



Study of the Cytotoxicity Effect of Cu (II), Co (II), Ni (II) and Zn (II) Complexes Incorporating Indole Derived N, O Bi-dentate Ligand on Cancer Cell Lines MCF-7, Hep G2 and NHDF

A. Arunadevi and N. Raman

Department of Chemistry, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract - A series of Cu(II), Co(II), Ni(II) and Zn(II) metal complexes with indole derived ligand were prepared and characterized by elemental analysis, molar conductance, magnetic susceptibility, UV-Vis, FT IR and proton NMR spectral studies. These analytical and spectral studies reveal that the complexes adopt a square planar arrangement around the central metal ion. The synthesized compounds were attempted for their cytotoxicity activity. Cytotoxicity of the tested compounds were investigated by MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] assay in normal NHDF and cancerous MCF-7 and HepG2 fibroblasts. Both compounds showed cytotoxicity activity as a dose-dependent manner. Moreover, the complexes exhibit a limited cytotoxicity effect on normal cell line NHDF. The effect of cytotoxicity of synthesized metal complexes is judge against standard drug of cisplatin.

Keywords: Indole derivatives; Tryptophan; Cytotoxicity; Metal complexes; Schiff base

1. INTRODUCTION

Chemotherapy is still one of the central courses of treatments employed in the clinic for various cancer diseases, and thus immense amount of research is conducted worldwide with the aim to develop new and improved anticancer drugs. Many studies start at the chemical level, with the design and synthesis of compounds, followed by biological evaluation of the cytotoxic properties *via in vitro*. Various types of organic and inorganic compounds involve in a variety of biological processes which are very important to the life process. Mainly, the metal ions play a decisive role in biological functions such as Cytochrome c oxidase, vitamin B-12, nickel-tetrapyrrole coenzyme and cofactor F430 and carboxypeptidase. Moreover, the metal atoms coordinate with oxygen or nitrogen - terminals from proteins in diver's model that play an essential role in the conformation and function of biological molecules [1, 2]. Recent research illustrates that most of the metal complexes

have potential biological activities like anti-bacterial, anti-fungal, anti-viral, anti-inflammatory and anti-cancer agents and so on [3, 4]. Among the important liable pharmacophores for biological activities, the biologically active amino acid derived ligands and their metal based compounds have selective drug actives in many pharmacological areas because of the functional groups of $-NH_2$ and $-COOH$ coordinate to the metal ion which develops the new therapeutic targets. Moreover, among the various amino acids L-tryptophan is considered as one of the essential amino acid for human nutrition which is necessary for normal growth in infants and for nitrogen balance in adults and even its helps the body makes proteins and certain brain- signaling chemicals. Then, it has one indole ring system. This heterocyclic ring system encompasses considerable pharmacological activities [5] such as anti-vascular, anti-malarial, anti-inflammatory, anticonvulsant, chronic diabetes, HIV inhibitors and particularly in the treatment of cancer etc.

Based on the above, herein we investigate the cytotoxicity activity of our previously reported Schiff base metal complexes of Cu(II), Co(II), Ni(II) and Zn(II) obtained by the condensation reaction of 4-chloro-3-nitrobenzaldehyde and L-tryptophan. Evaluation of the anticancer activity of these metal complexes can be attained by the MTT assay. The MTT assay is usually common in cytotoxicity studies due to its accuracy, rapidity and relative simplicity.

2. EXPERIMENTAL PROTOCOLS

2.1 Materials and Methods

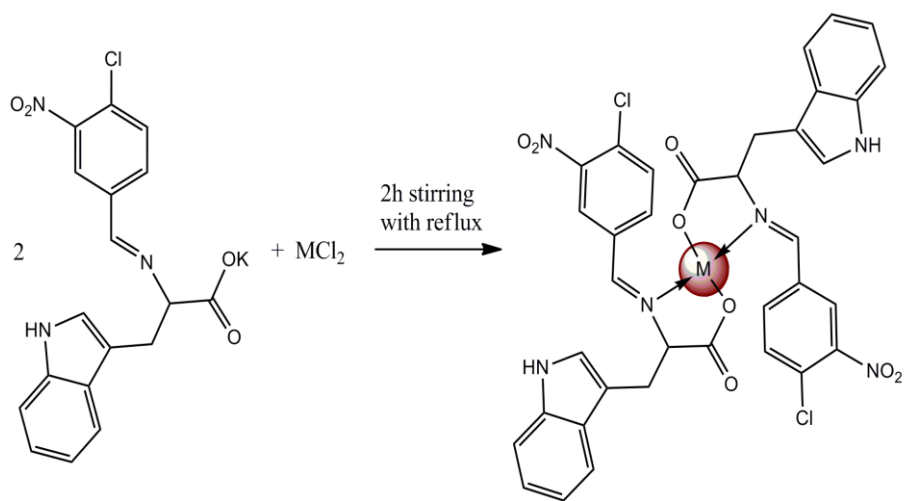
The chemicals involved in this work were of AnalaR grade and were used without further purification. However, the solvents were purified by the standard procedure. The starting reagent of 4-chloro-3-nitrobenzaldehyde and L-tryptophan was obtained from Sigma Aldrich. All metal salts were of Merck products. At room temperature, the absorption spectra were recorded by using Shimadzu model UV-1601 spectrophotometer in DMSO solution. Vibrational spectra were performed on FT IR–Shimadzu model IRAffinity-1 spectrophotometer using KBr discs. ^1H NMR of ligand and its Zn(II) complex were recorded on a Bruker 400MHz Avance III HD Nanobay NMR spectrometer using DMSO- d_6 as the internal standard. At room temperature molar conductivity of the complexes in DMSO solution (10^{-3}M) was measured using a deep vision 601 model digital conductivity meter. Magnetic susceptibility measurements were achieved from modified Gouy-type magnetic balance, Hertz SG8-5HJ where $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ was employed as the calibrant.

2.2 Synthesis of amino acid derived azomethine ligand (L1)

The ligand was prepared by using our previously reported procedure [6]. We have taken the homogeneous solution of 2 mmol of 4-chloro-3-nitrobenzaldehyde in 30 mL of methanol and 2 mmol of L-tryptophan in the medium of alcoholic potash (5 mmol KOH in 30 mL hot alcohol). These two solutions were mixed well and constantly stirred *ca.* 2 h. After that period, the alcoholic solution was evaporated and dried well. Then, finally we got the solid transparent red orange colored product which was recrystallized from methanol (**L1**)

2.3 Synthesis of complexes $[\text{ML}_2]$ -type

This monoligand $[\text{ML}_2]$ -type of metal complexes was synthesized by using the same procedure of our previously reported method [6]. 1 mmol of transition metal(II) chloride [Cu(II), Co(II), Ni(II) and Zn(II)] dissolved in 20 mL of methanol was added drop by drop to the (2 mmol) methanolic solution of synthesized ligand (L1) and the mixture was stirred and refluxed *ca.* 2 h. After the refluxing period, the alcoholic solution was filtered off and dried well. The obtained solid products were recrystallized from methanol. Synthetic pathway of the Schiff base complexes is given in Scheme 1.



Where, $\text{M}=\text{Cu(II)}, \text{Co(II)}, \text{Ni(II)}$ and Zn(II)

Scheme 1. Schematic route for the synthesis of metal complexes of type $[\text{ML}_2]$

3. RESULTS AND DISCUSSION

The ligand is freely soluble in water, ethanol and methanol while the complexes are freely soluble in DMSO and DMF only but slightly soluble in alcohol. The similarity values obtained between the elemental analyses data of the ligand and its complexes suggest the stoichiometry of proposed complexes. Physical characterization, microanalytical and molar

conductance data of the complexes are given in Table 1. The DMSO solution of these metal complexes shows lower molar conductance values ($12.3-18.0 \Omega^{-1} \text{ mol}^{-1} \text{ cm}^2$) for all complexes due to the non-electrolytic nature of the synthesized complexes which illustrate the absence of anion in the outer sphere of the complexes.

Table 1. Physical characterization, analytical and molar conductance data of the synthesized compounds

Compound	Yield (%)	Color	%of calculated (Found)				Formula weight	$\Lambda_m (\text{ohm}^{-1} \text{ cm}^2 \text{ mol}^{-1})$
			M	C	H	N		
L	76	Red orange	-	52.75 (52.24)	3.20 (3.16)	10.25 (10.01)	410	-----
[CuL ₂] [CuC ₃₆ H ₂₆ N ₆ O ₈ Cl ₂]	68	Light Green	7.89 (7.71)	53.71 (53.40)	3.26 (3.06)	10.44 (10.31)	805	12.3
[CoL ₂] [CoC ₃₆ H ₂₆ N ₆ O ₈ Cl ₂]	74	Brown	7.36 (7.21)	54.02 (53.92)	3.27 (3.13)	10.50 (10.38)	801	17.1
[NiL ₂] [NiC ₃₆ H ₂₆ N ₆ O ₈ Cl ₂]	65	Dark Yellow	7.33 (7.12)	54.03 (53.88)	3.27 (3.11)	10.50 (10.24)	800	18.0
[ZnL ₂] [ZnC ₃₆ H ₂₆ N ₆ O ₈ Cl ₂]	74	Orange	8.10 (8.02)	53.59 (53.21)	3.25 (3.04)	10.42 (10.12)	807	16.5

3.1 FT IR spectral data

Vibrational spectrum of the synthesized ligand shows a band at 3402 cm^{-1} which is allocated to $\nu(\text{N-H})$ group of indole moiety. The appearance of this band in all synthesized complexes indicates that the indole containing $-\text{NH}$ group is not involved in complex formation with central metal ion. Moreover, the ligand shows the azomethine band at 1614 cm^{-1} which is shifted to lower or higher frequency ($1594 - 1641 \text{ cm}^{-1}$) in all complexes due to the formation of metal chelates. In addition, the coordination of the ligand is also achieved by the presence of carboxylate (COO^-) group. This is quite visible based on the difference in position of maxima observed for $\nu_{\text{asy}}(\text{COO}^-)$ and $\nu_{\text{sy}}(\text{COO}^-)$ vibrational frequencies. These asymmetric and symmetric vibrational frequencies were observed at 1454 and 1342 cm^{-1} in free ligand which were noticed in complexes with slight change in positions $\sim 1456 \text{ cm}^{-1}$ and $\sim 1344 \text{ cm}^{-1}$ respectively. Thus,

the results describe the ligand involved in coordination through COO^- group. Similarly, the formation of metal complexes has been further proved by the observation of new bands (M-N and M-O) in lower frequencies compared to ligand. These bands are observed in the complexes at $469-482$ and $538-553 \text{ cm}^{-1}$ which may be assigned to the stretching frequencies $\nu(\text{M-N})$ and $\nu(\text{M-O})$ bonds respectively [7, 8].

3.2 UV-Vis spectra and magnetic susceptibility

The UV-Vis spectra of synthesized ligand shows three absorption bands at 23753 , 31447 and 38022 cm^{-1} and these bands are corresponding to the $\pi \rightarrow \pi^*$ and $n \rightarrow \pi^*$ transitions of the ligand. These transition bands are emerged due to the presence of indole group, non-bonding electrons available in the HC=N containing N-atom and delocalization of the π bonds in the phenyl ring system [9]. These weak and strong bands of ligand are appeared in synthesized complexes with slight shift in wavelength and intensity. The shift in

wavelength range of 4 - 6 nm is the basis of coordination of N and O atoms to the metal ions, which can also provide the supportive evidence for the coordination of ligand to metal atom. The electronic spectrum of copper complex shows the d-d band at 16026 cm^{-1} corresponding to the transitions of ${}^2B_{1g} \rightarrow {}^2A_{1g}$ which is the characteristic band of square planar geometry. The observed magnetic moment value of copper complex is 1.82 indicating that the metal ion is present in monomeric nature [10, 11]. Moreover, the cobalt complex shows low intensity broad band in the range at 17544 cm^{-1} which is corresponding to the d-d transition of ${}^1A_{1g} \rightarrow {}^1B_{1g}$ and shows the magnetic moment value 3.21BM which supports the square planar geometry around the metal center [12] and the synthesized nickel complex exhibits the d-d band at 16393 cm^{-1} corresponding to ${}^1A_{1g} \rightarrow {}^1A_{2g}$ transition which is the characteristic band of square planar geometry and this geometry is also supported by zero magnetic moment value compared to other synthesized complexes. Zinc complex does not show any d-d band due to completely filled d^{10} configuration of d orbital and exhibits ILCT bands. Based on the spectral and elemental analysis data, square planar geometry is proposed for zinc(II) complex.

3.3 Nuclear magnetic resonance spectroscopy

The proton NMR spectra of synthesized ligand and its zinc metal complex were recorded at room temperature using DMSO- d_6 as solvent. Schiff base ligand shows the signals of phenyl multiplet at 6.7-8.6 ppm. These multiplets exist in zinc complex with slight chemical shift. Moreover, the ligand shows a signal at 10.4 ppm assigned to indole containing -NH proton [13] which remains unchanged in synthesized complex indicating that it does not participate in coordination and also the ligand shows the proton signals of -HC=N, -CH, and -CH₂ groups at 9.71, 4.2 and 3.5 ppm respectively. In proton spectrum of

zinc complex, the -HC=N peak appears at upfield region of 9.04 ppm suggesting shielding of azomethine group due to the complexation of ligand to zinc(II) ion and the -CH and -CH₂ groups are appeared at same region in this examined complex.

3.4. Cytotoxicity

The positive results from the DNA interaction studies for these synthesized complexes [6] encouraged us to move on to evaluate their *in vitro* cytotoxicity behavior against two cancer cell lines MCF-7 (human breast cancer cell line) and HepG2 (human liver cancer cell line) and one normal cell line NHDF (Normal Human Dermal Fibroblasts) through a colorimetric viability (MTT) assay. Standard drug of cisplatin is used as positive control. The cell lines were incubated with prepared complexes at 48 h under identical conditions. The cytotoxicity of the complexes was evaluated by determining the concentration of a compound required to inhibit the cell viability by 50% (IC₅₀ concentration). The 50% of inhibitory values of the complexes against the three above mentioned cell lines are summarized in Table 2. The results indicate that all the metal complexes show higher inhibitory activity against MCF-7 and HepG2. Moreover the complexes display lower inhibitory rates against normal cell line NHDF than the standard anticancer drug. The entire result shows that the decrease of cell propagation was found to be dose and time dependent one. The order of the toxicity of the complexes against the above cancer cell lines is copper(II)>nickel(II)>zinc(II)>cobalt(II).

Compared to other complexes, copper(II) complex exhibits higher cytotoxicity effect against the cancer cell lines. This result may be ascribed by the factors like type of ligand and its coordinating ability with metal ion, size of the metal atom, the presence of electron withdrawing groups [14], the binding affinity of the complexes and pharmacokinetic factors. All these features play an important role for the

anticancer activity of metal chelates [15, 16]. The cytotoxic effects of these synthesized metal complexes against selected cell lines are portrayed in Figure 1.

