necessary security configurations.

As an area of future work as we are examining higher-level policy languages that are even more human understandable and capable of higher levels of abstraction. Such high- level policy would be combined with network and application specific information and compiled into a set to trust-management credentials. Similarly, a tool for translating trust-management credentials into application-native forms would give us all the advantages of trust management (delegation, formal proof of compliance, etc.) while requiring minimal changes to applications.

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Android Based Irrigation Application Home Genie

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Abstract— **The advancement in Automation Systems is making life simpler and easier. Everyday more and more people are getting connected to internet and hence there is a huge demand of internet based technology solutions. IoT (Internet of Things) is latest emerging technology trend that can share information and complete tasks when you are busy with other activities. Home Automation System (HAS) is a system that uses computers or mobile devices to control basic home functions through internet from anywhere in the world without user's own presence. It thus saves user's time and energy.In this paper we present a Home Automation System(HAS) that is used for watering the plants and gardens at home without user's involvement. The system is controlled by user through mobile application which is connected to internet and communicates through the server stored on cloud.**

Keywords— Home Automation System (HAS), Internet of Things (IoT), Wi-Fi network, ESP8266 Micro-controller.

I. INTRODUCTION

Home Genie is an automatic irrigation system which switches the pump motor ON/OFF on receiving the signal from the user through android application. The advantage of using this method is to reduce human intervention and still ensure proper irrigation. This system is based on IoT. According to Global Standards Initiative on Internet of Things (IoT-GSI) IoT is global infrastructure for the information society that enables advanced services by interconnecting physical and virtual things together[7].

The application uses internet to send commands to irrigation system installed at home and hence can be controlled from anywhere in the world. Hence it greatly pull out the worries of plant lovers of not able to water their plants while they are somewhere else.

Application uses a master control feature that can be used at any time to switch water pump ON/OFF. This is very useful to users as they can operate the water pump at any time as per their need.

People in todays world have less time and are too busy in earning their livelihoods and hence have a tendency to forget things. Thus they want to manage their time efficiently by planning. Home Genie gives users this flexibility of managing their future watering by pre-setting Date and Timings for automatic irrigation. The application will automatically trigger the water pump at specified date and time and will notify the user for same.

Irrigation on a rainy day will not only result in wastage of water resource but can also lead to death of plants due to over irrigation. Keeping that in mind Home Genie uses smart weather feature that automatically cancels the preset watering if there is a prediction of good amount of rainfall and will notify user in case user himself starts the irrigation using master control.

II. RELATED WORK

The paper [1] provides a comparison between various Home Automation Systems and proposes the features for an ideal Home Automation System. The proposed system should be available to the user 24*7 and thus requires an internet connection. System should be easy to install and should have a web application and a mobile application. Adding new devices should be easy. All the above features will help establish the system commercially.

The system proposed in [2] uses various sensors like motion sensor,fire and smoke sensor, light sensor. It switches ON/ OFF devices based on the results from these sensors. The system uses cloud to store information about sensors for future analysis.

The system [3] is designed to assist handicapped and old aged people. It control various home appliances using Android device. The system has two main parts (home automation application and Arduino Mega ADK). User can send control signal to the Arduino from the application.

The smart home system proposed in this paper [4] uses technologies like wireless sensors, biometric, etc. Biometric is used as a key at the entrance, this provides increased security. .This system can be used as automation system in offices, clinics, and other places.

The system in [5] uses bluetooth technology to control the devices at home. The PC connected to bluetooth via the bluetooth module behaves as the client. It also ha sensors attached to it like light sensor. Light sensor can turn ON/OFF light based on the value it receives. It can detect other bluetooth devices in range and can check if these devices are working properly or not. The drawback of this system is low bluetooth range.

III.   III. PROPOSED WORK

This paper proposes a model for home automation (specifically smart garden) that uses an application to control the ESP8266 to switch ON/OFF the pump located at a remote location. The system requires 24*7 internet connection and will help user keep check on their garden while they are away. The system will use an android application, a server and an ESP to perform the task. App uses the phone's internet connection (4G/3G/2G/EDGE or Wi-Fi, as available) to control the devices at home from anywhere, anytime. The app has preset options for setting time for future automatic watering and notifies when it automatically starts the pump. It also displays present weather conditions of specified location and has decision making capabilities as it can decide whether to switch ON the pump or not based on the weather conditions. It will send update signal to the server to switch ON/OFF the pump. ESP that is connected to Wi- Fi at home is checking the server periodically, will switch ON/OFF the pump connected to its I/O pins depending upon change in signal value received from the server. The system is intended to control devices at house garden with relatively low cost design, user-friendly interface and ease of installation. It is designed to assist and provide support to the user.

A.   Features of Proposed System

*   MASTER CONTROL- Allows to switch ONN and OFF motor.Overrides all other control requests

*   PRESER TIMINGS- Allows pre-setting watering timings, the app will automatically switch ON and OFF the motor on specified times.

*   WEATHER- The application provides weather information for specified location.

*   SMART CONTROL-The app automatically uses the weather information to control the preset options, i.e., the app will not switch ON the motor if there is heavy rain in specified area.

*   SERVER- The server relays information between the devices at home and the android application.

IV.   IV RESULTS
V.

The proposed model in shown in figure 1 where there are mainly three components connected together through internet. These include an android application, ESP micro controller and cloud server. The Application is running on mobile phone and will be available to users. Second is the ESP micro-controller which is installed in the homes. This micro- controller circuit will connect to internet through wireless router and will continuously listen to signal from server. Lastly there is a database implemented on server stored on cloud. This database is queried through application by the user.
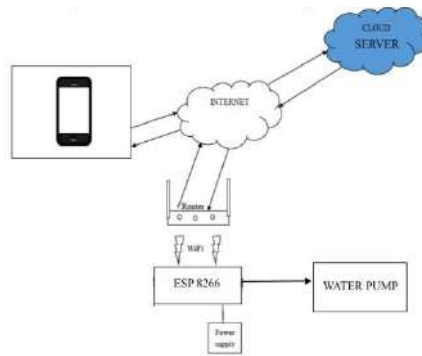
Figure 1. Proposed System Overview

A. Android Application

Figure 2 Home Genie Android Application

An android application made using Android Studio IDE. This application connects to internet and send signal to query the database which is saved on cloud. The signal sent is either 0 or 1 to switch OFF and ON the ESP respectively. Application offers features such as maser control that is used to trigger the water pump any time and overrides all other requests. It gives an option to add preset timings for automatically querying the database at set Date and Time saved by user. It will push notifications to notify user at such an event. Application also presents weather forecast with precipitation value for that day and will automatically cancel any preset watering if good amount of rainfall is detected.

B. ESP 8266 Circuit

The ESP8266 is a low-cost Wi-Fi module that provides MCU capability and full TCP/IP stack.

Figure 3. ESP Circuit Setup

ESP circuit is set up as shown in figure 3. This ESP is connected to internet through wireless router and continuously listens for signal from the server. A signal 1 turns ON the LED on ESP and sends a signal high to its GPIO5 pin which then completes the AC circuit of water pump made using a TRIAC and hence the water pump starts. On the other hand a signal 0 from server tells ESP to give a signal LOW on GPIO5 pin that in turn opens the circuit of water pump. ESP is provided a 5V AC supply which is regulated by a voltage regulator to regulate it within a range of 3.5 V.

C. Database on Server

A database is created on the server which stores value 0 or 1. This database is queried through the application by providing the url of script files written in PHP which are used to manipulate data on database. Two script files in PHP are implemented for data querying, one to update value on database when queried by application and other to get the current value (0 or 1) from the database to be used by ESP.

On startup the application shows the current status of water pump by querying the server. The water pump can be switched ON/OFF anytime through this master control option.

Figure 4 Master Control Feature

Application provides a feature to add preset timings where user can set date and time and application will automatically turn ON/OFF the water pump at that time. These set timings can be set on and off just like an alarm system.

Fig 5. Preset Time Feature

Application provides weather information for the current day so that user can decide weather to irrigate or not. Application also has a smart decision feature that will automatically cancels the watering in case any preset timing is saved for a day when there is good amount of rainfall.

Figure 6 Weather Forecast Feature

VI. VI. CONCLUSION AND FUTURE SCOPE
VII.

A. Conclusion

The system for home automation (specifically smart garden) is designed. The system has been experimentally proven to work satisfactorily. It uses an android application to control the ESP8266 that switches ON/OFF the pump located at a remote location through internet. The designed system not only controls the pump but also has decision making capabilities i.e., based on weather conditions it can decide whether to switch ON the pump or not (the preset option is influenced by the decisions).

B. Future Scope

In future, the system can be extended to Complete Home Automation and Security. The ESP Module can be used to trigger any device and this concept will be used to extend the project to Home Automation. We will also try to find a way to increase the number of outputs as the ESP Module provides 6 Input Output pins, we will have to interface it with some other micro controller to increase the number of outputs. Different types of sensors like light, fire, heat etc can also be added. These sensors will increase the decision making power of the system.

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Crime Cases and Ways of Criminal Detection

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Abstract— In today's scenario crime rates are rising tremendously and hence we have put forward the requirement of a computer technique that helps in criminal detection and prevention. The frequent and repeated robbery, rape, murder, dowry etc. have made common citizens to have sleepless nights, the criminals may have been operated in an organized way and sometimes have nationwide or international links. The research paper of quantities instead of quality would be the best way to review the high crime rates because you are open to farther information that assist you to relate to any new crime detection The paper will deal with the same. The data is based on a record of 130 criminal cases rather than dummy data set which would otherwise lead to a wishful analysis. It is a known fact that with the increase in the criminals we have a shortage in the police force and need a computer technique that helps in criminal detection and prevention in the future crimes by the criminals. The paper will include juvenile and non-juvenile criminal cases i.e. all age groups. Graphical approach has been used in the paper plotting age vs. education. Following that, knives'-Nearest Neighbor Algorithm (k-NN) is used to find the nearest plot. Further, we use the Naïve Bays algorithm to detect the future rating for each attribute and detect the further chances for the crime to take place.

Keywords—k-Nearest Neighbor Algorithm, Naïve Bays, Memory Based Reasoning.

I.   INTRODUCTION

The population growth is a global scenario, and with this growth there is a larger competition for the gain of resources and other problems like unemployment proper education, nutrition etc. to each person. This directly influences over the criminal activities. With growing crime rates we need a mechanism that could detect criminals and hence lead to prevention. In this modern lifestyle there is a need to automates the criminal identification and techniques, so that we could decrease the human work load and we could work our minds in doing something more productive and use time more efficiently. The paper uses data mining algorithms for identification, classification and future scope of crime by any criminal. This will help us develop a code through which criminal identification will be easy. The paper uses data mining algorithms for identification, classification and future scope of crime by any criminal. This will help us develop a code through which criminal identification will be easy. The algorithms used in the paper are the Apriori, *k*-NN and Naive Bayes.

II. ALGORITHM DESCRIPTION

The paper uses two data mining algorithms for the detection and prevention of future crimes described below:-

k-NN is an instance-based algorithm for learning, where any local plotted point is approximated locally depending upon the nearest point to that point i.e. all computation is deferred and classification depending on the nearest point. The *k*-NN algorithm is among the simplest and one of the most used of all machine learning algorithms. The training examples includes vectors in a multidimensional feature space, each of which having a class label. In the training of the algorithm we store the vectors with the class labels of the samples. In the

classification phase, we define k as a user-defined constant with an unlabelled vector i.e. a query or test point is classified by assigning the label that is the most frequent in the k samples used nearest to the query point.

$$\text{Distance } ((x, y), (a, b)) = \sqrt{(x - a)^2 + (y - b)^2} \qquad (1)$$

Other distances that may be used are 1) Manhattan Distance (x= (a, b) and y=(c, d) then Manhattan distance between x and y is $|a−c|+|b−d|$) and 2) Minkowski Distance is

$$d(p, q) = (\sum_{i=1}^{n} |p_i - q_i|^c)^{1/c} \qquad (2)$$

The Naive Bayes algorithm is a prediction and classification Algorithm. It uses Bayes' Theorem, a formula that calculates a probability by counting the frequency of values and combinations of values in the historical data. Naïve bays algorithm is used in data mining process. Data mining is a process of analysing patterns from historical information and transform it into an understandable structure for future use. Typical use of data mining process is in Science fields where analysts identifies the patterns based on historical data available and use those patterns to predict future activities. It is also used in medical fields, like whether a patient has heart disease or not from his historical data like patient's age, blood sugar level and other symptoms.

(A) Description:

Naïve bays algorithm is based on three concepts:
 Prior: Past experience
Likelihood: chance of event could happen. **Posterior**: predicting the event will occur

Prob. (B given A) = Prior * Prob. (A and B)/Prob. (A)   (3)

Example: Support you would like to determine the possibility that people over 60 ages are more prone to heart disease. In this case, prior condition (A) would be over 60 and dependent condition (B) would be having heart disease.

If there are 100 persons randomly tested for heart disease and before testing it is already known that out of them 25 are having heart disease,

Probability of A and B, (means people are tested and have heart disease previously) = 25%
If 75 of the 100 patients are over 60, then Probability of (A) = 75%
Then in this case, Bayes Theorem would predict that that 33% of the patients over 60 are likely prone to heart disease (25/75).

III.   WORKING AND IMPLEMENTAION
JJJ.

The implementation of the paper includes a java code based over the k-NN algorithm, implementing memory based reasoning (MBR), firstly we need to put the attributes of the criminals on the basis of the criminal records that we have.

The attributes includes the age, punishment, education, gender of the criminal, gender of the victim. The data entered is flexible and later be changed or expanded as more the data, more better we could predict the crime. As the program runs we enter the attributes of the person who expected to be involved in any crime and depending on the prior data we could detect the crime done by that person.
For the use of the system in any other country one may need to change the prior data totally as the data is on the basis of the judicial system of India, which is different with any other country. In order to explain the working of the program we need to consider a five dimensional graph on which we plot each attribute that we have

considered i.e. age, punishment, education, gender of the criminal, gender of the victim. Now using the k-NN algorithm we find the nearest neighbor of the unknown point using the Euclidean distance formula that we have modified as:-

Distance $((v, w, x, y, z), (a, b, c, d, e)) = \sqrt{(v - a)^2 + (w - b)^2 + (x - c)^2 + (y - d)^2 + (z - e)^2}$ (4)

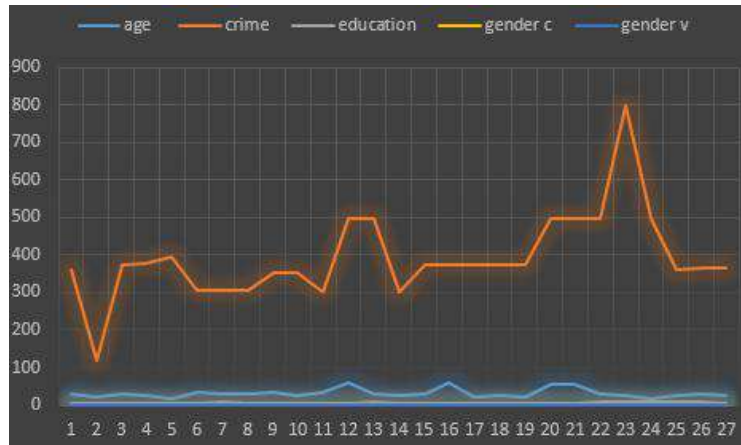A five dimensional graph won't be possible thus a simple representation on a two dimensional graph is as follows:-

Figure 1: 2D Representation of attributes of criminal

The technique allows us to determine the relation between the crime, criminal and the punishment given to the criminal, depending on the prior decisions taken by the court. Due to the privacy in the judicial system of India we are able to add only five attributes in the program that can be increased if needed in the future by making small changes and the research is restricted to only one hundred and thirty cases. The cases used in the paper are real and the information regarding them is obtained from different courts and police stations, spending lot of effort and time.

Example Result:

Figure 2: Result of murder criminal from past records

IV.   MATH

Equations of Naïve Bayes algorithm:
Prior: past experiences (p)

Likelihood: chance of event could happen (l) Posterior: predicting the event will occur (P) Evidence: number of cases where event occur alone (e)

$$P = (p*l)/e \qquad (5)$$

Euclidean distance formula:

$$Distance\ ((v, w, x, y, z), (a, b, c, d, e)) = \sqrt{(v - a)^2 + (w - b)^2 + (x - c)^2 + (y - d)^2 + (z - e)^2} \qquad (6)$$

C.   THE CONCEPT

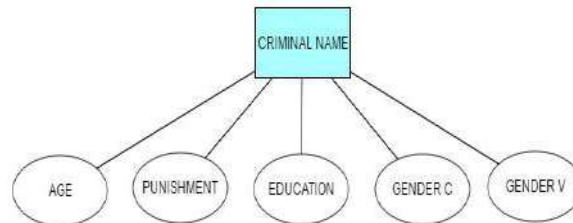We have used association rule to map criminals and the crimes.

Figure 3: criminal and attributes

For any criminal we divide its attributes and rate them, plotting it over the graph and using the k-NN algorithm we can get the nearest plot, and correspond it to the criminal, whose plot is nearest to it.

Example a new criminal's attributes are near to that of a murderer, then we could conclude that the new criminal, (according to the logic of paper) is most probably a murderer.

The paper also deals with any future detection of crime by the criminal i.e. use Naïve Bayes algorithm. According to the rating of Prior experiences, Likelihood and Evidence it provides the Posterior rating of occurring of the crime.

Specifically here we have 5 attributes i.e. 1) age of criminal, 2) punishment that he received 3) education 4) gender of criminal 5) gender of victim. We have already used the data and using that we will decide the new attribute to which category of crime does the crime belongs, depending on the information provided, more information in the database will make the implementation results more nearer to the actual result. Presently we deal with crimes like rape, murder, robbery, dowry demand etc. covering more crimes can make us cover more no. of crime and could have a usable

implementation of the research.

VI.   CONCLUSION

Automatize the crime detection of a criminal and prediction of crime by the criminal. Practically the system may fail, if:

D. The data set provided is not enough.
E. The criminal may vary in terms of its attributes from the previous listed criminals.
F. Records need to be updated.
G. The attributes included may not be enough.
H. The same data not valid in any other country.
I. System gives output on the basis of past experiences only (MBR), not to be relied on it as the results may vary

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Health and Wellness – A new Market Offering

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Abstract - **Consumer is demandinghealthy convenience food andstart looking at food like a medicine. Consumer is now more proactive about what to eat and demanding healthy ingredients. Food companies are now witnessing this growing trend as consumer shifting from junk foods to healthy convenience foods. Many companies are now adapting to these shifts and many more are still considering it. This paper evaluates how consumer, changes in preference leads to food companies to change their offerings.**

Keywords: Health, Wellness, Convenience Food, Market

1 INTRODUCTION

In today's era, a consumer is incredibly dynamic and it's very complex to understand the psychology of a consumer as his behavior is affected by many influencing factors. Thus, it is an important task of the marketer to study the behavior of consumersin order to improve their marketing strategies and campaign effectively to reach theirtarget audience.Consumer involvement refers to how involved a person is in the decision making process and it depends upon the individual and personal choice. It has a crucial effect on the behavior of a consumer. Take an example of food and beverage industry, the preferences of an Indian consumer are affected by fourenablers i.e. product, price, quality and income. In addition, quality of a product is judged by four parameters such sensory, health, process and convenience.