Table 2 IC₅₀ values of [MC₃₆H₂₆N₆O₈Cl₂] towards MCF-7 and HepG2

Compounds	IC ₅₀ values (μM)		
	MCF-7	HepG2	NHDF
[CuL ₂]	30 ± 0.6	25 ± 0.6	6 ± 0.8
[CoL ₂]	34 ± 1.1	28 ± 1.1	78 ± 1.0
[NiL ₂]	31 ± 0.8	26 ± 0.8	3 ± 0.6
[ZnL ₂]	36 ± 0.8	30 ± 0.8	4 ± 0.8
Cisplatin (Standard)	12 ± 1.2	11 ± 1.2	4 ± 1.1

*IC₅₀ = concentration of drug required to inhibit growth of 50% of the cancer cells (μM) (data are mean ± SD of four replicates to each).

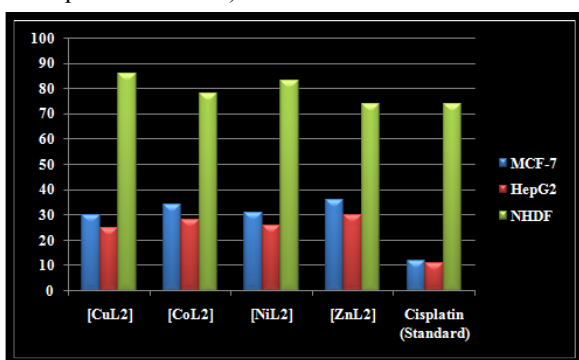


Figure 1. The IC₅₀ values of the synthesized complexes and standard cisplatin against MCF-7, HepG2 and NHDF cell lines.

4. CONCLUSION

In this study, we synthesized a series Cu (II), Co (II), Ni (II) and Zn (II) monoligand complexes. Coordination sites and geometry of the synthesized compounds were characterized by various physicochemical and analytical techniques like magnetic susceptibility, molar conductance, FT IR, UV-Vis and proton NMR, spectral studies. These spectral data reveals that presence square planar arrangement around the metal center. The lower conductivity values of these metal complexes indicate that are non-electrolytic nature. Toxicity behavior the metal complexes tested by MTT assay on normal NHDF and two cancerous cell lines, MCF-7 and Hep G2. Both compounds show cytotoxicity activity as a dose and time dependent manner. Moreover, the complexes exhibit a limited cytotoxicity effect on normal cell line NHDF. This effect of cytotoxicity of

synthesized metal complexes compared with standard drug of cisplatin.

Acknowledgments

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Synthesis and electrochemical analysis of TiO₂ thin film prepared by spray pyrolysis technique

A.Mathi Vathani¹, S.Dhanalakshmi², J.Pandiarajan¹, N.Jeyakumaran¹ and N.Prithivikumaran^{1*}

¹Department of Physics, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

²Department of Chemistry, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – In this study, we report electrochemical analysis of TiO₂ thin film electrode. Electrochemistry is a powerful tool to investigate reactions involving electron transfers. TiO₂ thin films got interest in electrochemistry due to its good biocompatibility, large surface area and immobilizing ability. TiO₂ thin film electrode was deposited on glass substrate by Spray pyrolysis technique. Cyclic voltammetry was used to analyze the electrochemical process of the TiO₂ thin film electrode. The electrochemical process of TiO₂ thin film electrode shows that the electron transfer rate was good. TiO₂ thin film electrode also exhibits good linearity and high stability.

Keywords: Thin films; TiO₂; Spray pyrolysis; electrochemical studies

1. INTRODUCTION

In recent years the electrochemical analysis have gained attention in the investigation of important biological molecules and drugs because of their simplicity, cost effectiveness, easy handling and highly sensitive compared to other methods [1]. Electrochemistry explains the flow of electrons into chemical changes. In inorganic chemistry, the chemical change is happened by the oxidation or reduction of a metal complex. Electrochemical cell is used to study the electrochemical processes. It usually has three electrodes and an electrolyte. An electrode is the boundary at which substrates may accept or lose electron(s). An electrolyte is required to supply electrical conductivity between the two electrodes. Cyclic voltammetry (CV) is the first experimental three electrode cell carried out for the electrochemical study of a composite, biological material or an electrode surface.

The cyclic voltammetry is a simple and easy technique and used to examine all types of electrochemical reactions. This method gives information about the reactions type observed in the method and the potentials at which they

happen. The plot obtained for current versus applied potential is called as a voltammogram. It provides the quantitative and qualitative information about the species involved in the oxidation or reduction reaction. The applied potential is calculated at the reference electrode, as the counter electrode closes the electrical circuit for the current to flow. The experiments are done by the potentiostat that successfully controls the voltage between the reference and working electrode and measures the current through the counter electrode. The working, reference, and counter/auxiliary electrodes together make up a balanced three electrode system [2].

Now a day's transparent metal oxide thin films are broadly used materials in various applications. The metal oxide semiconductor thin films such as TiO₂, ZnO, and SnO₂ are widely researched and extensively considered for various applications with high performance. Among these TiO₂ is a widely used semiconductor material for various applications such as dye-sensitized solar cells, water photoelectrolysis, photocatalysis, gas sensors, Chemical Oxygen Detection (COD) sensor and biosensor [3]. Environmental friendly TiO₂ thin films got interest in the field of electrochemistry due to its good biocompatibility, immobilizing ability, large surface area and good surface, structural, physical, chemical and optical properties [4].

TiO₂ thin film electrode was fabricated by Spray pyrolysis technique. Spray Pyrolysis is a cost effective, simple and efficient technique. This technique has the capability to produce large surface area, high quality adherent films with uniformity, easiness of

doping, operates at moderate temperatures (100-500°C) that opens the possibility of wide variety of substrates, control of thickness, variation of film composition along with thickness and possibility of multilayer deposition [5, 6].

2. CHEMICALS AND METHODS

The chemicals used for the preparation of TiO₂ thin film electrode was titanium tetraisopropoxide (TTIP, Ti{OCH(CH₃)₂}₄, 97%), ethanol (C₂H₅OH, 99.9%) and acetyl acetone (AcAc, CH₃COCH₂COCH₃, 98%). Potassium hydroxide (KOH) pellets was used for preparation of KOH electrolyte buffer solution. All the chemicals were used as received.

2.1. Preparation of TiO₂ solution

TiO₂ solution was synthesized by sol gel method. Ethanol was mixed with TTIP and stirred for 10 minutes. Then acetyl acetone was added with that mixture to stabilize the solution without precipitation and stirred vigorously for 1 hour. The molar ratio of TTIP, ethanol and AcAc was sustained as 1:10:1.

2.2. Preparation of TiO₂ thin films

TiO₂ thin films were deposited on finely cleaned glass slides by Spray pyrolysis technique. The prepared TiO₂ solution was loaded into the spray unit. The TiO₂ solution was sprayed with spray rate of 4ml/min, air as carrier gas, pressure of 1 bar, at a substrate temperature of 350 °C, nozzle to substrate distance as 15cm. TiO₂ solution was sprayed for 1 minute over the glass slide and then the film was pre-annealed for 10 minutes at 350 °C in muffle furnace. This was considered as 1 coating. The similar process was followed upto 10 coatings. After that the TiO₂ thin film was post annealed at 500 °C for 1hour. Deposited TiO₂ thin film was electrochemically characterized.

2.3 Construction of electrochemical cell

Electrochemical analysis was performed by CHI604E electrochemical work station. The working electrode was TiO₂ thin film. Ag/AgCl (KCl) electrode served as reference electrode

and polished glassy carbon electrode (GCE) served as counter electrode. The electrolyte solution was 1M KOH buffer solution.

3. RESULT AND DISCUSSION

3.1 Electrochemical analysis of TiO₂ electrode

The electrochemical measurements of TiO₂ electrode was performed at different scan rates 25, 50, 75 and 100mV/s in a potential range of -0.5 to 0.5 V maintained at room temperature. The importance of scan rate in the CV experiment is it controls how fast the applied potential is scanned. Faster the scan rates lead to a decrease in the size of the diffusion layer as a result, higher currents are observed [7, 8].

Figure 1 shows the CV sweep plots of TiO₂ electrode at the scan rates of 25mV/s, 50mV/s, 75mV/s and 100mV/s. The anodic peak potentials (E_{pa}) and cathodic peak potentials (E_{pc}) for TiO₂ electrode with various scan rates are shown in Table 1. It was observed that increasing the scan rate the anodic peak potentials shift towards higher potential and cathodic peak potentials shift towards lower potential which recommends the surface diffusion controlled and quasi reversible process [9].

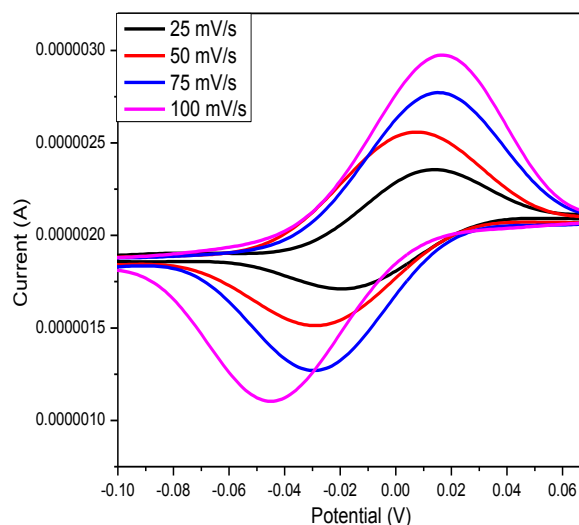


Figure 1: CV plot for TiO₂ electrode at various scan rates.

Table 1: anodic and cathodic peak potential (E_{pa} , E_{pc}) & anodic and cathodic peak current (I_{pa} , I_{pc}) of TiO_2 electrode.

Scan rate (mV/s)	E_{pa} (V)	E_{pc} (V)	I_{pa} (μA)	I_{pc} (μA)
25	0.0127	-0.0185	0.411	-0.333
50	0.0078	-0.0287	0.621	-0.541
75	0.0156	-0.0291	0.792	-0.772
100	0.0166	-0.0452	0.975	-0.842

The anodic peak current (I_{pa}) and cathodic peak current (I_{pc}) for TiO_2 electrode with various scan rates were obtained from the Figure 1 and shown in Table 1. It was noted that the anodic current increases and cathodic current decreases with increase in scan rate from 25mV/s to 100mV/s.

The stability of the electrode was observed with respect to the number of scanned cycles [3]. The electrochemical response for TiO_2 electrode at 100mV/s scan rate for 10 cycles was shown in Figure 2. With increasing the number of cycles the CV sweep plot does not change. It signifies that the TiO_2 electrode has good stability which may be used as electrode material to construct sensors devices.

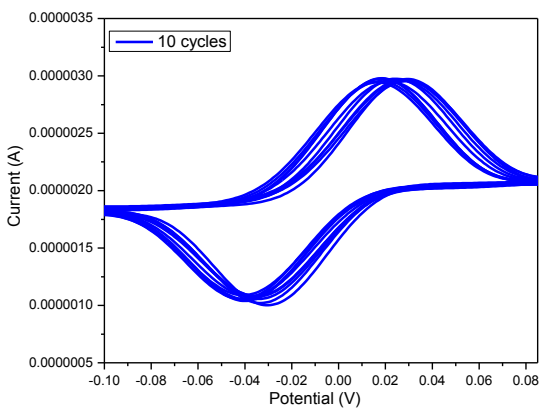


Figure 2: Electrochemical response of TiO_2 electrode at scan rate of 100mV/s for 10 cycles.

The correlation between scan rates and current for TiO_2 electrode was shown in Figure 3. The anodic peak current I_{pa} increased linearly with increasing scan rate which signifies the

direct electron transfer between the electrode and surface is diffusion controlled process [10, 11]. Likewise the cathodic peak current I_{pc} decreases linearly with increase in scan rate.

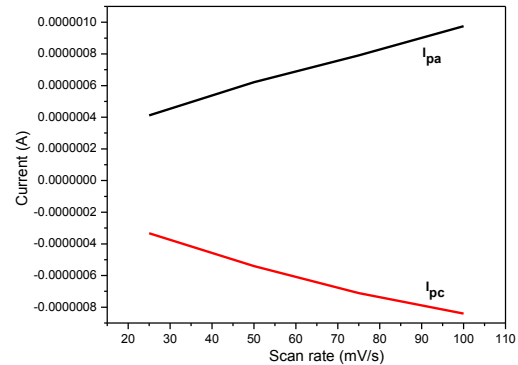


Figure 3: Correlation between anodic & cathodic current Vs Scan rate for TiO_2 electrode.

Figure 4 shows the Linearity calibration plot for anodic current Vs scan rate, which was obtained by least square regression method. The regression equation was I_{pa} (A) = $7E-09x + 2E-07$, with a correlation coefficient of 0.998.

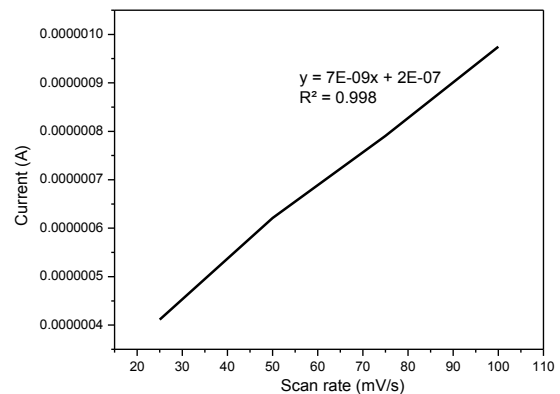


Figure 4: Linearity calibration plot for anodic current Vs Scan rate.

4. CONCLUSION

TiO_2 thin film electrode was effectively prepared by spray pyrolysis technique. Electrochemical analysis was carried out for TiO_2 thin film electrode with KOH electrolyte and shows that the electron transfer rate was good for it. Electrochemical performance of TiO_2 thin film electrode also reveals excellent linearity and high stability. Hence TiO_2 thin film electrode was potential candidate for sensor device applications.

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Molecular docking studies of mixed ligand complexes using flavonoids as precursors

J. Porkodi and N. Raman

Department of Chemistry, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract - Flavonoids are a group of plant phenolics which provide various health benefits through cell signaling pathways and antioxidant effects. In the present study, a new series of transition mixed ligand complexes of Co(II), Ni(II), Cu(II) and Zn(II) were synthesized by incorporating curcumin and quercetin flavonoid precursors. The structural features of the synthesized complexes had been explored by UV-Vis, NMR and conductivity measurements. These data support an octahedral geometry of the synthesized complexes. *In silico* biological activity score for the ligand was predicted using PASS online software. Based on the *in silico* results molecular docking studies was carried out to find out the interaction between the targets like cancer DNA (1 BNA), 6-COX enzyme and the synthesized compounds using HEX 8.0

Keywords: Flavanoids; curcumin Schiff base; VLS3D; Molecular Docking

1. INTRODUCTION

Curcumin (1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione) is a yellow component of the Indian spice turmeric, manufactured from the rhizome of the perennial herb *Curcuma longa* [1]. Curcumin has been referred to as "curecumin"[2,3] because it possesses various biological activities like antitumoral, antimicrobial, anti-inflammatory, antioxidant, anticancer, antihepatotoxic, antihyperlipidemic, antiviral and anti-Alzheimer's disease.

Quercetin is an yellow pigment in plant products which can help to alleviate eczema, sinusitis, asthma and hay fever [4,5]. The literature survey over the past few decades on curcumin reveals that its biological activity is enhanced after forming Schiff base with heterocyclic ring containing compounds like 4-aminoantipyrine. Recent progress explores that the individual biological activity of both the flavonoids is enhanced after forming complexes with metal ions [6, 7]. Increasingly over the last decade, computational (*in silico*) methods have been developed and applied to pharmacology hypothesis development and testing of lead

compounds. These *in silico* methods incorporate databases, quantitative structure-activity relationships, pharmacophores, homology models and other molecular modeling approaches, machine learning, data mining, network analysis tools and data analysis tools that use a computer. *In silico* methods are primarily used along with the *in vitro* data create the model as well as to test it. Such models have seen frequently use in the discovery and optimization of novel molecules with affinity towards the target, the clarification of absorption, distribution, metabolism, excretion and toxicity properties as well as physicochemical characterization

Based on the literature survey and the above facts, in the present study, a few mixed ligand complexes using the above biologically active flavanoids (curcumin and quercetin) were synthesized. They have been characterized by UV-Vis, NMR and TGA analytical techniques. The biological activity of the curcumin Schiff base has been predicted by PASS online. As per the results obtained from the above software, Molecular docking studies was carried out in HEX 8.0 and Argus lab software.

2. EXPERIMENTAL

2.1 Synthesis of compounds

2.1.1 Synthesis of Curcumin derived Schiff base (L₁)

Curcumin derived Schiff base was prepared by condensing equimolar concentration of curcumin with 4-aminoantipyrine in 30 mL of ethanol. This mixture was refluxed for *ca* 3 h. Then the volume of reaction mixture was reduced and washed with petroleum-ether for 3 times to remove the reactants. Finally it was poured into water. The red orange precipitate was obtained.

Then, it was recrystallized in hot solution of ethanol and dried *in vacuo*.

2.1.2 Synthesis of mixed ligand metal complexes of flavonoids

About 1:1 ratio (5 mM) of synthesized curcumin derived Schiff base L_1 was stirred with metal(II) chloride [Cu(II)/Ni(II)/Co(II)/Zn(II)] in methanolic solution for *ca* 30 min. To this mixture, 5 mM of methanolic solution of quercetin (L_2) was added. The whole mixture was stirred for about 4 h. The obtained solid metal complexes was filtered, dried and recrystallized from hot ethanolic solution.

2.3 *In silico* biological activity prediction

2.3.1 PASS online biological activity prediction software

PASS is a commonly used online software in drug discovery and development environment. It provides a way to find the most probable lead with essential activity among the compounds from commercial data base. It is used to predict the biological activity of the synthesized Schiff base. PASS Web tool predicts the 3678 types of pharmacological effects based on its structure. This tool interprets the biological active spectra using 2D structure of molecule [8,9].

3. RESULTS AND DISCUSSION

The synthesized metal complexes are soluble in DMF and DMSO. They are amorphous in nature with good stability. They have been characterized by various spectral and analytical techniques which show good agreement with the assigned formula of the metal complexes, ($ML_1L_2H_2O$). No single crystals suitable for X-ray determination could be isolated.

3.1 Electronic spectra and magnetic moments

The geometry of the synthesized metal complexes was predicted by electronic absorption data and magnetic moment values. The electronic spectra of ligand and complexes were recorded in the range of 200-1100nm. The

ligand shows two intense bands at 266 nm ($37,594\text{ cm}^{-1}$) and 434 nm ($23,041\text{ cm}^{-1}$) which are assigned to $\pi\rightarrow\pi^*$ and $n\rightarrow\pi^*$ transitions [10]. $[CuL_1L_2H_2O]$ shows an absorption band at $14,753\text{ cm}^{-1}$ which corresponds to ${}^2E_g \rightarrow {}^2T_{2g}$ type of d-d transition. The magnetic susceptibility value is 1.82 BM which confirms the presence of one unpaired electron in its d-orbital and octahedral geometry of the copper complex. Similarly the metal complexes of $[CoL_1L_2H_2O]$ and $[NiL_1L_2H_2O]$ show absorption bands at $13,345\text{ cm}^{-1}$ and $12,586\text{ cm}^{-1}$ which correspond to ${}^4T_{1g}(F) \rightarrow {}^4T_{2g}(F)$ and ${}^3A_{2g}(F) \rightarrow {}^3T_{1g}(F)$ transitions respectively. The magnetic susceptibility values for cobalt and nickel complexes are 4.52 and 3.18 BM which strongly favour the octahedral geometry of the synthesized mixed ligand complexes.

Due to the diamagnetic nature of Zn(II) complex, the d-d transition and magnetic moment measurement are not possible. So, the geometry of the Zn(II) complex is predicted based on its elemental analysis and other analytical data which show the complex may adopt the octahedral geometry. Moreover, the lower molar conductance values ($10\text{-}16\ \Omega^{-1}\text{cm}^{-2}\text{mol}^{-1}$) of the complexes confirmed the ML_1L_2 type which support that the complexes are non-electrolytic nature.

3.2 Nuclear magnetic resonance spectroscopy

The NMR spectra of the ligands (L_1 and L_2) and Zn complex were recorded at room temperature in DMSO- d_6 . The ${}^1\text{H}$ NMR spectrum of ligand L_1 showed one singlet peak at 12.4 ppm due to enolic OH proton. The ${}^1\text{H}$ NMR spectrum of ligand L_2 also showed one singlet peak at 12.5 ppm due to phenolic (5'OH). In the ${}^1\text{H}$ NMR spectrum of $[ZnL_1L_2H_2O]$ complex, these two peaks disappeared confirming the co-ordination of enolic OH of curcumin Schiff base (L_1) and phenolic 5'OH group of L_2 involved in complex formation.

In ^{13}C NMR spectrum, the ligand L_1 showed aromatic carbon peak around 124-138 ppm. This ligand also showed C=O carbon peak at 183 ppm and C=N carbon peak at 148.92 ppm which were shifted to upfield at 180.3 ppm and 146 ppm upon coordination with zinc(II) metal ion. Similarly, the ligand L_2 showed C=O carbon peak at 176.28 ppm which was also shifted to 170 ppm upon complexation. These observations confirm the coordination of -C=O of ligands L_1 and L_2 , -C=N (functional group) of ligand L_1 with zinc(II) metal ion.

3.3 PASS – Biological activity prediction of Schiff base

PASS online software was used to predict the biological activity of the curcumin based Schiff base L_1 . From the biological data, it was noted that the anti-inflammatory activity of the curcumin was increased after the formation of the Schiff base.

Table 1. Biological activity prediction of Curcumin Schiff base using PASS online software

P_a	P_i	Activity
0,863	0,005	Anti-inflammatory
0,785	0,004	Insulysin inhibitor
0,480	0,013	Rheumatoid arthritis treatment
0,482	0,026	Antiulcerative
0,436	0,017	Prostate cancer treatment
0,374	0,133	Antiviral (Picornavirus)
0,310	0,075	Antimycobacterial
0,279	0,068	Antibacterial
0,215	0,006	HIV-1 integrase inhibitor
0,233	0,041	Antioxidant

Table 1 shows the PASS prediction analysis of the synthesized ligand L_1 . The data imply that the anti-inflammatory activity of the curcumin derived Schiff base L_1 (0.86 P_a) is higher when compared to that of curcumin (0.45 P_a).

3.4 Molecular docking

The molecular docking technique has been played significant roles in understanding the DNA interactions with drug which helps in the rational drug design and discovery [11]. It is generally accepted that, if the binding free energy is low, then the potential of the binding affinity is more between the receptor (DNA) and synthesized compounds. Based on the P_a value retrieved from the PASS biological activity prediction software, the receptor COX which is responsible for the anti-inflammatory activity is found out. Its 3D structure is downloaded from protein data bank. Its water molecules are removed from Argus lab software. Molecular docking is carried out in HEX 8.0 and it was viewed in discovery studio visualizer. The Docking Score for the all the metal complexes is higher when compared to that of the ligand L . Heedless of all complexes, copper(II) complex has higher binding efficiency with cancer DNA than the other complexes. Figure 1 shows the molecular docking of 6 COX with copper(II) complex. Molecular docking of 1 BNA with cobalt(II) complex is given in Figure 2.

Molecular docking of the synthesized compounds with 6 COX and 1 BNA is presented in Table 2.

Table 2. Molecular docking of the synthesized compounds with 6 COX and 1 BNA

Receptor	Ligand L_1 kJ mol $^{-1}$	Cu(II) complex kJ mol $^{-1}$	Ni(II) complex kJ mol $^{-1}$	Co(II) complex kJ mol $^{-1}$	Zn(II) complex kJ mol $^{-1}$
6 COX	-409.26	-498.65	-452.87	-425.23	-445.56
1 BNA	-344.63	-393.6	-365.6	-362.8	-329.3

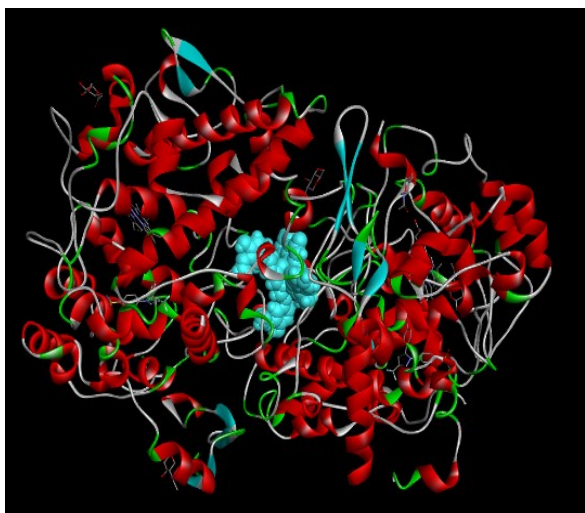


Figure 1. Molecular docking of 6 COX with copper (II) complex

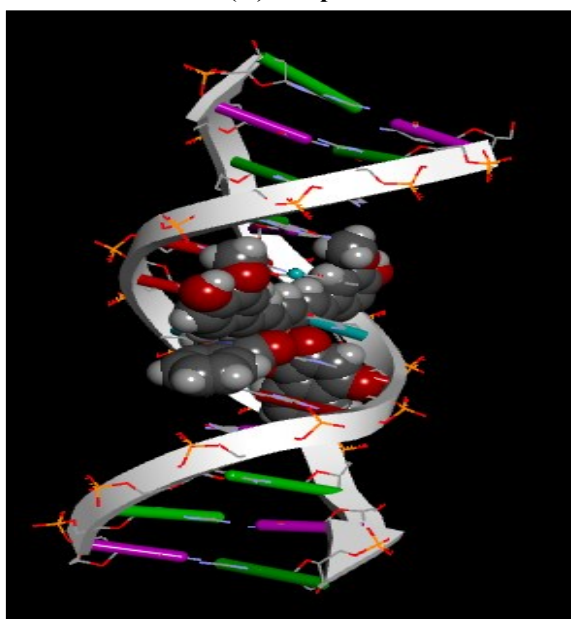


Figure 2. Molecular docking of 1 BNA with cobalt(II) complex

4. CONCLUSION

In the present study, new mixed ligand complexes of flavonoids derivatives were synthesized. The coordination site for the ligands L_1 and L_2 with the metal ions were confirmed by NMR spectral studies. The octahedral geometry and nature of the metal complexes were corroborated by evaluating electronic, magnetic moments and UV-Vis studies.

The output of PASS online software exhibits higher anti-inflammatory activity of the curcumin derived Schiff base L_1 than curcumin. Molecular docking studies revealed that, the copper (II) complex has higher binding efficiency with the target 6-COX cyclooxygenase enzyme and cancer DNA 1 BNA.

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Synthesis and Characterization Studies of CdS Nanoparticles

R. Shiyamala Devi¹, T. Sheela Priya¹, I. Rathinamala¹ and N. Prithvikumar^{2*}

¹Department of Physics, V.V. Vanniaperumal College for Women (Autonomous), Virudhunagar.

²Department of Physics, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – In the present work, a systematic study has been carried out to understand the synthesis, structural, surface morphological and optical properties of CdS nanoparticles. In this work, Cadmium Sulphide nanoparticle was successfully synthesized by sol-gel method at room temperature using cadmium nitrate and thiourea as the precursor solutions. The prepared nanoparticles were characterized by X-Ray Diffraction method (XRD), Scanning Electron Microscopy (SEM), Energy Dispersive X – ray Analysis (EDAX) and UV – Visible spectroscopy. The XRD analysis shows that the particles have crystallites with hexagonal structure along (1 0 1) plane. The grain size was found to be in the range 43.50nm. The SEM micrograph of CdS nanoparticles post annealed at 300°C reveals the uniform cloud like structure. The UV visible spectrum shows that the band gap of CdS nanoparticle is about 3.0eV.

Keywords: Sol - gel method; CdS nanoparticle; XRD; SEM.

1. INTRODUCTION

Semiconductor nanoparticles (quantum dots) have been investigated over the past years due to their specific optic, electronic and catalytic properties. These properties emerge from the high surface-to-volume ratio present in nanoparticles. Cadmium chalcogenides are well studied materials [1, 2] due to, among other interesting properties, their well-established relationship between the optical absorption and their size. Due to high stability, excellent physical, chemical and structural properties, availability, ease of preparation and handling, CdS nanomaterials can be exploited in various fields of life. In photonics, due to its photoconducting and electrical properties can be used in sensors, photodetectors, optical filters, and all optical switches[3–7]. It exhibits high photosensitivity and its band gap appears in the visible spectrum[8], enabling it to be useful for many commercial and potential applications in photovoltaics, as hetero-junction solar cells and thin film solar cells. In this work, cadmium sulfide nanoparticles were synthesized using sol-gel process; this method

is not time consuming and can be developed at room temperature.