Food consumption patterns are changing all over the world.Over, the last decade, people has become more health conscious. Due to the growing awareness related to health and wellness and increase in the lifestyle disease.Now-a-days people are following the preventive rather than a curative approach. "eat healthy and live healthy "is today's mantra of healthy life. Healthier food has gradually enteredinto the Indian market and gaining market share as consumers are inclined towards in eating nutritional food to manage the body mass index. On the other hand, it is also helps in preventing lifestyle problem such as obesity, diabetes, cardiac arrest and the accumulation of bad cholesterol level. In a country like India with diverse culture, the food and consumption patterns can be described in two ways: Firstly, in rural areas people do not get proper diet and nutrition and suffers from malnutrition and secondly, people in urban areas in India usually suffer from lifestyle disease like obesity, diabetes, hypertension and heart disease.
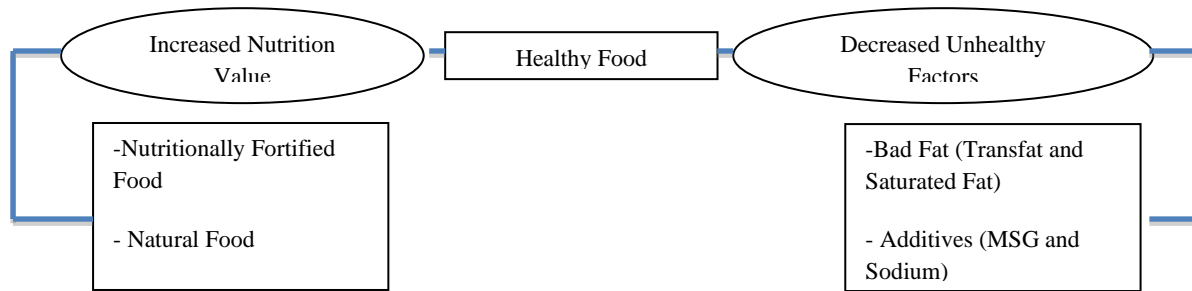
Figure 1 Classification of healthy Food
Source: Lee et al., 2011

Demand for healthier (please see the classification for health food in figure 1), natural and less processed ingredients is increasing and consequently the manufacturers and marketers are adapting to this trend by developing new products considering the latest trend. So, one can state that there is a shift in the thinking and perception of a consumer towards health and wellness (people are back to basic)this momentum has pushed food manufacturers to make hard core changes throughout their productline and depthbefore distribution.

II NEED FOR THE RESEARCH/AIM

According to Obesity Foundation India, "Obesity is due to an individual taking in more calories than they burn over an extended period of time. These "extra" calories are stored as fat. Although there are several factors that can lead to this energy imbalance in obese individuals, the main contributors are behavior, environment and genetics". India is the third most obese countries in the world and nowadays, 3% of Indians are overweight (Mail Today, 2014).

If ate only occasionally, even a deep-fried French- fry, butter dipped parantha, cheese burst pizza and cream whipped ice-cream shakes, will not lead the consumer to obesity.Traditionally, customerhas made decisions based on conventional drivers such as taste and price. However, now these days a customer is now a 'problem customer' in technical terms a problem customer is not a "problem" but he/she is more educated, learnt, knowledgeable and know what he/she eats and purchase.

It's a prime responsibility of the companies to promote healthy food as well change their offerings from junk to healthy. They should self check thenutritional content in the food and advertise food responsibly.

The objectives of conducting this research are

1. To understand the shift in the taste, choices, preferences, attitudes of an Indian customer from junk to healthy food.
2. To study how companies or a manufacturer responsively adapt the change in their product offering to marketing communication.

III LITERATURE REVIEW

India is the country of diversity in culture and so in food, in ancient India, people use to eat great millet, pearl millet, finger millet, kodo millet, Porridgejust to name a few. However, as the time progress more and more women started working, splitting of big families into nuclear, increase in the option of offerings in food, penetrating of fast food joints, increase in the dining out culture leads to increase in the dependency on the Can food. However, these days many people especially youths are now shifting their choices from eating junk food to eat healthy. Increase in awareness related to the ill effects of eating junk and what it did to your body, increase in the health related problems such as growing cases of diabetes, gastric issues. Whereas, on the other hand, many health and wellness lobbies such as gym centers, yoga, aerobics are disseminating lots of information related to the longer negative effects on the human body.

Research clearly shows that your body responds accordingly to what you eat. The 'Responsibility Deal' was launched in England in March 2011 under Public Private Partnership (PPP) to tackle the lifestyle changes as people are eating and drinking more and in anticipation they are not exercising to burn the extra calories. The Government engages the private sector and NGO partners in efforts to address public health objectives with specific focus on food, alcohol, physical activity, health at work, or behaviour change.

According to report published by Deloitte published in 2015 surveyed on 5000 respondents across the nation found that 49% respondents influence by traditional drivers and 51% respondents influenced by evolving drivers. Whereas,

the gap between respondents are only 2%, but still it shows that most of the participants are inclined towards evolving drivers. Hwang and Lorenzen (2008) analyzed that restaurant clientele showed the most optimistic attitude toward a low-calorie food and were willing to pay even more when nutrition information was provided. According to Nielsen's Global health and wellness report (2015) included 30,000 participants, around 88% consumers state that they tend to pay more to get 'healthy food' (claim to boost health and weight loss) on their plate that.

Figure 1.1: Traditional and evolving drivers
Source: Deloitte Food Value Equation Survey (2015)

Schroder and McEachern (2005) investigated the fast-food purchasing behaviour of the young class of UK with reference to McDonald's and Kentucky Fried Chicken (KFC) and concluded that Ready-To-Eat had perceived as convenient but unhealthy and therefore Ready-to-eat companies can no longer rely on convenience as USP unless the implications of same on consumers health is given equal importance.

IVRESEARCH METHODOLOGY

The study is purely based on the secondary data only which is collected through online magazines, journals, published reports and newspaper. This study is descriptive in nature as this researchdescribes the characteristics and behaviour of consumers.

V TRANSITION IN INDIA AND OTHER COUNTRIES- FROM BACK TO BASICS

The Indian Food law, The Food Safety and Standards (Packaging and Labeling) Regulations,2011, notified by the FSSAI, mandated by law to appear on food packages, includes information on the amount (per serving) or nutritional facts per 100 gm or 100ml or per serving of the product of saturated fat, cholesterol, energy value in Kcal, protein dietary fiber and other major nutrients, and provides nutrient reference values as a percentage of daily values (Ministry of health and family welfare, 2011).
Due to the change in the attitude and preferences of the consumer, Coca-Cola Company in India has seen a 4% slump in their sales. As consumers, are increasingly opting for healthy drinks over fizzy drinks such as juice and milk based drinks. It increasingly pressurizes the multinational companies (MNCs) to cut the sugar levels in all of its aerated drinks. Strategies are formed at various levels to win back the trust of those people who are moving towards maintaining a healthy lifestyle.
The company is now planning to use Stevia a natural sweetener instead of sugar in its fizzy drinks, soon they also offer Sprite Zero and also reduce sugar in Fanta.Reducing sugar is clearly a noble indication, but that does not make it healthy. Whereas, on the other hand rival company PepsiCo pledge to cut their sugar content as well as the salt across it's all the product lines (The Economic Times, 2016).Increase in awareness related to wellness most of the healthcare companies are now offering wellness programs. Startup companyPortea Medical under the name of PorteaActiv offersend to end health, fitness programs, lifestyle solutions, offering customized wellness programs in their Business to Business (B2B) segment and also source food and deliver to their fitness and wellness program subscriber.
According to s report published in Nielsen's survey conducted in 2015 on 30,000 participants, 88% consumers state that they tend to pay more to get healthy foods on their plate that claim to boost health and weight loss.According to

Deng (2009) in order toalter the image from a junk food restaurant to nutritious food restaurant, McDonald designed a new project "Happy Exercise And Love Touch Health" (HEALTH), in partnership with World Health Organisation (WHO), nutritionists, local communities, fitness centers and various media channels. The purpose of this campaign is to attract those who are health-oriented and totransform the behavior of the existing consumers (takes only junk food)to change their lifestyle by buying balanced meal.

Nestle India, also changed its marketing communication message from convenience food to healthy food and also offers Oats and Aatanoodles to those who want to eat Maggie, but would like to avoid due to refined wheat flour (Maida). Recently, Nestle Maggie came in a bad light due to the presence of Monosodium Glutamate (MSG) and lead. The lead concentration in Maggie was 17.2 parts per million (ppm), nearly seven times the permissible limit (the permissible limit of lead ranges between 0.01 ppm and 2.5 ppm, was found in the noodles) Hindustan Times, 2015.Nestle not only lost its sales and market in India due to a temporary ban,but also lost its trust among the loyal consumer.

An article published in Bloomberg (2015), Tyson Foods (USA), McDonald's major supplier revealed plans to stop using human antibiotics important to human medicine in its chickens by the end of 2017. Similarly the food chain of Chipotle's Mexican Grill restaurants, has started using of non-GMO corn and also switched its cooking oil from soybean oil to GMO-free sunflower oil and rice bran oil.
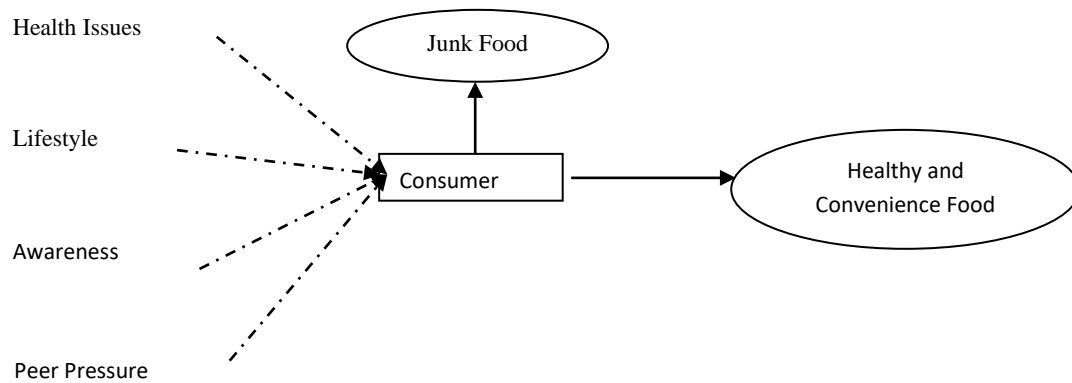

Figure 3: Drivers of consumer preference

Food manufacturers have started making initiatives to the change, by replacing artificial ingredients with natural one. For example: In Diary and juice category, there is an influx of probiotic, mineral fortified, zero fat and high fiber variants. Oatmeal is one of the likings of health conscious consumer and many more variants of oatmeal has been served such as Saffola peppy tomato, Saffola masala oats, Saffola classic, Saffola masala oats veggies twist. MTR also experimenting with their breakfast offering and now offers MTR Upma ready mix, masala upma mix, upma breakfast cup. Similarly, many Indian food giants now offer whole wheat pastas, pizzas, multigrain breads and low sugar desserts to tap the segment of health conscious consumers.

Nestle USA,also removed artificial flavours in their two product categories (1) Baby Ruth and (2) the Butterfinger which means Nestle has to reformulate 75 recipes for their 250 products. Nestle has started using natural colours instead of artificial food colouring, to get an orange hue in the middle of a Butterfinger, which is usually made by combining Yellow 5 and Red 40. Now Nestle use 'annatto' which is a natural colorant comes from the seeds of the fruit of the Achiote tree (Boscamp, 2015). The market for healthy food tends to grow at a faster pace only because of increasing awareness and the drastic shift in the lifestyle of the urban consumer. Trends in food consumption like diet which people follow to improve their health condition, health and convenience related concerns as well as the use of natural and nutritional ingredients need to penetrate the market further to bring about a paradigm shift within the product and consumption landscape.

Some more examples are given in Table 1:

Table 1: Company and their healthy offering

Company Name	Their Offering
Nestle	Introduced slim and real fruit yoghurts and ban artificial colors
Dabur	Launched health based yoghurt drink(real active)

Kellogg's	Positioned different products according to the requirements of different demographic segments.
Patanjali ayurveda	Launched Amla candies, AmlaMurraba and many more
Yakult's	Probiotic drink
Subway	Cuts artificial colourand antibiotics

As in Indian market, consumers are focusing on health and wellness products and have become very much particular about their food eating habits. This change has led to many manufacturers to focus on health and wellness products and in this concern they are making amendments in ingredients, packaging and labeling of products to ensure the Indian consumer that they are not misleading or making any false claims.

CONCLUSION

Therefore, one can state that health and wellness is an integral part of a sustainable future and it is significant for people to be healthy both physically and mentally. Companies should focus more on research and development and innovation for continuous growth. Companies will get success, if theyfollow a culture, which promotes the use of consumer insights to create new product categories. This research clearly indicates that most of the companies are going towards the healthy way and reducing their use of artificial colouring and preservatives in their food offering and as well welcoming the shift of consumer choices from eat junk to eating healthy.

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Positioning of Starbucks in India: Issues and Challenges

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Abstract: Indian consumer market's magnetism is attracting various foreign players specifically in the retail sector as India has been placed at the first position in the category of countries with the best opportunity for investment in the retail sector in a survey by A.T. Kearney's 2005 on Global Retail Development. The rising disposable incomes of the middle class and youth's proportion in the total population are the main reasons which attracted Starbucks products in India. This case is an attempt to put light on various opportunities and challenges which Starbucks coffee may face in a country like India which differs in many ways from other markets where Starbucks coffee is the market leader. In a country like India which differs in many ways from other markets where Starbucks coffee is the market leader, will it face opportunities or threats?On the surface they do appear to be succeeding where others are failing. If anybody is going crack the Indian market from the outside, it could well be Starbucks.
Keywords:Brand Awareness, Opposition Share, Strategic Alliance.

I Introduction

The largest coffee house in the world, Starbucks was established by Jerry Baldwin, Gordon Bowker and Zav Siegl in Seattle, Washington (Pike Place Market) on March 30, 1971. Starbucks has its network of stores in 61 countries, with 20,366 outlets in different areas of the various countries and serves around 70 million customers per week. Howard Schultz is the chairman and president of the Starbucks. In Starbucks customers enjoyed the unexpected forms of the products which are different and new, at home, and on the go.

II Related Work

Product Variety offered

More than 30 blends and single-origin premium coffees are available in the Coffee menu. The handcrafted beverages include fresh-brewed coffee, hot and iced espresso beverages, Frappuccino coffee, non-coffee blended beverages, smoothies and tazo teas. Merchandised items consist of coffee and tea-brewing equipment's, mugs, accessories, packaged goods, music, books and gifts. Fresh food is also served like baked pastries, sandwiches, salads, oatmeal, yogurt parfaits and fruit cups acc to the store.starbucks.com/
Handcrafted Beverages: Fresh-brewed coffee, hot and iced espresso beverages, Frappuccino coffee and non-coffee blended beverages, smoothies and Tazo teas. Merchandise: Coffee- and tea-brewing equipment, mugs and accessories, packaged goods, music, books and gifts. Fresh Food: Baked pastries, sandwiches, salads, oatmeal, yogurt parfaits and fruit cups. Starbucks and Seattle's best coffee brands like whole bean and ground coffee are some consumer products available at Starbucks, besides Starbucks VIA Ready Brew, Starbucks K-Cup portion packs, Tazo tea filter bags and tea latte concentrates.*www.starbucks.com/menu/drinks/evolution-fresh*

Consumer Products: Coffee and Tea: Whole bean and ground coffee (Starbucks and Seattle's Best Coffee

brands), Starbucks VIA Ready Brew, Starbucks K-Cup portion packs, Tazo tea filter bags and tea latte concentrates.

*Ready‑to‑Drink (RTD):*Starbucks bottled Frappuccino coffee drinks, Starbucks Discoveries chilled cup coffees, Starbucks Doubleshot espresso drinks, Starbucks Doubleshot Energy+Coffee drinks; and juiced teas. Starbuck Ice Cream: Super-premium coffee and coffee-free flavors.*www.**starbucks**.com/menu/drinks/evolution-fresh*

Markets/Revenue/Profit

(http://www.reuters.com/finance/markets.)Andhttp://www.moneycontrol.com/stocksmarketsindia/.

Starbucks have the 32,187 stores in 84 countries including 12,973 in the United States, 1,897 in China, 1,550 in Canada, 1,088 in Japan and 927 in the United Kingdom. At Starbucks there are 151,000 full time employees engaged with this brand. The total revenue of Starbucks was US$ 4,239.6 million U.S dollar (2014). Products of the Starbucks serve its menu worldwide. Starbucks act as a responsible company which takes care of the all concept related to environment and individual like, ethical sourcing, environmental stewardship and community involvement.   Starbucks create a connection between the use of products with justice and with human that's term they called diversity. Starbucks mainly focus on the four areas, viz., partners (employees), customers, supplier and communities. Starbucks receive the many awards for their best performance and quality products. "No. 1 Most Popular Quick Refreshment Chain", Zagat's

Survey of National Chain Restaurants- 2009-2011, one of the Most Admired Companies in America Fortune-2003-2012, one of the World's 50 Most Innovative Companies Fast company- 2012, one of the World's Most Ethical companies Ethisphere-2007-2012, one of the 100 Best Corporate Citizens Corporate Responsibility/Business Ethics- 2000-2012. Starbucks chairman Howard S. posted a blog named let's come together, America in which they are spirit of connectedness and humanity which is powerful. It is the Starbucks new tradition to bringing people together. They spread the message "come together on customers' cup."
Revenue/ Sales growth of Starbucks (Fiscal 2015 Financial Highlights, Starbucks Coffee Company)
http://investor.starbucks.com/phoenix.zhtml?c=99518&p=irol-reportsannual.

Year	Net Revenue In billion
2007	$9.4
2008	$10.4
2009	$9.8
2010	$10.7
2011	$11.7
2012	$13.3
2013	$14.9
2014	$16.4
2015	$19.2

Starbucks Corporation Fiscal 2011, 2012 & 2013 Annual Report.

SELECTION OF MARKET- Why Starbucks Choose India

*India beverages and fast-food industry scenario:*Growth rate was recorded with double growth in Indian food and beverages sector in the last few years and some of them grow 30% annually acc to the business.mapsofindia report. Demand of fast food and beverages is increasing day by day because now the purchasing power among youth is high. India is fast emerging as a leading producer and consumers of packaged food products, non-alcoholic beverages, alcoholic beverages, dairy products and meat acc to the business.mapsofindia report to the fast food chain growing day by day now it will become second most populous country in the world. Many global chains like McDonalds, Dominos, subway, KFC, Cafe Coffee day, Barista, Costa coffee have entered in the Indian market. With the announcement of government's foreign investment reforms in Indian retail sector in 2012, Starbucks and Dunkin Donuts also penetrated the Indian market. Indian food and beverages sector is growing positively due to growing sales, reforms in organized retail sector and rapid urbanization acc to the report given by business.mapsofindia. India is the world's fifth biggest coffee producer and presently they export 70% to 80% of their production.

Positive Points- In a developing country like India most of the people are traditionally tea-drinking, so in order to attract customers coffee chains have focused on providing an ambience where people can relax and spend time with each other. With an increase in the purchasing power of the customers and due to rapid growth of globalization, more people have been employed and are earning money. With the growth and development of our economy, Indians have **become** more status seekers and crave for enjoying their weekend with friends and family.