2. EXPERIMENTAL PROCEDURE

2.1 Synthesis

To prepare CdS nanoparticle, cadmium nitrate which was dissolved in 100 ml of distilled water and the solution was stirred for 30 min at room temperature. After 30 min stirring process, 2 ml of ammonia solution was introduced and then the solution was stirred for an hour at room temperature. The process was then followed by addition of thiourea precursor into the solution. Soon after the introduction of thiourea the entire solution changed into deep yellow.

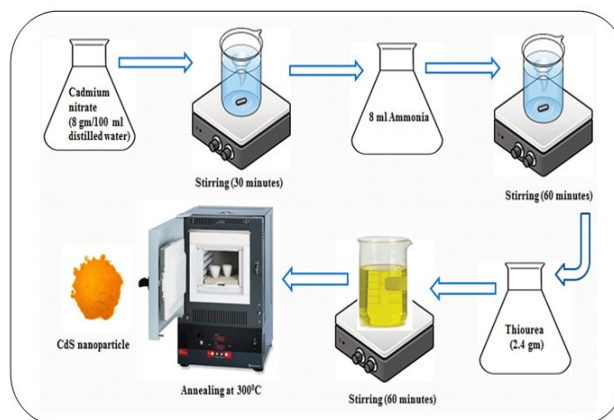


Figure 1: Mechanism used for the preparation of CdS nanoparticle

The particles are then collected in a petri dish and dried by keeping the material in a hot air oven for 3 hours with the temperature of 300°C. Then the free standing powder was collected and preserved in an air tight container. The simple mechanism to prepare CdS nanoparticle was shown in Figure 1.

3. RESULTS AND DISCUSSION

3.1 Structural Analysis

For the prepared CdS nanoparticles X – Ray diffraction (XRD) pattern was obtained using X'PERT PRO X – ray diffractometer, which was operated at 40 KV and 30 mA with

CuK α_1 radiation of wavelength 1.5407Å. Figure 2 shows the diffraction pattern of the sample obtained. The diffraction peaks positioned at 2 θ values of 26.8°, 28.47°, 36.96°, 43.99°, 51.30° and 52.15° displays hexagonal wurtzite phase of CdS (JCPDS file – 06- 0314) and can be indexed respectively to the (1 0 0), (0 0 2), (1 0 1), (1 0 2), (1 1 0), (2 0 1) crystal planes. The XRD pattern reveals that the crystalline nature of CdS nanoparticle having (1 0 1) as the major plane.

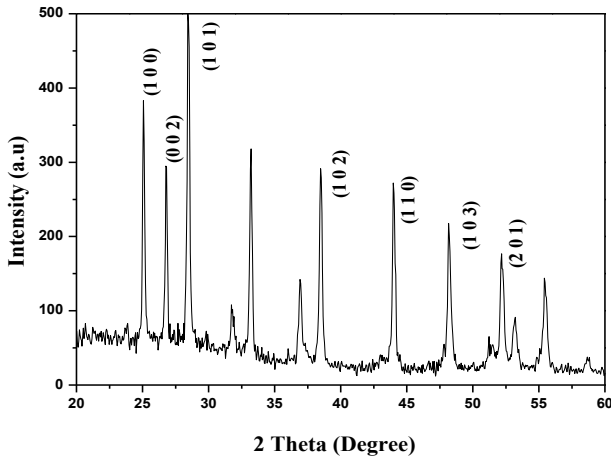


Figure 2: X-Ray Diffraction pattern of CdS nanoparticle

The crystalline size of prepared CdS nanoparticles was obtained by Debye-scherrer formula

$$D = \frac{0.9 \lambda}{\beta \cos \theta} \text{ (nm)} \quad (1)$$

where D is the average crystallite size, λ is the X – ray wavelength (CuK α_1 = 1.54060 Å), β is the full width at half maximum (FWHM) of XRD peaks and θ is the Bragg angle. The synthesized nanoparticles have good crystallinity and it was in the hexagonal wurtzite phase. The average particle size obtained using the diffraction pattern was about 43.50 nm. The dislocation density (δ), defined as the length of dislocation lines per unit volume, has been estimated using the formula [9],

$$\delta = \frac{1}{D^2} \quad (2)$$

Where ‘ δ ’ being the measure of amount of defects in a crystal. From the XRD data the strain (ϵ), the lattice parameters ‘a’ & ‘c’ and the volume of the unit cell were evaluated using the relations, [10],

$$\frac{1}{d^2} = \frac{4}{3} \frac{h^2 + hk + k^2}{a^2} + \frac{l^2}{c^2} \quad (3)$$

$$V = \frac{\sqrt{3}}{2} a^2 c \quad (4)$$

$$\epsilon = \frac{\beta \cos \theta}{4} \quad (5)$$

Where ‘d’ is the interplanar spacing. The calculated crystallite size, dislocation density, lattice parameters, volume of the unit cell and strain values has been summarized in Table 1.

Table 1: Structural Parameters of the prepared CdS nanoparticle

Sample	Crystallite Size D (nm)	Dislocation Density δ (*10 ¹⁶) (lines/m ²)	Strain ϵ *10 ⁻³	Lattice Parameter		Unit cell Volume V (Å) ³	Bond length L(Å)
				a (Å)	c (Å)		
CdS	43.50 *10 ⁻⁹	5.2847*10 ¹⁴	0.04769	4.1040	6.6497	97.00	2.4023
JCPDS reference	-----	-----	-----	4.136	6.713	99.45	

3.2 Surface Morphology and Elemental Analysis

The surface morphology of the sample was recorded using TESCAN VEGA-3 LMU Scanning electron microscope.

The SEM micrographs of CdS nanoparticles post annealed in air at 300°c are shown in Figure 3 for different magnifications.

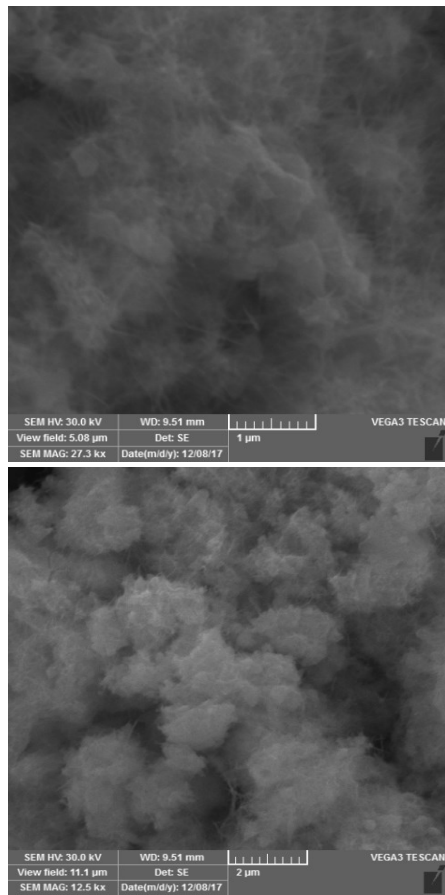


Figure 3: SEM Micrograph of CdS nanoparticle

The uniform cloud like structure was depicted on the SEM micrograph of the prepared CdS nanoparticle. It can be easily understood that the shape and arrangement of the grains are highly influenced by the crystallographic orientation. The EDAX elemental analysis (Figure 4) shows that the prepared nanoparticles were mainly composed of Cd & S and its respective atomic weight percentage was shown at the inset of the Figure 4.

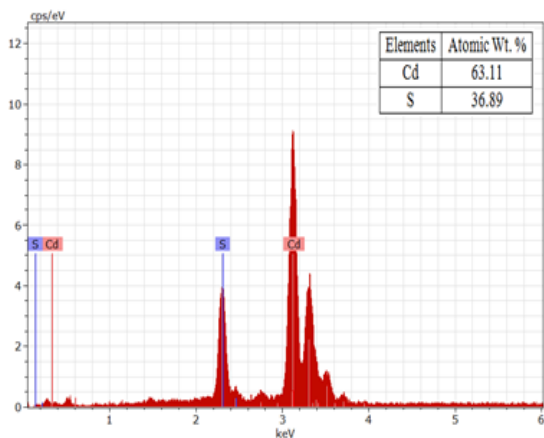


Figure 4: EDX spectra of CdS nanoparticle

3.3 Optical Analysis - UV Visible Spectral Study

The prepared CdS nanoparticle was subjected to UV – visible spectral study and the results were analyzed. In the present study, optical transmission spectra were recorded in the range of 200 – 800 nm using Shimadzu 1800 UV – VIS – NIR spectrophotometer. A fundamental property of semiconductor compounds is the band gap, the energy separation between the filled valence band and the empty conduction band. Cadmium sulfide is a direct band gap semiconductor with a band gap value of 2.4 eV in the bulk form. The relation between the absorption coefficient and the incident photon energy in a direct transition is given by,

$$\alpha h\nu = A(h\nu - E_g)^n \tag{6}$$

Where A – constant, E_g - optical energy gap, $n = 1/2$ and $3/2$ for direct allowed and direct forbidden transitions respectively. Thus, a plot of $(\alpha h\nu)^2$ versus $h\nu$, termed as Tauc’s plot, allows one to determine the energy gap [11].

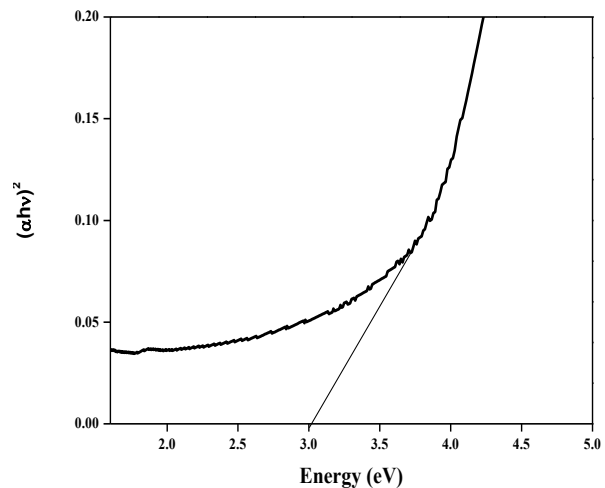


Figure 5: Tauc’s plot of the prepared CdS nanoparticle

A plot of $(\alpha h\nu)^2$ versus $h\nu$ should yield a straight line, and its intercept with the horizontal axis allows one to determine the phonon energy and the energy band gap of a semiconductor material. Figure 5 shows the Tauc’s plot for the synthesized CdS nanoparticle. We calculated the band gap of sample in order to determine if there is a “size quantization” effect in the synthesized

materials. The band gap value obtained was 3.0eV, this value is shifted compared with the bulk value and this could be a consequence of a “size quantization” effect in the sample. As expected, reduction in particle size gives a shift in the optical band gap of the sample.

4. CONCLUSIONS

In this work, CdS nanoparticle was successfully synthesized by sol-gel method at room temperature using thiourea as a source for sulphide ion in the presence of cadmium nitrate. The structural, surface morphological and optical properties of CdS nanoparticles were investigated. The XRD results suggests that the formation of CdS hexagonal structure along (1 0 1) as the major plane. The structural parameter such as crystallite size, strain and dislocation density of the prepared sample were estimated and reported. The SEM image of the CdS nanoparticle shows that the grains are cloud like shaped over the entire surface of the sample. The surface compositions of the nanoparticle were identified by EDAX analysis. The energy band can be determined from the Tauc's plot with UV-Visible absorption spectra. The present work shows that the prepared CdS nanoparticle proves to be a promising candidate for the fabrication of optoelectronic devices such as sensors, photovoltaic devices, solar cells etc.

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A Study on Under Graduate Student Teachers Preference for Emotional, Social and Academic Adjustment with Reference to Pudukkottai District

S.Kumaresan and R.Neelamegam

Department of Management Studies, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract - The study analyses the student teachers' preference for emotional, social and academic adjustment. Survey includes the B.Ed. colleges in Pudukkottai district with sample respondents of 322 student teachers in seven B.Ed. colleges. Adjustment in B.Ed. college is the process of adapting to the role of being a student teacher and to various aspects of the college environment. Failure to adjust can lead to mental health issues and college refusal or college dropout and may require college counselling. The present study focuses on ranking the factor which is more influencing the level of agreement with emotional, social and academic adjustment.

Keywords: Emotional adjustment, Social adjustment, Academic adjustment.

1. INTRODUCTION

Adjustment is the effective control of the emotions and manifestations of good and appropriate responses to the situation of life when a person is developing and using his capacities more from dependence to independence is ready to help others, take active part in his/her social groups, readily accepts to others, take active part in his social groups readily accepts the mistake.

In the words of Coleman, James C, "Adjustment is the outcome of the individual's attempts to deal with the stress and meet his needs: also his efforts to maintain harmonious relationships with the environment".

Emotional adjustment is one of the most important aspects of personal adjustment and physical health if a person depends largely upon his emotional health and adjustment.

Social adjustment means those types of relationships which involve the accommodation of the individual to circumstances in his social environment for the satisfaction of his needs or motives. Actually adjustment means reduction of tension or satisfaction of motives.

Tinto (1975) described academic adjustment of higher education students as the degree of students' adaptation to academic manner of their educational life. The amount of accomplishment of students in their studies displays by academic adjustment, this accomplishment defines by students' success in dealing with different kinds of educational demands (Baker & Siryk, 1999).

Research question was the following

1. What adjustment of students teachers do to inform their teaching practice? 2. What are the preferred aspects for the emotional, social and academic adjustment towards academic achievement in the student teachers?

2. OBJECTIVES OF THE STUDY

- ✓ To study the level of agreement with emotional, social and academic adjustment among under graduate student teachers
- ✓ To know the ranks for the identification of the factors that are more influencing the level of agreement with emotional, social and academic adjustment among under graduate student teachers

3. HYPOTHESIS

H₀: There is no difference in the respondents' giving of ranks to identify the factors which are more influencing the level of agreement with emotional, social and academic adjustment.

4. METHODOLOGY

The investigators have adopted the survey method of research to study the emotional, social and academic adjustment of under graduate student teachers in Pudukkottai district. They used stratified random sampling technique for selecting of the samples. The stratification was done on the basis of gender and locality of students. The sample consists of

322 student teachers from seven B.Ed. colleges in Pudukkottai district. The statistical techniques used for analyzing the data for the present study were percentage, mean, standard deviation, Friedman test and test of reliability of the data. In addition to the primary data, secondary data were also used in this study to explain the theoretical background of the subjects focused.