Negative Points- Starbucks face competition from established competitors like Costa coffee, Barista and Cafe coffee day.

Global brands face the dilemma of whether to go solo or tie up with a local partner.

ENTRY MODE OF STARBUCKS IN INDIAN MARKET NOT INDIVIDUAL BUT WITH THE LEADING

BRAND TATA

Starbucks Choose a Local Partner-Global brands like Starbucks do to maximize their chances of success in India Starbucks choose to enter with the TATA because Tata is a leading brand in the market and people easily recall Starbucks with the help of Tata, because people have faith on this existing brand. Starbucks' decision to partner up with India's TATA Global Beverages shows a focus on leveraging multiple benefits.

The TATA Group is one of India's ethically-driven brands, India produces coffee beans in only a few places; the other sourcing option was importing the beans. But this would have hiked input costs significantly. TATA's coffee plant in Karnataka has also been contracted to supply beans to Starbucks' globally, creating mutual synergies.

Many of the foreign brand enter in Indian market and survive but some year back new Coffee leading company enter in Indian market viz; Starbucks. Government announced the foreign investment reforms in retail sector. Indian beverages market is positively growing in sales due to organized retail and rapid urbanization due to that reason in January 2012 Starbucks came to India with the Tata global beverages viz; Indian company. They entered with Tata by making 50:50 joint ventures and named as Tata Starbucks Ltd. After that Starbucks open his first store in Mumbai in October 2012 at Horniman circle of south Mumbai with a space of 120 customers and after that Starbucks open 4 more store in Mumbai at Taj Mahal palace and in Oberoi hotel and 3 stores in Delhi at Indira Gandhi International Airport.

Now, in total Starbucks have 14 outlets in New Delhi by (24 Jan.2013), 4 outlets in Gurgaon (10 July 2013), 29 outlets in Maharashtra which includes 23 outlets in Mumbai and 6 in Pune (8 Sep. 2013), 10 outlets in Bangalore (22 Nov. 2013) , 1 in Chennai (8 July 2014) and 1 in Telangana Hyderabad (1 October 2014).

As of July 2014, Starbucks operates 59 outlets in 7 cities of India. In those stores they are getting the profits. The consumption of coffee market through cafes in India is about $140 million of the country's annual sales of about $667 million. A cup of plain coffee cost about Rs 10 at a big restaurant in India and when it compared with western style café it seems to be very low and affordable coffee because the price of coffee in western cafes is 60-80 Rs and which is keeps on increasing. The partnership with Tata helps Starbucks to access some prime location for its outlets one is the Elphinstone building, which is owned by Tata sons, and Taj Mahal hotel is also Tata property.

Till now Starbucks getting the positive response from the market and they are planning to open more outlets in the India. Coffee shop industry has been growing 25% CAGR for a few years. Retail consultancy report predicts that $230 million café market in India will swell to $410 million by 2017, with the number of cafés rising from 1950 to 2900 in the next five years.

*Industry profile:*This Starbucks deals with the food and beverages industry because they are selling variety of products that are deals with food and drinks. According to 2012 report from 2009 to 2011, sales of regular soft drinks declined by 1.9% to $27 billion, the reason for this decrease the sales were changing in consumers taste. From 2001 to 2011, annual bottled-water consumption soared 56% to 26 gallons per person. At the same time, annual soda consumption fell 16%, to 44 gallons (about 281 single-serving bottles) per person. 80% of Americans consumed at least one such beverage every two weeks, Americans drink soda than drink energy drinks and coffee. One of the most popular energy drinks on the market has around 160 milligrams of caffeine, drinks contain half the caffeine of many large coffees and Starbucks coffee has 330 milligrams of caffeine, and a 16.5-ounce Panera frozen mocha has 267 milligrams. The amount of money spent by Coca-Cola, PepsiCo, and the American Beverage Association fell to $10 million in 2011.

Leading beverages Industry in India: Tea and coffee are the major sector in beverages industry these are sold in domestic market as well as overseas in market. The production capacity of coffee market is 19,600 tones which is USD 87 million market, soft drinks like juice constitute USD 1 million producing 284 million per years. Pepsi and cola-cola also two leading brand in Indian market. Minerals water market produces 65 million, 4.9 each month. Tea and coffee have shown the excellent growth in the Indian beverages market.

Challenges Starbucks facing in conquering Indian context-

Starbucks entered in the Indian market but they have to face many challenges from existing players like Costa Coffee, Barista and Café Coffee day. Others factors which act as a barriers for the Starbucks are changing habit of customers, external environment of business which includes various political, legal, Social, technological and environmental factors, Climate changes, internal factors which includes training, infrastructure, better facility, variety of products. because here India's largest coffee chain is café coffee day and it has nearly 1,200 outlets and the strategy of café coffee day is to open one outlet in every third day and this was also followed by the Barista which have the more than 200 outlets in the Indian market and Barista also have its own plans and strategy to expand its business at huge level. Next is the costa coffee which entered in Indian market in 2008, they have 75 stores and in future they are planning to increase this four-fold over the next three years. So, if Starbucks want to survive in the Indian market they have to cop up with various challenges in the Indian market.

Competitor's analysis (Indian market major sales players) - Café Coffee day

Café coffee day has a 15 year head start in the market so it deal with the consumers taste, sensitivity regarding price and know the dynamics of market.

Today café coffee day captures the 65% market in terms of market share and stores and the future plan of café coffee day is to expand its outlets and planning to open 2000 outlets by the end of 2014. So for Starbucks it's now difficult to lead in the market and operate many outlets in India because café coffee day increasing the gap among both of them.

The menu at CCD is effective when relate with pricing, menu mainly focus on sweet sugary drinks preferred by teens and location captured by them is the area of every youth hub like IT/ITES offices + educational institutions, CCD is tough competition.

Barista

Barista Lavazza (slightly more premium than CCD) & Crème (catering to higher end clientele), it has about 200 outlets notching up about 300 crores in revenue per annum. With Barista there are some disturbance occurs with the management which give negative impact, it result in lack of focus, conflicting strategy and non-cohesive operational code. They have though managed to retain (not maintain) the first guitar each outlet sanctioned. It has progressively lost market share to CCD and has allowed Costa to gain a foot hold among the up end of market.

Costa

Costa is the 3rd competitor for the Starbucks after CCD and Barista; it is affecting the market leader (CCD) but eating the shares of Opposition (Barista). A non-starter itself, failing inexplicably to capitalize in terms of swiftness of expansion and increasing market share, whilst Barista was fighting its inner demons. Over the last 5 years has managed to notch up only 50 outlets, mainly in metros, catering to almost exclusively premier clientele. Starbucks has always stressed on uniformity of processes and preparations. This could backfire in India as it did in Israel where consumers ditched Starbucks.

Brand awareness is also one of the challenges for star bucks, people are not aware. There are political, economic, social, technological, legal and environmental factors.

Compatibility, 'Coffee is not my cup of tea- India is a tea drinking country. India is one of the largest tea producers in the world, though over 70% of the tea is consumed within India. Tea is culturally rooted in India. Starbucks will have to identify a product mix that balances catering to their customers (tea and Indian cuisine) with doing what they do best as a company (coffee first, tea second). The more they focus on coffee initially, the more they risk alienating their customers.

Indian consumer being price conscious- While CCD may charge around Rs 40 for a coffee and the wayside shops charge Rs 10, Starbucks $2.5 for a short latte would seem to be very expensive.

*Political factors-*In India there are some political factors which gave the impact on them they are regulation for controlling of business and the spending power of consumers and other businesses. The political environment in India as a whole, the bureaucracy complications, it is safer for Starbucks to enter India via a joint venture or a strategic alliance with an Indian company that can provide a buffer from possible political tension. Furthermore, Starbucks can face some opposition from the existing competitors (CCD, Barista, etc.) through the use of political influence and delaying tactics.

Economic factors- In the metro and big cities Starbucks entry will be easy because in that place environment for Starbucks is favorable. Mumbai is regarded as the country's financial center and accommodates many foreign financial organizations as well as many IT companies. Delhi and Bangalore, other major cities with population totaling just below 20 million, are call-center hubs and many international IT companies are situated there. But star bucks have to face the problem in others area where people don't prefer coffee. The price is one of the factors because for Indian people spending around 125 and more than that for just a cup of coffee is not in their favor. But the Indian Government is still working on improving unfavorable factors such as widespread poverty, inadequate physical and social infrastructure, bureaucracy, limited non-agricultural employment opportunities, regulatory and foreign direct investment controls, insufficient access to quality basic and higher education, and the imbalance of rural-to-urban migration. The Indian population is still heavy tea drinkers. The consumption of tea per person in 2000 was reported to 44 liters in comparison to 1.2 liters of coffee. Another good substitute is the instant coffee. It is reported that 65 % of households bought instant coffee and only 18 % bought filter coffee.

Environmental factors- coffee beans are the main thing which maintains the quality of coffee. There are many factors which are kept in mind while growing coffee. Sufficient water & trees and a diverse flora & fauna are important for growing coffee beans. But in India, increasing population and economic development will lead to a number of environmental issues like uncontrolled growth, urbanization, industrialization, intensification of the agriculture and destruction of the forest. The growing population has an adverse effect on natural resources and the environment. And also weather in India does not remain same during whole year. Here hot summers stay for a long time that is also one of the reason people doesn't prefer strong coffee, because in US and Europe the temperature remain low, which results in more demand for strong and hot coffee.

Legal factors- The coffee retail market in India consists of mainly homegrown brands. The biggest ones are Coffee Café Day (CCD), followed by Qwiky's and Barista Coffee. These companies are considered as threats to Starbuck's entry in the Indian market because they are offering similar and sometimes identical products. CCD, for instance, the company which pioneered the concept of specialty coffee in India, has wide range of café formats with almost identical concept used by Starbucks. Besides, CCD has presence all around the India. The same company also sells merchandise and is involved in heavy marketing, such as establishing relations with the Indian movie and television series industry. Furthermore, CCD's best-seller – the cold Frappe – is a direct competition to Starbuck's Frappuccino.