5. PERCEPTION ON EMOTIONAL ADJUSTMENT

5.1 Opinion on Various Views of Emotional Adjustment

The table 1.1 describes the distribution of the opinion with Emotional Adjustment, Regarding the factor “I have obtained the appreciation and guidance from my professors when I got high scores, I am glad and calm in

the college, I have given opinion in the meeting of my classmates, I have enlightened other students of the college, I feel proud when I met the senior students, I have attended the duties of my professors, My professors have always solved the problems concerning my studies, I have thought that my professors paid attention to my personal attitude in the college, I have liked to be in the company of students, I have accepted my mistakes, I was glad when my professors asked a question in the class, I was pleased when others asked to come forward in any programme in my college, Suppose, my classmates did something reasonably, I enjoyed them, I am courageous now, I got appreciation from my professors for my achievement, I have liked the ideas of having more holidays in the college” are analyzed.

Table 1.1 Level of Agreement with Emotional Adjustment

Symptoms	SDA		DA		N		A		SA		Total
	N	%	N	%	N	%	N	%	N	%	
I have obtained the appreciation and guidance from my professors when I got high scores	16	5	21	7	60	19	83	26	142	44	322
I am glad and calm in the college	45	14	24	7	58	18	82	25	113	35	322
I have given opinion in the meeting of my classmates	24	7	25	8	62	19	79	25	132	41	322
I have enlightened other students of the college	25	8	14	4	57	18	79	25	147	46	322
I feel proud when I met the senior students	17	5	27	8	57	18	81	25	140	43	322
I have attended the duties of my professors	26	8	22	7	50	16	75	23	149	46	322
My professors have always solved the problems concerning my studies	14	4	22	7	56	17	77	24	153	48	322
I have thought that my professors paid attention to my personal attitude in the college	15	5	20	6	59	18	80	25	148	46	322
I have liked to be in the company of students	25	8	15	5	59	18	88	27	135	42	322
I have accepted my mistakes	22	7	15	5	55	17	86	27	144	45	322
I was glad when my professors asked a question in the class	28	9	19	6	47	15	78	24	150	47	322
I was pleased when others asked to come forward in any programme in my college	18	6	18	6	54	17	86	27	146	45	322
Suppose, my classmates did something reasonably, I enjoyed them	21	7	13	4	58	18	75	23	155	48	322
I am courageous now	17	5	18	6	55	17	70	22	162	50	322
I got appreciation from my professors for my achievement	17	5	22	7	50	16	79	25	154	48	322
I have liked the ideas of having more holidays in the college	31	10	22	7	51	16	77	24	141	44	322

Source: Primary Data

{Strongly Agree – SA, Agree – A, undecided – N (None), Disagree – DA, Strongly Disagree – SDA}

It is clear from the table 1.1 that majority of the respondents strongly agreed with the factor of “I have obtained the

appreciation and guidance from my professors when I got high scores, I am glad and calm in the college, I have given opinion in the meeting

of my classmates, I have enlightened other students of the college, I feel proud when I met the senior students, I have attended the duties of my professors, My professors have always solved the problems concerning my studies, I have thought that my professors paid attention to my personal attitude in the college, I have liked to be in the company of students, I have accepted my mistakes, I was glad when my professors asked a question in the class, I was pleased when others asked to come forward in any programme in my college, Suppose, my classmates did something reasonably, I enjoyed

them, I am courageous now, I got appreciation from my professors for my achievement, I have liked the ideas of having more holidays in the college”.

5.2. Hypothesis Testing by Friedman Test

Friedman’s test was applied to verify the following hypothesis.

H₀: There is no difference in the respondents’ giving of ranks to identify the factors which are more influencing the level of agreement with emotional adjustment.

The results are given in Table 1.2.

Table 1.2 Friedman Test - Agreement with Emotional Adjustment

Symptoms	Mean	SD	Mean Rank	Reliability
I have obtained the appreciation and guidance from my professors when I got high scores	3.98	1.16	8.48	0.82
I am glad and calm in the college	3.60	1.39	7.27	
I have given opinion in the meeting of my classmates	3.84	1.25	8.24	
I have enlightened other students of the college	3.96	1.23	8.56	
I feel proud when I met the senior students	3.93	1.19	8.32	
I have attended the duties of my professors	3.93	1.27	8.54	
My professors have always solved the problems concerning my studies	4.03	1.15	8.73	
I have thought that my professors paid attention to my personal attitude in the college	4.01	1.15	8.72	
I have liked to be in the company of students	3.91	1.22	8.36	
I have accepted my mistakes	3.98	1.19	8.65	
I was glad when my professors asked a question in the class	3.94	1.28	8.53	
I was pleased when others asked to come forward in any programme in my college	4.01	1.16	8.67	
Suppose, my classmates did something reasonably, I enjoyed them	4.02	1.19	8.84	
I am courageous now	4.06	1.17	8.87	
I got appreciation from my professors for my achievement	4.03	1.18	8.83	
I have liked the ideas of having more holidays in the college	3.85	1.31	8.38	

Source: Primary Data

It could be noted from the above table that among the 16 factors “I am courageous now” was ranked first. It is followed by the “Suppose, my classmates did something reasonably, I enjoyed them”. “I got appreciation from my professors for my achievement” was ranked third.

6. PERCEPTION ON SOCIAL ADJUSTMENT

6.1 Opinion on Various Views of Social Adjustment

The table 1.3 describes the distribution of the opinion with Social Adjustment regarding the factor “*I have some intimate among the friends in college, I have braved in certain events in my college, I was admired in the meeting of the senior students, I have liked to join my classmates working together, I have established a friendly relationship with the students in the college, I have a friendly association with our fellow students, When my professors and I together gone somewhere, I have delighted them, I have enjoyed when I*

evaluated well than other classmates, When I had seen some students talked themselves, I thought they were gossiping about me, I have got friendship easily, I have blissful among those friends professor appreciate very much, When some students have talked together, I have also joined them willingly, If I did not understand the lesson, I clarified the doubt from my classmates, I have helped my friends in studies, I have liked to sit in the front seats of the classroom, I liked in asking a question when I didn't understand the lesson" are analyzed.

Table 1.3 Level of Agreement with Social Adjustment

Symptoms	SDA		DA		N		A		SA		Total
	N	%	N	%	N	%	N	%	N	%	
I have some intimate among the friends in college	19	6	18	6	57	18	83	26	145	45	322
I have braved in certain events in my college	17	5	22	7	62	19	78	24	143	44	322
I was admired in the meeting of the senior students	20	6	31	10	53	16	82	25	136	42	322
I have liked to join my classmates working together	16	5	16	5	55	17	90	28	145	45	322
I have established a friendly relationship with the students in the college	21	7	16	5	49	15	87	27	149	46	322
I have a friendly association with our fellow students	33	10	33	10	50	16	76	24	130	40	322
When my professors and I together gone somewhere, I have delighted them	22	7	25	8	65	20	84	26	126	39	322
I have enjoyed when I evaluated well than other classmates	19	6	23	7	54	17	87	27	139	43	322
When I had seen some students talked themselves, I thought they were gossiping about me	17	5	16	5	67	21	81	25	141	44	322
I have got friendship easily	27	8	25	8	47	15	74	23	149	46	322
I have blissful among those friends professor appreciate very much	16	5	24	7	54	17	74	23	154	48	322
When some students have talked together, I have also joined them willingly	19	6	19	6	52	16	82	25	150	47	322
If I did not understand the lesson, I clarified the doubt from my classmates	17	5	18	6	54	17	78	24	155	48	322
I have helped my friends in studies	18	6	23	7	50	16	71	22	160	50	322
I have liked to sit in the front seats of the classroom	25	8	22	7	60	19	70	22	145	45	322
I liked in asking a question when I didn't understand the lesson	24	7	24	7	52	16	79	25	143	44	322

Source: Primary Data

{Strongly Agree – SA, Agree – A, undecided – N (None), Disagree – DA, Strongly Disagree – SDA}

It is clear from the table 1.3 that majority of the respondents strongly agreed with the factor of “*I have some intimate among the friends in college, I have braved in certain events in my college, I was admired in the meeting of the senior students, I have liked to join my classmates working together, I have established a friendly relationship with the students in the college, I have a friendly association with our fellow students, When my professors and I together gone somewhere, I have delighted them, I have enjoyed when I have also joined them willingly, If I did not understand the lesson, I clarified the doubt from my classmates, I have helped my friends in studies, I have liked to sit in the front seats of the classroom, I liked in asking a question when I didn't understand the lesson*”.

6.2 Hypothesis Testing by Friedman Test

Friedman’s test was applied to verify the following hypothesis.

H₀: There is no difference in the respondents’ giving of ranks to identify the factors which are

more influencing the level of agreement with social adjustment.

The results are given in Table 1.4.

Table 1.4 Friedman Test – Agreement With Social Adjustment

Symptoms	Mean	SD	Mean Rank	Reliability
I have some intimate among the friends in college	3.98	1.18	8.68	0.845
I have braved in certain events in my college	3.96	1.18	8.50	
I was admired in the meeting of the senior students	3.88	1.23	8.19	
I have liked to join my classmates working together	4.03	1.13	8.68	
I have established a friendly relationship with the students in the college	4.02	1.19	8.82	
I have a friendly association with our fellow students	3.74	1.35	7.89	
When my professors and I together gone somewhere, I have delighted them	3.83	1.22	8.06	
I have enjoyed when I evaluated well than other classmates	3.94	1.19	8.39	
When I had seen some students talked themselves, I thought they were gossiping about me	3.97	1.15	8.60	
I have got friendship easily	3.91	1.29	8.39	
I have blissful among those friends professor appreciate very much	4.01	1.18	8.67	
When some students have talked together, I have also joined them willingly	4.01	1.18	8.70	
If I did not understand the lesson, I clarified the doubt from my classmates	4.04	1.16	8.95	
I have helped my friends in studies	4.03	1.20	8.78	
I have liked to sit in the front seats of the classroom	3.89	1.27	8.28	
I liked in asking a question when I didn’t understand the lesson	3.91	1.25	8.41	

Source: Primary Data

It could be noted from the table that among the 16 factors, “If I did not understand the lesson, I clarified the doubt from my classmates” was ranked first. It is followed by the “I have established a friendly relationship with the students in the college”. “I have helped my friends in studies” was ranked third.

7. PERCEPTION ON ACADEMIC ADJUSTMENT

7.1 Opinion on Various Views of Academic Adjustment

The table 1.5 describes the distribution of the opinion with Academic Adjustment Regarding the factor “I have paid attention to the lesson been taught in College, I have always ready to help my classmates in every way, I have read books and magazines

borrowed from the college library, I have lent my books or note-books gladly when my classmates asked for it, I am interested in the things regarding education, I have satisfied with progress in my studies, I have attracted the attention of my professor to myself in my college, I have memorized what I read, I have noted down the lessons taught in class correctly, I have attended when lesson taught in my college, I have easily written to understand the lessons taught in the class, My professors have praised me in the college, I have enjoyed to study, I have braved to attend examinations, I have satisfied with the teaching methods of the professors of this college, When I have got myself worked up and endeavoured to win the test, my friends/classmates/professors/ parents encouraged me” are analyzed.

Table 1.5 Level of Agreement with Academic Adjustment

Symptoms	SDA		DA		N		A		SA		Total
	N	%	N	%	N	%	N	%	N	%	
I have paid attention to the lesson been taught in College	18	6	63	20	109	34	30	9	102	32	322
I have always ready to help my classmates in every way	19	6	72	22	97	30	29	9	105	33	322
I have read books and magazines borrowed from the college library	18	6	70	22	98	30	40	12	96	30	322
I have lent my books or note-books gladly when my classmates asked for it	22	7	77	24	94	29	24	7	105	33	322
I am interested in the things regarding education	17	5	72	22	106	33	35	11	92	29	322
I have satisfied with progress in my studies	22	7	66	20	112	35	33	10	89	28	322
I have attracted the attention of my professor to myself in my college	25	8	78	24	84	26	27	8	108	34	322
I have memorized what I read	27	8	70	22	94	29	31	10	100	31	322
I have noted down the lessons taught in class correctly	24	7	79	25	94	29	35	11	90	28	322
I have attended when lesson taught in my college	21	7	66	20	103	32	35	11	97	30	322
I have easily written to understand the lessons taught in the class	19	6	70	22	103	32	36	11	94	29	322
My professors have praised me in the college	15	5	70	22	93	29	28	9	116	36	322
I have enjoyed to study	16	5	71	22	104	32	22	7	109	34	322
I have braved to attend examinations	19	6	79	25	83	26	29	9	112	35	322
I have satisfied with the teaching methods of the professors of this college	8	2	77	24	96	30	24	7	117	36	322
When I have got myself worked up and endeavoured to win the test, my friends/classmates/professors/ parents encouraged me	14	4	69	21	98	30	37	11	104	32	322

Source: Primary Data

{Strongly Agree – SA, Agree – A, undecided – N (None), Disagree – DA, Strongly Disagree – SDA}

It is clear from the table 1.5 that majority of the respondents Neutral with the factor of “I have paid attention to the lesson been taught in College, I have always ready to help my classmates in every way, I have read books and magazines borrowed from the college library, I am interested in the things regarding education, I have satisfied with progress in my studies, I have noted down the lessons taught in class correctly, I have attended when lesson taught in my college, I have easily written to understand the lessons taught in the class” and about strongly agreed with the factor of “I have lent my books or note-books gladly when my classmates asked for it, I have attracted the attention of my professor to myself in my college, I have

memorized what I read, My professors have praised me in the college, I have enjoyed to study, I have braved to attend examinations, I have satisfied with the teaching methods of the professors of this college, When I have got myself worked up and endeavoured to win the test, my friends/classmates/professors/ parents encouraged me”.

7.2 Hypothesis Testing by Friedman Test

Friedman’s test was applied to verify the following hypothesis.

H₀: There is no difference in the respondents’ giving of ranks to identify the factors which are more influencing the level of agreement with academic adjustment.

The results are given in table 1.6.

Table 1.6 Friedman Test – Agreement with Academic Adjustment

	Mean	SD	Mean Rank	Reliability
I have paid attention to the lesson been taught in College	3.42	1.27	8.62	0.947
I have always ready to help my classmates in every way	3.40	1.30	8.60	
I have read books and magazines borrowed from the college library	3.39	1.27	8.38	
I have lent my books or note-books gladly when my classmates asked for it	3.35	1.33	8.30	
I am interested in the things regarding education	3.35	1.25	8.38	
I have satisfied with progress in my studies	3.31	1.26	8.35	
I have attracted the attention of my professor to myself in my college	3.36	1.36	8.30	
I have memorized what I read	3.33	1.34	8.20	
I have noted down the lessons taught in class correctly	3.27	1.30	8.09	
I have attended when lesson taught in my college	3.38	1.28	8.46	
I have easily written to understand the lessons taught in the class	3.36	1.27	8.46	
My professors have praised me in the college	3.50	1.30	9.02	
I have enjoyed to study	3.43	1.29	8.68	
I have braved to attend examinations	3.42	1.34	8.50	
I have satisfied with the teaching methods of the professors of this college	3.51	1.27	9.03	
When I have got myself worked up and endeavoured to win the test, my friends/ classmates/professors/ parents encouraged me	3.46	1.26	8.61	

Source: Primary Data

It could be noted from the above table that among the 16 factors “I have satisfied with the teaching methods of the professors of this college” was ranked first. It is followed by the “My professors have praised me in the college”. “I have enjoyed to study” was ranked third.