It is also mentioned that the infrastructure in India is weakly developed, which might results in difficulties or larger amounts of costs incurred in the business operations of Starbucks. In addition the retail environment in India is largely unorganized and dominated by small and individually owned businesses.

Opportunities for Starbucks in Indian context-

Starbucks offer the different types of products like in burgers there are three varieties; breakfast burger, lunch burger & dinner burger, to avoid the disturbance Starbucks use a different type of strategy they make a different cabin for children at Starbucks, better and advance infrastructure, and free Wi-Fi facility for the customers, the reasons for that is today the standard of living of Indian people increasing day by day as people are focusing more on education, the expansion of western brands created liking for these brands, expansion to new market and product.

Positioning StrategyUsed by Starbucksin Indian Market

For the best positioning of their brand in Indian market they done a survey in which they include the IIM Bangalore and asked the attributes which they consider important while go for a coffee. As the outcomes display that **Ambience, service quality, Taste, Price and Service Time** are amongst the 5 most important aspects that café visitors look for and Starbucks have all these attributes which help to make Starbucks successful in Indian market.

Price skimming strategy, Starbucks cut the prices of coffee to maintain their position in the market and to make the customers base. Now, Starbucks cutting the prices of packaged coffee sold in grocery stores by 10% with an interest to attract the new customers and in order to remain in the competition. The price will drop from $9.99 to $8.99 for a 12-ounce bag of Starbucks. It will help them to enhance the value that they have given to their existing packaged coffee customers and hopefully increase the frequency and attract new customers. Last time Starbucks charges the $2.55 profit per beg but that time it will drop to $1.55 Starbucks already has plenty of $6 barista-brewed drinks to capture the top of that market, but a bag of $10 coffee is very much in the middle." Plus, "Starbucks has been working hard to grab grocery-store shoppers' dollars by expanding the array of products it has available in those stores," wrote Mary Beth Quirk at Consumerist. Dunkin' Donuts have been lowering their prices, so the pressure is on Starbucks to do the same." Starbucks strength lies in the high end market, however, in the tough economy; it is looking at expanding its base by capturing the low-end market.

Starbucks is also expanding aggressively in markets and economies which traditionally do not go for high end coffee. On an average, Starbucks's lattes cost $5 a cup. Starbucks has already slashed its prices for the Indian market. In India, Starbucks comets with popular chains like Café Coffee Day and Barista's Lavazza. Apart from that, small coffee and tea haunts are very popular in India, which sell at very low prices. Starbucks charges substantially lower in India than its China rates. Starbucks' price cut will amount to a 65% cut in its profit margin. The Starbucks price cut move comes after its competitors started the trend a few months ago, due to the decreasing cost of the commodity. In February, Starbucks coffee to cost an average of Rs125 – higher than the Rs60-75 that Café Coffee Day charges but lower than the Rs150 other international chains in India charge and now Starbucks charge 80 Rs for coffee. Like the Success in China they are getting because they understand customer's needs- China traditionally has been a tea-drinking country but we turned them into coffee drinkers." In 1999 Starbucks entered in China and presently having more than 570 stores in 48 cities.

By 2015, it plans more than 1,500 stores in 70-plus cities. Starbucks exciting growth story in China could be identified with its ability to customize Chinese food items such as a traditional local Chinese food for the Dragon Boat Festival and few other favorites. Corporate executives in China love the Starbucks store ambiance and the free unlimited Wi-Fi facility. So same strategy they are applying in Indian market.

Questions

1. India is a country where people prefer tea over coffee. What strategies will you suggest to Starbucks to overcome the challenge imposed by customer's taste and preference?
2. Starbucks enjoys a reputation of premium brand with high prices, is now attempting to offer the products at lower prices in India. Do you think this low pricing strategy will work in India without harming the brand image of Starbucks?

3. In a growing economy like India, what opportunities you see for Starbucks even in the presence of competitors like Café Coffee day, Barista, Costa Coffee etc.
4. Do you think the Starbucks' strategy for uniformity of processes and preparation will work in a country with diversified sub cultures like India.

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Total Quality Management and Services Marketing

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Abstract- Total quality management (TQM) represents a major philosophical revolution in the management of organizations. Currently TQM is being applied to a diversity of sectors, including the health, education, banking, transportation, hotels, and profit and non-profit, organizations in the service sector. There are two reasons for this. Firstly, services have become an important part of the economy. Second, service quality has become a key factor in achieving competitive advantage for both manufacturing and service organizations. Also, quality improvement leads to increase in sales, optimal production and distribution of services, profitability, better salaries for employees, and high morale. The objective of this paper is to shed some light on the current TQM practices of service organizations. TQMS is expected to face problems in implementing it, because intangibility of services, the heterogeneous nature of the service processes, and various customer requirements, etc.

*Keyword*s-- **TQM, Service Sector**

I. INTRODUCTION

India is one of the world's major emerging economies where services have become an important part of the financial system. The significance of services has led to focus attention on the effective management of service organizations and, thus, the emergence of service management as a discipline. Due to its holistic approach to quality, total quality management (TQM) is generally considered as a framework that supports service management. Hence, TQM has been widely applied in service organizations in recent years although its origin is in manufacturing.

II. CHARACTERISTICS OF SERVICES

Services have defined in so many ways but with no general agreement. Kotler defines services as any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may be tied to a physical product. Several researchers have identified four characteristics of services that distinguish services from manufacturing organizations. These are: intangibility, inseparability, heterogeneity and perishability (Dean and Evans, 1994; Dotchin and Oakland, 1994; Parasuraman et al., 1985; Sasser et al., 1978). As services are intangible, they cannot precisely specifications for uniform quality and measurement of performance. The inseparability and heterogeneity of services mean that there is less managerial control over quality, since the services cannot be tested and assured before delivery and standardised during the delivery. It is also difficult to predict, and hence influence, how the customer would perceive and evaluate the service quality. The final characteristic of perishability implies that service organizations need to retain excess capacity to meet the fluctuating demands of customers.

III. CONCEPT OF TOTAL QUALITY MANAGEMENT

The phrase total quality management (TQM) has become a common part of today's business language. It generally means a quest for excellence, creating the right attitudes and controls to make prevention of defects possible and optimize customer satisfaction by increased efficiency and effectiveness. Definitions of TQM are as broad as the literature associated with it. Schonberger defines it as "quality of goods, services, of time, of

place, of equipment and tools, of processes, of people, of environment and safety, of information and measurements." TQM is an approach to doing business that attempts to maximize the competitiveness of an organization through the continual improvement of the quality of its products, services, people, processes, and environments (Goetsch and Davis, 1995). It is a customer-oriented management system, which seeks to meet or exceed customer expectations by providing defect-free goods or services the first time, on time, all the time.

While the original concepts of TQM defined by Deming and Juran found their base in manufacturing industries, the developed nations have now come to benefit from short learning curves, available technology and cheap labour to undercut prices. There is a much greater emphasis on service industries, which in turn brings different challenges. In recent years, some service organizations in different service industries such as healthcare, insurance, hospitality among others have shown interest in TQM (Hasan and Kerr, 2003). This interest may attribute to the positive impact of TQM on the strategic and operational facets of organizational performance (Reed et al., 1996; Zahiri et al., 1994).

IV. OBJECTIVES OF THE STUDY

The main objective of study is:
  I.   To study the emergence of total quality management in services.
  II.   To study the TQM effects in promotional avenues in the organization.

V. DRIVING FORCES FOR TQM IMPLEMENTATION IN SERVICE SECTOR

The adoption of TQM results in better quality of service facilitating to increase the market share and profitability. It enhances the image of the company by treating a loyal customer base and helps to attract high quality human resource to have a career in the organization. It is indeed important for service businesses where human resource is the key to long-term success. Quality improvement leads to increase in sales, optimal production and distribution of services, better salaries and promotional avenues to employees, and high morale. Last, the cultural change would help service business to attend to the needs of customers in an improved manner, thus promoting customers' delight. Other drives include the following:

◆ Growth in Services: There has been a substantial growth in services in last two decades. Healthcare services, business services, accounting, engineering, architectural services, and hospitality services have grown at approximately double the rate of other industries since mid-1980s (Rowdy and Martin, 2001). Ghobadian et al state that the service sector has become the dominant element of the economy in the industrialized nations. The service activities in the US accounted for a 20 percent of the Gross Domestic Product, employing 53 percent of the US workforce in 2001 (Statistical Abstract of US, 2002). The trend signifying the increasing importance of the service sector is expected to be strengthen in the future (Lemark and Reed)

◆ Complexity of Problems: The second major trend inducing more attention to the service operations is the seriousness and complexity of problems within modern society. These include the population explosion, and its concentration in urban areas, the coexistence of affluence and poverty, rising expectations for better health and education, concern about pollution of the physical environment and a growing hostility towards the modus operandi of the traditional institutions. Increasingly, there seems to be a belief that the appropriate quality technology can put to work to solve current social problems.

◆ Government Recognizing Benefits of TQM: It has shown that there is a positive relationship between export performance and economic growth. To succeed in the world market, services must be competitive both in quality and in price. Implementation of TQM in service concerns enhances quality and reduces cost, thus increasing their competitiveness in international markets. Increased exports boost the foreign exchange earnings that, in turn, facilitate economic development by enabling the acquisition of needed capital goods. Improved quality of services also makes them more attractive to domestic consumers, thereby boosting increased consumption at home. Therefore, quality improvement can contribute to breaking the vicious cycle of poverty that has plagued most developing countries. Awareness of the implications of improving quality through TQM adoption is therefore, prompting government to push for its implementation in service organizations.