8. SUGGESTIONS AND CONCLUSION

It is suggested that the professors, management and office administration could stimulate the students to achieve records in college level, district level and state level competitions such as education, sports, extra curricular activities and social activities. Student teachers would feel freedom in class room and college to opine their own ideas and feelings and enlighten other students in class room and college. It will create confidence in minds of the student teachers. The conduct of regular meetings will generate a mutual and matured relationship among them. It will also improve the student’s academic life. The student teachers should be encouraged to take effective steps for improving skills development activities. They may motivate other students to participate in the social and

cultural activities of the college. The exchange and borrowing of books and magazines from the library among student teachers would be helpful to improve the educational knowledge and develop sharing mind and discussion on the subjects.

The present study concluded that if student teachers did not understand the lesson, they clarified the doubt by themselves. They have mutually helped their friends while studying. They are satisfied with the teaching methods of the professors of the colleges. Student teachers got appreciation from their professors for their achievement.

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Women Managers and their Health Issues - With Special Reference to Tamilnadu

S. Muthu Lakshmi and P.Sundara Pandian

Department of Commerce, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – In certain instances, women with multiple roles reported better physical and psychological health than women with less role involvement. Multiple roles have also been found to cause a variety of adverse effects on women's mental and physical health, including loss of appetite, insomnia, over indulgence, and back pains. Allotting time for multiple roles becomes a difficult task for managerial women. The present study analyses the health issues of women managers working in service sectors in Tamilnadu. The service sector is confined to Banking, Insurance, IT and BPO, Hotel and Communication Sector.

Keywords: Women Managers; Health Issues

1. INTRODUCTION

Multiple role-playing has been found to have both positive and negative effects on the mental health and wellbeing of managerial women. In certain instances, women with multiple roles reported better physical and psychological health than women with less role involvement (Doress-Wortes 1994). However, multiple roles have also been found to cause a variety of adverse effects on women's mental and physical health, including loss of appetite, insomnia, over indulgence, and back pains (Hughes 1994). Allotting time for multiple roles becomes a difficult task for managerial women.

2. OBJECTIVE

To study the health issues of women managers working in service sectors in Tamilnadu.

3. REVIEW OF LITERATURE

Cloud and Townsend (1992) in their book entitled, 'Stress and work life balance boundaries: when to say no, to take control of your life' aimed particularly at those whose work life balance has been changed by the additional workload, and potential stress, and studying management development courses for professional qualifications to develop their careers. Negative stress can also be caused by

major events, such as death in the family was also reported.

4. METHODOLOGY

The purpose of the present study is to analyze the health issues of women managers working in service sectors in Tamilnadu. The service sector is confined to Banking, Insurance, IT and BPO, Hotel and Communication Sector.

5. SELECTION OF SAMPLE SIZE

The present study is based on the responses elicited from the selected managerial women in Tamil Nadu. For the purpose of identifying the target population, the researcher has selected five industries namely Banking, Insurance, IT & BPO, Hotel and Communication sector. With the rapport of the researcher, with the study companies, 500 women managers were selected from among all the 100 companies and the selection of the respondents was made only to the convenience of the researcher for the timely collection of data. Hence, convenience sampling technique is applied in the collection of data.

The table furnished below exhibits a detailed account of the selection of respondents in all the five industrial sectors.

Table – 1 Distribution of the Respondents According to the Sectors

Sector	Companies	Number of Respondents	%
Banking	20	108	21.6
Insurance	20	104	20.8
IT and BPO	20	103	20.6
Hotel	20	98	19.6
Communication	20	87	17.4
Total	100	500	100.0

Source: Primary Data

Different service sectors were chosen for the study. The respondents of the present study belong to the fields of Banking,

Insurance, IT & BPO, Hotel and Communication sector. With regard to sector wise classification of the respondents, it is evident that 21.6 percent of the respondents belong to banking sector, 20.8 percent of the respondents are working in the Insurance sector, 20.6 percent of the respondents are working in IT & BPO sectors, and 19.6 percent are in Hotel sector and 17.4 percent are working in Communication sector.

6. WORK AND WOMEN'S HEALTH

There are gender differences in physical, psychological and behavioral symptoms of stress. Physical symptoms reported more often among women include headaches, hair loss, skin problems, increased vaginal discharge, loss of appetite, digestive problems, back pain, increased fatigue, frequent throat infection, periodic weight gain and shift timings.

6.1 Age of the Respondents

The sample comprised of 500 managerial women from service sectors such as Banking, Insurance, IT & BPO, Hotel and Communication, which are located in Tamil Nadu. Data was obtained on the basis of response by means of structured questionnaires.

Regarding the age of the respondents, the data indicates that 29.8 percent belong to the age group of up to 30 years, 39.8 percent of the respondents belong to the age group between 31 to 40 years, 17 percent of the respondents belong to the age group between 41 to 50 years, and 13.4 percent belong to the age group above 50 years.

Table – 2 Demographic Characteristics of the Sample (N=500)

Demographic Variables	Number	Percentage
Up to 30 years	149	29.8
31 to 40 years	199	39.8
41 to 50 years	85	17.0
Above 50 years	67	13.4
Total	500	100.0

Source: Primary data

From the above table it is inferred 39.8 percent of the respondents belong to 31- 40 years of age.

6.2 Age of the respondents and periodical medical examination

Working women have health hazards and physical ill health like psychosomatic stress, strain, tension, sleeplessness that is caused by double work, long journey, attitude of colleagues and superiors at workplace and lack of leisure.

The analysis shows that out of 149 respondents belonging to age group up to 30 years, 25.5 percent undergo periodical medical examination and 74.5 percent do not undergo periodical medical examination. Out of 199 respondents belonging to the age group 31 – 40 years 36.7 percent undergo periodical medical examination and 63.3 percent do not undergo periodical medical examination. Out of 85 respondents belonging to the age group 41 - 50 years 41.2 percent undergo periodical medical examination and 58.8 percent do not undergo periodical medical examination. Out of 67 respondents belonging to the age group of above 50 years, 34.3 percent undergo periodical medical examination and 65.7 percent do not undergo periodical medical examination.

Table – 3 Periodical Medical Examinations

Periodical medical examination	Age				Total
	Up to 30 years	31-40 years	41-50 years	Above 50 years	
Undergo Medical Examination	38 (25.5%)	73 (36.7%)	35 (41.2%)	23 (34.3%)	169 (33.8%)
Do not undergo medical examination	111 (74.5%)	126 (63.3%)	50 (58.8%)	44 (65.7%)	331 (66.2%)
Total	149 (100%)	199 (100%)	85 (100%)	67 (100%)	500 (100%)

From the above table, it is inferred that majority of the respondents (66.2 percent) do not undergo periodical medical examination irrespective of the age.

6.3 Health Problems

From the table it can be seen that feeling angry and irritable is given the highest score, followed by back aches which ranks 2nd, frequent cold and headache which ranks 3rd, continual tiredness which ranks 4th, menstrual problem which ranks 5th, anxiety/breathing problems which ranks 6th and high blood pressure which ranks 7th.

Table – 4 Health Problems Due To Stress

Symptoms	Total Scores	Rank
Feeling angry and irritable	7384	1
Back aches	6104	2
Frequent cold and Headache	5847	3
Continual tiredness	5357	4
Menstrual Problem	5238	5
Anxiety /Breathing Problems	5122	6
High Blood Pressure	5015	7

Source: Computed data

It is inferred from the above table that feeling angry and irritable is given 1st rank by the respondents and the 2nd rank is given to back aches, and lowest rank is given to high blood pressure.

7. STRESS MANAGEMENT

Dohrenwend and Dohrenwend (1974) defined life stress in terms of characteristics of stressful events and the individual's recent traumatic events. Stress may cause psychological, physiological and behavioural problems.

7.1. Symptoms Due to Stress

The symptoms due to stress as revealed by the survey include agitated state of mind (12.2 percent), no sense of accomplishment (14.6 percent), lack of concentration and focus on work (33 percent), not being able to work (8.8 percent), de-motivated (5.2 percent), and no commitment to work (26.2 percent).

Table – 5 Symptoms Due to Stress

Stress Symptoms	No of respondents	Percentage
Agitated state of mind	61	12.2
No sense of accomplishment	73	14.6
Lack of concentration and focus on work	165	33.0
Not being able to work enough	44	8.8
De-motivated	26	5.2
No commitment to work	131	26.2
Total	500	100.0

Source: Computed data

The data shows that one third of the respondents lack concentration and focus on work due to stress, followed by 26.2 percent of the respondents having no commitment to work. From the above analysis it is clear that many women managers face health related problems.

8. SUGGESTIONS

1. Organization can achieve better health among women managers by conducting some development programme, stress overcoming class and yoga for reducing mental stress on work and family.
2. Counsellors should be appointed for maintaining better mental health of the women managers. Classes for meditation and yoga can be provided to the women managers compulsorily free of cost to overcome their stress.
3. The long work culture in many service sector increases the work pressure of the women managers. The organisation can adopt 'five days week'.
4. It is recommended that gender based policies should be introduced and the organisation should see that the laws should be prescribed so that no one manipulates it.
5. Women managers after 40 years of age face difficulty regarding menopause. This causes inconvenience for the women managers. Ultimately they lack concentration in the work. The productivity of the organisation slows down. The sector should take steps to

implement menopause leave with other leave strategies.

6. Long work culture in many service sector increases the work pressure of women managers. It is recommended that organisations should adopt best practices such as options to work in flexi-timings and also work from home during emergency times.

9. CONCLUSION

The innate nature of the service sector is such that it causes stress affective physical and psychological health of the women managers. Precautionary measures should be directed in eliminating stress and other risk factors by the service sectors. A more meaningful approach is to identify work values and practice that. If changed would facilitate both work performance and family and personal life ultimately leading better health of the women managers.

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Customer Satisfaction towards Supermarkets in Rajapalayam

P.K.Pandiyaraj¹ and A.A.Magesan²

¹Department of Commerce, Ayya Nadar Janaki Ammal College (Autonomous), Sivakasi.

²Department of Commerce, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – Customer satisfaction has been considered as the one of the important aspect for the survival of business in the competitive market. In the organized retail market, it has becomes necessary to identify whether the customers are satisfied towards various attributes of products and ambience available in the supermarkets. Customer satisfaction has superior power and influence on any firms marketing strategy. It is through offering of variety of products, pricing products competitively, providing more parking space the satisfaction of customers that firms remain growing and develop in a successful way.

Keywords: Customer; Customer Satisfaction; Supermarkets.

1. INTRODUCTION

Supermarket shopping is often categorized as a self-service retail environment. For supermarket retailers wanting to build relationships with their customers, being able to track their levels of 'satisfaction' with the key elements of the supermarket environment is extremely important. From the retailer's perspective the aim is to minimize the reasons for complaints and dissatisfaction and the cost of a service recovery plan whilst establishing a track of direct feedback from customers about their reactions to those key elements. Satisfaction is a consumer's post-purchase evaluation of the overall service experience. It is an affective reaction in which the consumer's needs, desires and expectations during the course of the service experience have been met or exceeded. Satisfaction in this sense could mean that a supermarket has just barely met the customer's expectations, not exceeded nor disappointed those expectations. The benefits of taking the customer's response beyond satisfaction at this level by exceeding expectations, is a competitive strategy many retailers aspire to achieve. Under this background the present study was designed to investigate customers' satisfaction levels with a range of key elements that contribute to the

retail offer presented by Supermarkets in Rajapalayam.

2. STATEMENT OF THE PROBLEM

In a competitive marketplace, the challenges are the supermarkets' retailers need to improve the customers' satisfaction and the most importantly to have better understanding about those supermarkets' attributes that are most considered by customers. Therefore, it is essential for the supermarkets' retailers to equip and enhance themselves to improve customer satisfaction with reference to key attributes of the supermarket to stay ahead of competition.

One of the key challenges faced by the supermarket in the study area, is the competition from unorganized sector. Unorganised sector and traditional retailing is the low cost structure, minimum rental cost and with little taxes to pay. At the same time the supermarkets has huge expenses to meet and yet have to keep the prices low enough to compete with the traditional sector. The supermarkets are meeting these expenses through increased turnover only in order to achieve increased turnover and customer must be satisfied with the mode of operation of the supermarkets in Rajapalayam.

3. SCOPE OF THE STUDY

This study helps us to know the current customer satisfaction, preference and problems of the customer that they are facing today in supermarket. This study has to be effective for the survey of the supermarket and as well as manufacturers. The study focuses only 8 supermarkets in Rajapalayam. The researcher has made a sincere attempt to study the services offered by that supermarkets in Rajapalayam only.

4. OBJECTIVES OF THE STUDY

The study has been carried out keeping in mind the following objectives:

- To know the concept of supermarkets.
- To study the socio economic profile of the customers.
- To analyse the customer satisfaction towards supermarkets.
- To offer suitable suggestions based upon the findings of the study

5. METHODOLOGY

Depending on the nature of problem, the researcher has used descriptive research design for this study. Both primary and secondary data were collected, analysed and used, for measuring customer satisfaction towards super markets.

A convenience sampling method of sampling has been adopted to collect the primary data from the customers in Rajapalayam. The size of sample was 200. Questionnaire specially designed for the study was used for the data collection.

The data collected from the customer was tabulated category wise. The researcher has use, analyse and interpret the collected data, using the statistical techniques like, Percentage, Chi-Square test, Weighted Arithmetic Mean, Garrett Ranking and Correlation.

6. ANALYSIS AND INTERPRETATION

Customer satisfaction is the focus area of modern marketing which leads to value addition in growth and profitability of the supermarkets. In the competitive retail landscape the success of the supermarket relies on customer satisfaction as it is the major link to accomplish profitability. Retaining a customer is less expensive than bringing a new customer to the supermarket. And this virtue of customer loyalty is mostly a result of customer acceptance and satisfaction.

Super markets typically are supplied by the distribution centers of their parents companies, usually in the largest city in the area. Super markets usually offer products at

relatively low prices by using their purchasing power to buy goods from manufacturers at lower prices than smaller stores can. They also minimize financing costs by paying for goods atleast 30 days after receipt and some extract credit terms of 90 days or more from vendors. Certain products such as bread, milk and sugar etc., are very occasionally sold as loss leaders, that is, with negative profit margins so as to attract shoppers to their store.

Table 1: Profile of the Customers

Measure	Category	Frequency	%
Gender	Male	103	51.5
	Female	97	48.5
Age	Upto 20	31	15.5
	21-30	83	41.5
	31-40	36	18.0
	41-50	33	16.5
	Above 50	17	8.5
Educational Qualification	Upto SSLC	33	16.5
	Upto Higher Secondary	21	10.5
	Diploma	17	8.5
	Under Graduate	63	31.5
	Post Graduate	53	26.5
	Others	13	6.5
Marital Status	Married	123	61.5
	Unmarried	77	38.5
Type of Family	Joint Family	61	30.5
	Nuclear Family	139	69.5
Monthly Income	Rs.5000-Rs.10000	61	30.5
	Rs.10001-Rs.15000	49	24.5
	Rs.15001-Rs.20000	46	23.0
	Rs.20001-Rs.25000	23	11.5
	Above Rs.25000	21	10.5

Source: Primary Data

Table 1 reveals that a majority of 51.5 per cent of the respondents is male customers, followed by the age of notable portion of 41.5 per cent of the respondents is in the age group of 21to 30 years, 31.5 per cent of the sample respondents is under graduates, a majority of 61.5 per cent of the respondents are married, a majority of 69.5 per cent of the customers in Rajapalayam lives as nuclear family system and a majority of 55 (30.5+24.5) per cent of the respondents' monthly income of the family ranges between Rs.5000 to Rs.15000.

Table 2: Place of Purchase

Place	Number of Respondents	Percentage to Total
Nanayam super market	48	24.0
NDR super market	36	18.0
Gokul super market	28	14.0
Kanga super market	21	10.5
Sangamam super market	15	7.5
Anandas super market	21	10.5
In & Out super market	16	8.5
Aandal super market	15	7.5
Total	200	100.0

Source: Primary Data

Table 2 highlights that out of 200 respondents, 24 per cent of the respondents preferred Nanayam super market, followed by 18 per cent of the respondents preferred NDR super market, 14 per cent of the respondents preferred Gokul super market, 10.5 per cent of the respondents preferred both Kanga super market and Anandas super market, 8.5 per cent of the respondents preferred In & Out super market and the remaining 7.5 per cent of the respondents preferred both Sangamam super market and Aandal super market.

Table 3: Reasons for Preference

Sl. No	Reasons	Garrett Value							Garrett Score	Average Score	Garrett Rank
		78	65	57	50	42	34	22			
1	Nearby Home	5772	1495	1311	950	672	680	550	11430	57.15	I
2	Better Service	3276	2340	2166	950	1050	850	330	10962	54.81	III
3	Large variety of goods	2808	3055	1539	1900	798	714	264	11078	55.39	II
4	Offered discount	702	2145	1653	1200	1596	1564	462	9322	46.61	VI
5	Opinion from friends and relatives	1482	1430	1368	1900	1554	1088	616	9438	47.19	V
6	Credit facility	156	1040	684	1350	1344	1088	1738	7400	37.00	VII
7	Reasonable price	1404	1495	2679	1750	1386	816	440	9970	49.85	IV

Source: Primary Data

Table 3 disclosed that out of 200 respondents, most of the respondents selected the reasons for preferring super markets as 'Near by home' which was ranked first by them with a Garrett score of 11430 points, followed by 'Large variety of goods' ranked second with a Garrett score of 11078 points and 'Better service' ranked third with a Garrett score of 10962 points.

Table 4: Period of Shopping

Period	Number of Respondents	Percentage to Total
Upto 2 years	54	27.0
3 – 4 years	60	30.0
5 – 6 years	44	22.0
Above 6 years	42	21.0
Total	200	100.0

Source: Primary Data

Table 4 shows that out of 200 respondents, a majority of 57 per cent (27+30) of the respondents have used the particular super market upto 4 years.

Table 5: Frequency of Visit Per Month

Frequency (in months)	Number of Respondents	Percentage to Total
1 time	38	19.0
2 times	65	32.5
3 times	40	20.0
More than 3 times	57	28.5
Total	200	100.0

Source: Primary Data

It is evident from Table 5 that out of 200 respondents, 32.5 per cent of the respondents visited the super markets by 2 times per month, followed by 28.5 per cent of the respondents visited the super markets by more than 3 times per month.

Table 6: Type of Products Purchased

Type	Number of Respondents	Percentage to Total
Grocery	87	43.5
Foods and Snacks	50	25.0
Stationery	24	12.0
Gift	13	6.5
Plastic	12	6.0
Others	14	7.0
Total	200	100.0

Source: Primary Data

Table 8: Relationship between Monthly Income of the Family and Amount of Shopping Per Month

Sl. No	Amount of Shopping	Monthly Income of the Family					Total
		Rs.5000 – Rs.10000	Rs.10001 – Rs.15000	Rs.15001 – Rs.20000	Rs.20001 – Rs.25000	Above Rs.25000	
1.	Upto Rs.1000	37	20	12	9	3	81
2.	Rs.1001 – Rs.2000	15	16	22	13	4	70
3.	Rs.2001 – Rs.3000	7	8	10	1	3	29
4.	Above Rs.3000	2	5	2	-	11	20
	Total	61	49	46	23	21	200

Source: Primary Data

To find out the relationship between monthly income of the family and amount of shopping per month, Karl Pearson’s Coefficient

Table 6 unfolds that out of 200 respondents, 43.5 per cent of the respondents have purchased grocery items in super markets, followed by 25 per cent of the respondents have purchased food and snacks items in super markets, 12 per cent of the respondents have purchased stationery items in super markets, 6.5 per cent of the respondents have purchased gift items in super markets, 6 per cent of the respondents have purchased plastic items in super markets and the remaining 7 per cent of the respondents have purchased other items like sports and cosmetics in super markets.

Table 7: Amount of Shopping Per Month

Amount	Number of Respondents	Percentage to Total
Upto Rs.1000	81	40.5
Rs.1001 – Rs.2000	70	35.0
Rs.2001 – Rs.3000	29	14.5
Above Rs.3000	20	10.0
Total	200	100.0

Source: Primary Data

Table 7 upshots that out of 200 respondents, a majority of 75.5 (40.5+35) per cent of the respondents are spending Upto Rs.2000 per month for shopping in super markets.

of Correlation is applied. The result (+0.327) shows that, there is a meager positive correlation between monthly income of the

family and amount of shopping per month of the sample respondents.

Table 9: Level of Satisfaction towards facilities available

Sl. No	Facilities	HS (2)		S (1)		N (0)		DS (-1)		HDS (-2)		Total		WMS	Rank
		No	Po	No	Po	No	Po	No	Po	No	Po	No	Po		
1.	Parking facility	31	62	24	24	62	0	61	-61	22	-44	200	-19	-0.10	XIV
2	Floor space	13	26	93	93	78	0	14	-14	2	-4	200	101	0.50	XI
3	Price of the product	39	78	97	97	52	0	10	-10	2	-4	200	161	0.81	IV
4	Variety of the product	48	96	96	96	50	0	4	-4	2	-4	200	184	0.92	III
5	Service by employees	36	72	65	65	83	0	15	-15	1	-2	200	120	0.60	VII
6	Display of product	35	70	75	75	57	0	25	-25	8	-16	200	104	0.52	IX
7	Cleanliness and tidiness	26	52	100	100	69	0	3	-3	2	-4	200	145	0.73	VI
8	Timing	38	76	90	90	65	0	2	-2	5	-10	200	154	0.77	V
9	Quality of product	49	98	105	105	40	0	4	-4	2	-4	200	195	0.98	II
10	Location	72	144	65	65	54	0	6	-6	3	-6	200	197	0.99	I
11	Advertisement	15	30	49	49	62	0	62	-62	12	-24	200	-7	-0.04	XIII
12	Lighting	25	50	73	73	85	0	13	-13	4	-8	200	102	0.51	X
13	Ventilation	14	28	67	67	90	0	22	-22	7	-14	200	59	0.30	XII
14	Payment counters	28	56	88	88	65	0	12	-12	7	-14	200	118	0.59	VIII

Source: Primary Data

Table 9 clearly shows that out of 14 facilities available in the super markets, Location ranked the first place with the weighted mean score of 0.99, followed by Quality of products ranked second (0.98) and Variety of products ranked third (0.92).

In order to ascertain relationship between the profile variables and level of

satisfaction towards super markets, a group of null hypotheses were set for testing as ‘There is no significant relationship between level of satisfaction towards supermarkets and different profile variables, namely, age, gender, educational qualification, occupation, marital status and monthly income’. The table and calculated values of Chi-square for Ho1 to Ho6 are given in Table 10.

Table 10: Relationship between Profile Variables and Level of Satisfaction towards Super Markets

Sl No	Profile Variables	Hypothesis	Calculated Value	Table Value	Degrees of Freedom	Acceptance of Null Hypothesis
1	Age	H ₀ 1	31.35	26.3	16	Rejected
2	Gender	H ₀ 2	3.44	9.49	4	Accepted
3	Educational Qualification	H ₀ 3	70.56	31.4	20	Rejected
4	Occupation	H ₀ 4	31.55	26.3	16	Rejected
5	Marital Status	H ₀ 5	4.26	9.49	4	Accepted
6	Monthly income	H ₀ 6	60.01	26.3	16	Rejected

Table 10 makes it clear that there are four hypotheses set, namely, $H_0 1$, $H_0 3$, $H_0 4$ and $H_0 6$ was rejected, because the calculated values of chi square are more than the table value at 5% level of significance. Hence, there is a significant relationship between age, educational qualification, occupation and monthly income of the customers with the level of satisfaction towards supermarkets. The remaining two hypotheses set, namely, $H_0 2$ and $H_0 5$ were accepted, because the calculated values of chi square are less than the table value at 5% level of significance. Hence, there is no significant relationship between gender and marital status of the customers with the level of satisfaction towards supermarkets.

7. SUGGESTIONS

The following suggestions are provided by the researcher for the effective improvement of super markets:

- 1) Supermarkets should include more of branded products so as to attract the people to come into super market.
- 2) Supermarkets should provide large parking space for its customer so that they can easily park their vehicles.
- 3) Customer care department is needed to take proper attention to customer queries and complaints.
- 4) The services of sales person is needed to be improved. Personal care should be taken by the sales person for the customers so that the customers feel good.
- 5) The infrastructure is needed to be changed to accommodate weekend heavy crowd in the Supermarkets.
- 6) Education and training of staff on product, price, procedure and practices needs to be done to enhance customer servicing and achieve customer satisfaction.
- 7) Super marketers should maintain dynamic customer databases and communicate them periodically to build a cordial relationship with the customers.

8. CONCLUSION

The present study is an attempt to find out the satisfaction of customer towards supermarkets in Rajapalayam. It is impossible to give a limit to satisfaction level within a boundary. Level of satisfaction differs from person to person, as no two human beings are identical. But there are some common factors which can determine the overall level of satisfaction of the customers of supermarkets. Being satisfied with supermarkets means a customer's positive attitude towards the supermarket from where he or she is shopping. If one is satisfied by shopping from his/her supermarkets, he/she will shop more from supermarket to achieve maximum satisfaction on supermarkets. Further it is suggested that super markets must concentrate the price level of the products, services of the employees and availability of products required by all type of people. At the same time the super markets should be retain their existing customers and also try to attract new customers. Therefore, the study concludes that the super markets should carry out some new forms of strategies in order to make them satisfied.

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A Study on Investors' Attitude towards Effect of Corporate Announcements

C.Rajalakshumi and R.Neelamegam

Department of Management Studies, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract - Stock market indicators rise or fall of share prices on a particular trading day depends on many factors. The success of an investor in the stock market always depends on how well he is able to incorporate all these factors while taking up his investment decisions. Stock market indicators are extremely used by investors across the world while taking various buy or sell decisions in the market. Any indicator which is used to project future financial and economic trends can be called as market indicators. The efficiency of a stock market is principally measured by its information efficiency which is closely related to the information in stock markets. In this perspective, the present paper investigates the impact of five major company announcements like Dividend, Split, Earnings, Rights and Bonus that are considered being most important by the investors in their investment decision making. The present researchers have applied the factor analysis to know the attitude of investors and level of emotional tolerance towards the company announcements and share market.

Keywords: Information efficiency, Investor Attitude, Company announcements.

1. INTRODUCTION

India's capital market witnessed rapid growth since liberalization in 1991. Financial liberalization had positive decades. Indian capital market was hardly existent in the pre-independence times. Agriculture was the main stay of economy but there was hardly any long term lending to agricultural sector. Similarly, the growth of industrial securities market was very much hampered since there were very few companies and the number of securities traded in the stock exchanges was even smaller. Individual investors were very few in numbers and that too were limited to the affluent classes in the urban and rural areas. There were no specialized intermediaries and agencies to mobilize the savings of the public and channelize them to investment. The role and importance of individual investors and their trading behaviour in Indian stock market is also very crucial. These pieces of information are processed by investors to update their

investment strategies. Stock prices move up and down every minute due to fluctuations in supply and demand. If more people want to buy a particular stock, its market price will increase. Conversely, if more people want to sell a stock, its price will fall.

Investors consider several things before they invest their funds in any particular securities. Among them, so far the most important subject matter is return from investment in securities that partly depends on company announcements in the stock market. The present study deals with the five major company announcements like: **Dividend, Bonus, Rights Issue, Splits and Earnings report**. This paper is based on the scholar's Ph.D. thesis

2. STATEMENT OF THE PROBLEM

The effect of sensitive information on market price of stock is the subject matter of the study. At this juncture, the present study captioned "Effect of Company Announcements and Role- of Media on Prices of Stocks Listed at NSE" attempts to answer the following research questions that arise with reference to the selected announcement from the companies listed at National Stock Exchange.

1. Which media is mostly preferred by the investors to receive the company announcement?
2. What types of announcement do the investors prefer to gain their expected return on their investment?

3. OBJECTIVES

- (i) To analyse the impact of investors' attitude on corporate announcements
- (ii) To examine the factors affecting their level of emotional tolerance towards corporate announcements.

4. METHODOLOGY

4.1 Sources of Data

The study has depended on primary sources of data.

4.2 Questionnaire

Primary data were collected by administering a well conceived questionnaire to the sample investors.

4.3 Statistical Tools

Relevant statistical tools such as Factor analysis and regression analysis were used for the analysis and interpretation of survey data.

4.4 Sampling Design

- (a) Sampling frame : 2,850 Investors
- (b) Sampling size : 430 Investors
- (c) Sample method : Simple random sampling

4.5 Research Design

The research design adopted in the present study is a "Descriptive Design" of conclusive one.

5. LITERATURE REVIEW

Fama, Lawrence and Jensen (1969), examined whether normally some "unusual" behavior in the rates of return on a split security in the months surrounding the split and if splits are associated with "unusual" behavior of security returns, to what extent can this be accounted for by relationships between splits and changes in other more fundamental variables.