◆ Quality-Productivity-Profitability Connection: It has shown that adopting the TQM process leads to improvements in the overall quality of an organization's services, and that such improvements result in increased productivity and profitability. Achieving improved organizational performance through TQM implementation enables managers to get personal recognition and reward for their achievements. Therefore,

managers of service organizations who are aware of TQM's potential as a cost-effective approach to improving both quality and productivity push for its implementation.

VI. RESTRAINING FORCES FOR TQM IMPLEMENTATION IN SERVICE SECTOR

Even though the TQM framework may be broadly applicable to service organizations, there are special implementation problems, Such as:

◆ **Problems in Defining Quality of Service:** Application of total quality principles and techniques in service sector has always remained a major and challenging task. The traditional definition of quality as "conformance to standards" is usually not applicable in services, since there are often no specified standards and even if these are specified, they are difficult to measure. The lack of standards thus makes it difficult to judge quality performance. The most important problems that the authors have observed in many service organizations are as follows:

◆ **Intangible Products**: The major problem associated with service business is the absence of an easily identifiable a product to which focus can direct. The factors, which govern the satisfaction of the customer, include speed and responsiveness of service, comfort and cleanliness of the facility, courtesy and helpfulness of employee and many other behavioral factors. These factors undergo a lot of variation and in fact are difficult to standardize as they depend mainly on the customer's expectations. Because of this, many service organizations find it difficult to apply total quality concepts to their business.

◆ **Inadequate Knowledge Base:** Successful TQM implementation requires that workers at all levels go through rigorous on-the-job training in behavioural, problem-solving and technical areas. However, training institutions are either inadequate or unavailable, and well-trained managerial and technical personnel are in short supply in India. The generally poor educational system also means that workers at all levels should go through extensive on-the-job training which can drive up the training costs and render TQM implementation quite expensive. These discourage some managers from initiating the TQM effort in the first place, or force a discontinuation of the process.

◆ **Ignorance Regarding Customers' Requirements**: Good service is an expectation of the individual customer, which may be unknown or unstated, and may vary from customer to customer and from time to time (Jessome, 1988). The key contributing factors to the existence of this problem are insufficient market research, inadequate use of research findings, lack of communication between management and customers, inadequate upward communications and too many levels of management.

◆ **Government Control and Bureaucratic Bottlenecks:** The state owns a large part of the service sector in India, and government plays a prominent role in economic activity. In addition, it has shown that the management of public enterprises is tainted by politics. Accordingly, a number of management decisions, including personnel recruitment, promotions, rewards and recognitions are made more from the perspective of political pragmatism than the interests of the enterprises. Such interference by government stifles the success of the TQM efforts.

It should be noted that the same forces might be strong champions of the TQM process in some firms, while they will be staunch resisters in others. Therefore, some forces, such as managers and government leaders, are shown both as drivers and as resisters in order to emphasize the different reaction they may have in different situations. It is propose that whether such forces become proponents or resisters of TQM implementation will depend on the degree of their awareness regarding the potential benefits of TQM. The government leaders and managers who are dissatisfied with the existing conditions and who are convinced of the potential benefits of TQM will push for its implementation.

VII. RESOLUTION OF RESTRAINING FORCES

Literature indicates that to improve the chances of success in introducing change, it is better to reduce the strength of the resisting forces than to increase the strength of the driving forces. The experiences of managers who have already implemented TQM also reveal that it is more effective to reduce the impact of the resisting forces than to strengthen the driving forces (Whitney, 1992).

Resolution of these restraining forces requires senior management commitment to provide necessary resources and leadership in promoting and driving the necessary change. Strategies for resolving the problems created by these factors include using information from customer complaints, researching customers' desires in similar industries, and research on intermediate customers, key client studies and comprehensive customer expectation studies. As McManus identifies, change cannot be successfully implemented without "awareness of customer requirements at all levels in the organisation, continuous improvement as the only way forward, a clear vision of the direction to follow, and top management will and determination".

Similarly, Zeithaml *et al.* consider it necessary to eliminate levels of management to allow managers to be closer to customers, to understand their needs and expectations. The type of organization best matching the above criteria is akin to the organic form described by Dawson, where people are essentially cosmopolitan, working in an environment where communication is both lateral as well as vertical, with task definition from a network of sources, and with control, which allows considerable flexibility and initiative.

VIII.   APPLICATIONS OF TQM IN VARIOUS SERVICE SYSTEMS

Service quality is a multi-dimensional construct. Thus, service quality may be viewed based on the attributes of the service delivery system, the extent of customer satisfaction and/or the interactions among the different elements of the service system which define the service encounter (Chase and Bowen, 1991; Klaus, 1985; Parasuraman *et al.*, 1988). In recent years, some service organizations in different service industries such as healthcare, hospitality among others have shown interest in TQM (Hasan and Kerr, 2003)

Yasin and Alavi (1999) conducted the research aiming at understanding the facets of effective TQM implementation in different service operational settings.   The research attempted to explore current TQM implementation practices and their operational and strategic outcomes and benefits. In general, the results of the study confirmed the reported literature findings concerning outcomes and benefits of effective TQM implementation as shown in table below:

The table depicts that TQM has been very effective in the fast food, book publishing, investment-banking and other service industries. TQM had a very positive impact on all of the strategic variables presented in the research instrument. We can only hypothesize that the other firms in these industries will eventually recognize that competitors who have effectively implemented the tools and techniques of TQM are achieving exceptional strategic outcomes and begin to experiment with TQM. The reported very positive impact of TQM on market share (ranging from a positive 63.83 to 100 percent), return on investment (67.74 to 100 percent), and

Table   Level of impact of TQM on key externally measured strategic variables

	Market share (percent)	Return on investment (percent)	Competitive position (percent)
Fast food	100	100	100
Book publishing	80	70	81.82
Computer	67.57	78.38	80.56
Investment banking	86.96	88.46	95
Restaurant	70	67.74	87.50
Pharmaceutical	68	79.17	84.62
Gaming	80.95	71.43	76.19
Banking	63.83	87.23	91.67
Accounting	70.37	77.92	85
Range of impact	63.83-100 percent	67.74-100 percent	76.19-100 percent

competitive position (76.19

Source: Yasin and Alavi, 1999

to 100 percent) speaks volumes to the benefits of a well-implemented TQM program in the service industry.
 If we examine the level of positive impact that the implementation of TQM has had on the three major externally measured strategic variables of market share, return on investment (ROI), and competitive position. An examination by other firms in each industry of successfully implementing TQM tools and techniques should be a significant motivator to reconsider their decisions not to implement a TQM programme.

IX.   CONCLUSION

The application of a quality improvement programme in service industry has not received much attention until recently, but efforts aimed at spreading it are increasing rapidly. Understanding the basic service philosophy and developing strategy for continual growth are the necessary requirements for future service quality goals. The role of service systems in the global economy is changing. Managing such systems successfully requires an orientation towards conceptualizing the philosophies and essentials of TQM, and coupling them with implementation for providing better quality of life to the society at large. Viewed in the above perspective, service systems must anticipate impending challenges of market changes, economic globalization, wider dissemination of information etc. They need to develop professional expertise, executive capabilities and all the more a sound business philosophy.

Given the nature of most service operations where the customer is the focal point, there is a need to have customer-focused and quality-driven strategy orientations. To manage a service process with a quality-focus is a complex affair. Therefore, the managers of service systems need to commit themselves to a concept of "management by quality first" rather than a specific ideology. With commitment, and a suitable framework to guide implementation, TQM can be successfully applied to service organizations. As such, the effective implementation of TQM in service operational settings would be expected to be the rule rather than the exception.

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Analysis of FTP and TFTP Protocols

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Abstract- This paper presents our approach to study the storage and retrieval of information between a router and a server in a simulated network on CISCO Packet Tracer. Current approach uses File Transfer Protocol (FTP) and Trivial File Transfer Protocol (TFTP) as supporting file transfer protocols for backing-up and restoring information. We study the procedure and analyze the key features of both the transferring protocols and observe the time taken to transfer the running configuration and the internetwork operating system files of the router using both the protocols for backing up as well as restoring.

I. INTRODUCTION

Data loss and it's recovery has been a matter of high concern during this era of digitization. Loss of crucial data or unintended deletion may happen due to human error, malicious intent, system failure or natural disaster. A 2008 survey found that 66% of respondents had lost files on their home PC [1]. This inspired us to study the process of backing up crucial information and retrieving it later on if required to ensure the integrity and reliability of networking. After studying the processes and possibilities to do so, this paper shall demonstrate the transferring of vital data such as the ios-files and the running configuration of a router between itself and a provided server. The simulation of the router, server and the rest of the network components was successfully carried out using Cisco Packet Tracer [5].

II. SYSTEM OVERVIEW

As shown in fig. 1, our network has several components configured to the network. The network consists of switches, routers, a dedicated server, fast access cable, serial cable and cross-over cable.
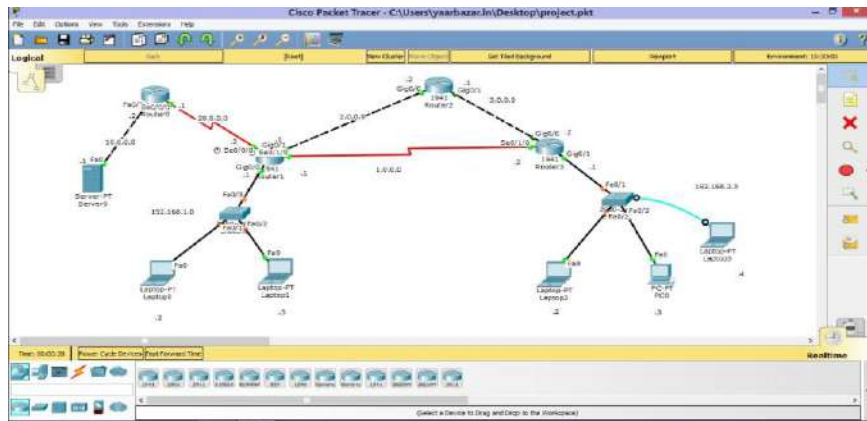
Figure 1: Simulated Network on CISCO Packet Tracer=]

III. WORK DONE

The work done can be shown in the form of an algorithm given below:

1.) Steps for TFTP server to backup and restore a configuration:

    a) At the Router > prompt, issue the enable command , and provide the required password when prompted. The prompt changes to *Router#*,which indicates that the router is now in privileged   mode.

    b) Copy the running configuration file to the TFTP server:

        CE_2#copy running-config tftp:
        Address or name of remote host []? 64.104.207.171
        Destination filename[ce_2-confg]?
        backup_cfg_for_my_route   !!
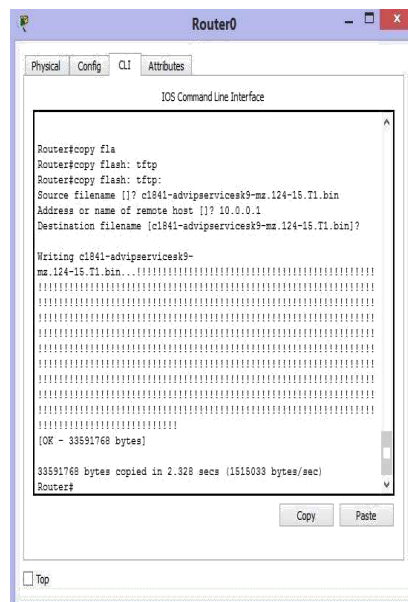   1030 bytes copied in 2.489 secs (395 bytes/sec)
        CE_2#

    c) Open the configuration file with a text editor. Search for and remove any line that starts with "AAA".
        Note: This step is to remove any security commands that can lock you out of the router.
    d) Copy the configuration file from the TFTP server to a new router in privileged (enable) mode which
        has a   basic configuration.

These steps can be shown in the following figures.

Figure 2: Copying IOS files from router to server.

Figure 3: Copying running config from router to server

Figure 4: Downloading/retrieving running config from the server

2) Steps for FTP Server to Backup and Restore a Configuration:

In this procedure, an FTP server can be used in place of a TFTP server.

(a) At the Router> prompt, issue the enable command, and provide the required password when prompted.
The prompt changes to Router#, which indicates that the router is now in privileged mode.

(b) Configure the FTP username and password:
CE_2#config terminal
CE_2(config)#ip ftp username cisco
CE_2(config)#ip ftp password cisco
CE_2(config)#end
CE_2#

(c) Copy the configuration to the FTP server:
Router#copy running-config ftp:
Address or name of remote host []? 10.0.0.1
Destination filename [Router-confg]?
Writing running-config---
33591768 bytes copied in 5.379 secs (655697 bytes/sec)
Router#

(d) Open the configuration file with a text editor. Search for and remove any line that starts with "AAA".

Note: This step is to remove any security commands that can lock you out of the router.

(e) Copy the configuration file from the FTP server to a router in privileged (enable) mode which has a basic configuration.
Router#copy ftp: running-config
Address or name of remote host [10.0.0.1]?
Source filename []? Router0_running-config
Destination filename [running-config]?
Accessing ftp://10.0.0.1/Router0_running-config...
Loading backup_cfg_for_router !
[OK – 1030 bytes]
1030 bytes copied in 9.612 (107 bytes/sec)
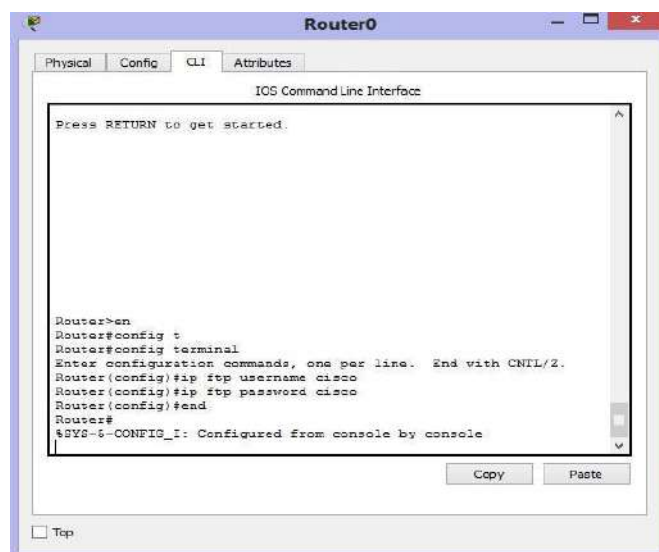Router#

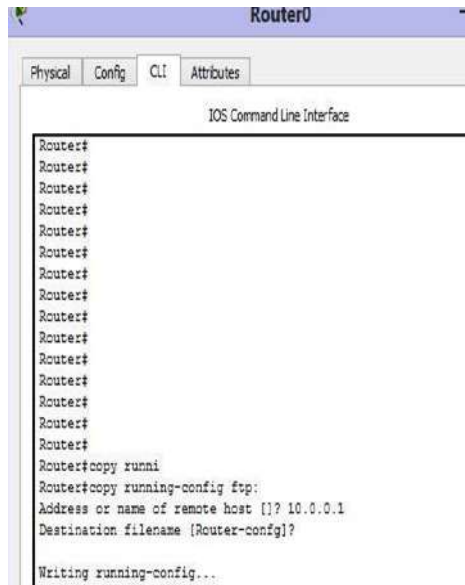Figure 5: Configuring ftp username and password.

Figure 6: Copying/storing running configuration to the server

IV. RESULT

After execution we obtained the following result:

TABLE 1: Results of TFTP

TFTP				
BACKING-UP				
S.NO,	FILE	SIZE(bytes)	TIME(sec)	RATE(bytes/sec)
1.	IOS	33591768	2.328	1615033
2.	Running Configuration	1030	2.607	395
RESTORING				
1.	IOS	33591768	5.379	655697
2.	Running Configuration	1030	9.612	107

TABLE 2: Results of FTP

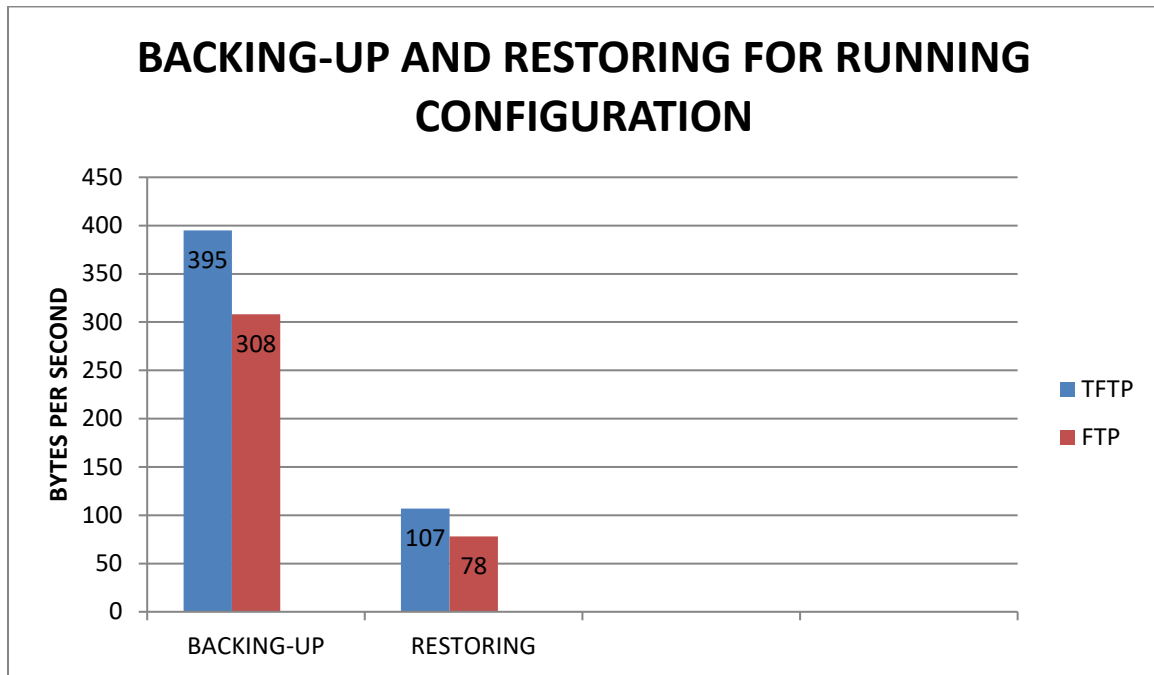| FTP				
BACKING-UP				
S.NO.	FILE	SIZE(bytes)	TIME(sec)	RATE(bytes/sec)
1.	Running Configuration	1030	3.341	308
RESTORING				
1.	Running Configuration	1030	13.213	78

V. ANALYSIS

Figure 7: Comparison of transferring rate observed in both protocols.

Time taken by TFTP [3, 4] to complete the transfer was lesser as compared to FTP. However user authentication adds to the advantages of FTP. **TFTP** uses **UDP** as a transport, as opposed to TCP which FTP uses, and works **on port 69 [2, 6, 7]. The speed of copying files from the router to the server was found to be higher than that of restoring the same files. Such observations were made as the ios-files and configuration are stored in the flash memory and random access memory of the router.**

VI. CONCLUSION

While studying the procedure and implementing the same we came to the conclusion that FTP should be preferred when security is desirable since TFTP does not use any kind of password protection. However, TFTP proved to be faster and easier to implement. TFTP can be referred to as a simplified version of FTP. TFTP is used mostly for backing up router configuration files like Cisco and its IOS images. FTP is widely used and preferred for transferring other files.

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