Tetlock (2007) quantitatively measured the interactions between the media and the stock market using daily content from a popular Wall Street Journal column. He found that high media Pessimism predicts downward pressure on market prices followed by a reversion to Fundamentals, and unusually high or low pessimism predicts high market trading volume.

6. FACTOR ANALYSIS

Factor analysis, a multivariate interdependence statistical technique is a data reduction tool. Factor analysis removes redundancy or duplication from a set of correlated variables. It is helpful in representing correlated variables with a smaller set of "derived" variables. Factors are formed that are relatively independent of one another. The present researcher has applied the factor analysis for the attitude of investors towards the company announcements and share market.

Investors' attitude towards corporate announcements and share prices

The present study covers four hundred and thirty investors to ascertain their attitude towards the company announcement. The schedule consists of 23 statements on investor attitude that are considered for factor analysis. Mathematically, factor analysis is somewhat similar to the multiple regression analysis. Each variable is expressed as a linear combination of the underlying factors. Factor analysis calculates pairs of correlation between all variables, and the highly related variables are combined into factors.

Factor analysis involves the following decisions. (1) Is the factor analysis valid? (2) How many factors are to figure in the final solution? (3) What are the constituent variables of each factor? (4) Name the each factor.

Prior to this analysis, Reliability test has to be performed. Reliability is the degree of consistency of a measure. A test will be reliable when it gives the same repeated result under the same conditions. Cronbach's alpha value.7 will indicate an overall reliability coefficient for a set of variables in the study.

7. DETAILS OF INPUT DATA AND VARIABLES

As the first step, sample investors 430 in number were requested to state to what an extent they agree or disagree with the 23 statements. To measure the degree of investors' awareness with each of these 23 statements,

Likert type 5 point numerical scale was used. Strongly agree carrying score 5, agree the score of 4, neither agree nor disagree carrying the score 3, disagree the score of 2, and strongly disagree the score of 1.

8. DETAILS OF STATISTICAL CALCULATION AND DECISIONS

Testing of reliability

The below table 1 shows the result of reliability - here it is called internal consistency reliability.

Table 1 Reliability Statistics – Cronbach’s Alpha

Cronbach's Alpha	N of Items
.861	23

The test statistic results show that Cronbach's Alpha of **0.861** close to 1 showing high reliability. This proves that all the variables used in the factor analysis measures the same thing and agree with one another.

Testing for sampling adequacy

The appropriateness of the factor model is tested before extracting the factors. The test statistics for sphericity is based on a chi-square transformation of the determinant of the

correlation matrix. Another useful statistics is the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy. Small values of the KMO statistics indicate that the correlation between pair of variables cannot be explained by other variables and that factor analysis may not be appropriate. Generally, a value greater than 0.5 is desirable. The correlation matrix was examined carefully and the two tests, viz., Bartlett’s test of sphericity and Kaiser-Meyer-Olkin test were undertaken to test if it was judicious to proceed with factor analysis in the present study.

Hypothesis for testing:

H₀ : The factor is not valid.

H₁ : The factor is valid.

Table 2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.790
Bartlett's Test of Sphericity	Approx. Chi-Square	4150.820
	Df	253
	Sig.	.000

Source: Results computed through SPSS.

Table 3 Communalities

Variables	Initial	Extraction
expected return calculation	1	0.409
Systematic and unsystematic risk	1	0.741
Testing of Market Efficiency	1	0.746
individual decision	1	0.514
dependent variables	1	0.6
Market theory influencing share price	1	0.654
CA and investment decision	1	0.546
indicator to determine share price movement	1	0.768
positive/negative reaction in the share price	1	0.782
associated with risk-return relationship	1	0.708
Financial information in a predominant role	1	0.712
Non-financial information	1	0.722
Monitor the return	1	0.707
Positive information	1	0.68
Negative information	1	0.533
information will reflect in share price	1	0.701
share prices are random	1	0.503

Variables	Initial	Extraction
Government policies as a positive sign	1	0.626
Macroeconomic factor	1	0.688
Economic stability	1	0.221
Certified Professionals	1	0.335
Influence of government policy on CA	1	0.74
Role of media	1	0.722

Source: SPSS computed results

The significance (0.000) is less than the assumed significance value (0.05). So the null hypothesis H_0 is rejected, the alternate hypothesis H_1 is accepted and hence the factor analysis is valid. Next, one may look at the KMO coefficient to cross check Bartlett's test. It can be seen (0.790) is more than 0.5, so one agrees with Bartlett's test that the factor analysis is valid.

The communalities in table 3 are all high indicating that the extracted components represent the variables well. The variance explained by the initial solution, extracted components and rotated components is displayed in below table with eigen values greater than 1.0.

Extraction of Factor: Principal Component Analysis (PCA)

There are two main stages in factor analysis. At the first stage, Principal Component Analysis was used for the initial extraction of the factors. PCA is a technique for forming a set of new variables that are linear combinations of the original set of variables. The new variables are called 'principal components' or factors.

a. Factor - The initial number of factors is the same as the number of variables used in the factor analysis. However, not all 23 factors will be retained. In this study, only the first six factors will be retained.

b. Initial **Eigen values** – Eigen values are the variances of the factors. Because factor analysis on the correlation matrix is used, the variables are standardized, which means that the each variable has a variance of 1, and the

total variance is equal to the number of variables used in the analysis, in this study, 23.

STAGE I:

It is necessary that the scale constructed and the factors / components extracted should be able to explain the variance in the data. To analyze this variance, one has to calculate the Eigen values, which will explain the variance among the factors. A low Eigen value (less than 1) contributes very little to the explanation of variances in the set of variables being analyzed. The sum of Eigen values, as expected, is equal to the number of variables being analyzed. There are 23 variables that can be extracted. But only those factors can be extracted which have eigen value more than 1. The eigen value for a given factor measures the variance in all the variables which is accounted for by that factor.

The higher the Eigen value of a factor, the larger is the amount of variance explained by the factor. By retaining only the variables with eigen value greater than one, one can infer that 18.737 per cent of variance is explained by factor 1, 10.177 per cent of variance is explained by factor 2, 9.140 per cent of variance is explained by factor 3 and so on till factor 6 is explained in the table 4.

Extraction sum of squared loadings is also used for measuring the factors influencing investors' awareness towards corporate announcement. From the above table, one could see that the six factors show a cumulative variance explanation of 62.435 per cent.

Table 4 Total Variance Explained With Factor Loading

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.268	27.250	27.250	6.268	27.250	27.250	4.310	18.737	18.737
2	2.374	10.321	37.571	2.374	10.321	37.571	2.341	10.177	28.914
3	1.679	7.299	44.870	1.679	7.299	44.870	2.102	9.140	38.055
4	1.551	6.744	51.614	1.551	6.744	51.614	1.992	8.659	46.714
5	1.304	5.670	57.283	1.304	5.670	57.283	1.889	8.214	54.927
6	1.185	5.152	62.435	1.185	5.152	62.435	1.727	7.508	62.435
7	.959	4.170	66.605						
8	.941	4.092	70.697						
9	.849	3.691	74.388						
10	.802	3.488	77.876						
11	.714	3.106	80.982						
12	.613	2.664	83.646						
13	.540	2.346	85.993						
14	.513	2.231	88.224						
15	.482	2.097	90.321						
16	.428	1.863	92.183						
17	.381	1.658	93.841						
18	.322	1.402	95.243						
19	.303	1.319	96.562						
20	.245	1.064	97.626						
21	.228	.992	98.618						
22	.173	.752	99.370						
23	.145	.630	100.000						

Extraction method: Principal component analysis.

Source: Results computed through SPSS.

STAGE II:

In stage II of factor analysis, ‘rotation of principal components is performed by varimax rotation method. After initial extraction, the plot has to be rotated (varimax method) to get a better analysis. In practice, the best results are obtained by principal components extraction and varimax rotation. The results of varimax rotation of principal components are presented in table tt. The factor matrix gives the loading of each variable in relation to each factor. The purpose is to ascertain variables which have a

have loading on a certain factor, but low loadings on other factors.

Rotated Component Matrix table contains the rotated factor loadings (factor pattern matrix), which represent both how the variables are weighted for each factor and also the correlation between the variables and the factor. Because these are correlations, possible values range from -1 to +1. Factor columns give the rotated factors that have been extracted.

Table 5 Rotated Component Matrix

Variables	Component					
	1	2	3	4	5	6
individual decision	.649					
Market theory influencing share price	.805					
CA and investment decision	.869					
indicator to determine share price movement	.750					
positive/negative reaction in the share price	.840					
Non-financial information	.539					
Monitor the return		.829				
Negative information		.750				
information will reflect in share price		.807				
Systematic and unsystematic risk			.821			
Testing of Market Efficiency			.816			
Role of media				.535		
Macroeconomic factor				.745		
Economic stability				.813		
expected return calculation					.520	
associated with risk-return relationship					.745	
Financial information in a predominant role					.539	
Positive information					.607	
dependent variables						.753
Certified Professionals						.807

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization.

The table 5 exhibits the rotated factor loadings for the only 20 statements (variables) out of 23 variables indicating that the other three variables value fall below 0.05 which need not considered for the study. It is clear from the table that all the 20 statements have been reduced to six factors that influences investors' awareness towards corporate announcements and share prices namely, F1,

F2, F3, F4, F5 and F6. These six factors with suitable names are given below.

- F1 – Systematic
- F2 – Conservatism
- F3 – opportunism
- F4 – Representativeness
- F5 – optimistic
- F6 – perceived

The factors and variables within those factors are presented in the following tables.

Table 6 Factor 1: Systematic

S. No.	Variables	Factor loading	Eigen value	Percentage Variance
1.	Investors individual decision making only decides the share price behaviour	.649	6.268	18.737
2.	There is an association between corporate announcement and investment decision.	.805		
3.	Corporate announcement is an indicator to determine share price movement	.869		
4.	Corporate announcement is also associated with risk-return relationship	.750		
5.	Financial related information plays a predominant role on immediate share price reaction.	.840		
6.	Positive information will increase the share price	.539		

Source: Results computed through SPSS.

Factor 1 was named as “**Systematic**” on the basis of loading. The Eigen value of the Factor 1 is 6.268, and the percentage variance is 18.737.

Table 8 Factor 2: Conservatism

S.No.	Variables	Factor loading	Eigen value	Percentage Variance
1.	Negative information will reduce the share price	.829	2.374	10.177
2.	Share price movements are, usually at random (irregular)	.750		
3.	Government policies (contributions, tax reductions etc.) affect investor behaviour in a positive way	.807		

Source: Results computed through SPSS.

Factor 2 was named as “**Conservatism**” on the basis of loading. The Eigen value of the Factor 1 is 2.374, and the percentage variance is 10.177.

Table 9 Factor 3: Opportunism

S. No	Variables	Factor loading	Eigen value	Percentage Variance
1	Systematic and unsystematic risk can be measured	.821	1.679	9.140
2	Testing of Market Efficiency is not an accurate method	.816		

Source: Results computed through SPSS.

Factor 3 was named as “**opportunism**” on the basis of loading. The Eigen value of the Factor 3 is 1.679, and the percentage variance is 9.140.

Table 10 Factor 4: Representativeness

S. No.	Variables	Factor loading	Eigen value	Percentage Variance
1	Media plays an essential role in market behavior	.535	1.551	8.695
2	Macroeconomic factor influences the effect of corporate announcement	.745		
3	Economic stability is also main determinant in market efficiency	.813		

Source: Results computed through SPSS.

Factor 4 was named as “**Representativeness**” on the basis of loading. The Eigen value of the Factor 3 is 1.551, and the percentage variance is 8.695.

Table 11 Factor 5: Optimistic

S. No.	Variables	Factor loading	Eigen value	Percentage Variance
1	The expected return on security can be easily calculated by testing the Efficient Market theory	.520	1.304	8.214
2	Non-financial information also plays a vital role in immediate share price behavior	.745		
3	Monitor the return from the investment before and after corporate announcement	.539		
4	Positive and negative information will reflect in share price to some extent	.607		

Factor 5 was named as “**optimistic**” on the basis of loading. The Eigen value of the Factor 5 is 1.304, and the percentage variance is 8.214.

Table 12 Factor 6: Perceived

S. No.	Variables	Factor loading	Eigen value	Percentage Variance
1	Corporate announcement and share price are dependent variables.	.753	5.152	7.508
2	The quickly positive/negative reaction in the share price is also one of the reasons for positive/negative corporate announcement.	.807		

Source: Results computed through SPSS.

Factor 6 was named as “**perceived**” on the basis of loading. The Eigen value of the Factor 6 is 5.152, and the percentage variance is 7.508.

Table 13 Variables With High Loading In The Factors Influencing Investors Attitude Towards Corporate Announcements And Share Price

Factor	Name of extracted factor	Selected statement (Variable)	Factor Loading
F1	Systematic	Corporate announcement is an indicator to determine share price movement	.869
F2	Conservatism	Government policies (contributions, tax reductions etc.) affect investor behaviour in a positive way	.829
F3	Opportunism	Testing of Market Efficiency is not an accurate method	.821
F4	Representativeness	Economic stability is also main determinant in market efficiency	.813
F5	Optimistic	Positive and negative information will reflect in share price to some extent	.607
F6	Perceived	The quickly positive/negative reaction in the share price is also one of the reasons for positive/negative corporate announcement	.807

After labeling the factors, the factor scores of the factor analysis for the above six composite variables (factors), namely, Systematic, Conservatism, Opportunism, Representativeness, Optimistic and Perceived were used in the following multivariate analysis of multiple regression - where these factors were considered as the independent variables (Xs) explaining variation in the dependent variable of level of emotional tolerance of investors (Y). The Standardized variable values multiplied by the corresponding factor score co-efficient would give factor scores.

Multiple Regression Analysis

Multiple regression analysis is to explain the variation in one variable (called the

dependent variable), based on the variation in two or more other variables (called the independent variables). Here the,

Dependent variable

Y = level of emotional tolerance of investors

Independent Variables

X1 → Systematic

X2 → Conservatism

X3 → Opportunism

X4 → Representativeness

X5 → Optimistic

X6 → Perceived

Hence the model is, $Y = C + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6$

Table 14 ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	402.257	6	67.043	90.713	.000 ^a
	Residual	311.145	421	.739		
	Total	713.402	427			
a. Predictors: (Constant), Perceived , Optimistic, Representativeness, Opportunism, Conservatism, Systematic						
b. Dependent Variable: dependent variables						

From ANOVA analysis summary table 14, the statistical significance of the model is to be proved first. From the above table the p-

value or significance is 0.000, which is less than 0.05, which means this model is acceptable.

Table 15 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.751 ^a	.564	.558	.85969

a. Predictors: (Constant), Perceived , Optimistic, Representativeness, Opportunism, Conservatism, Systematic
 b. Dependent Variable: dependent variables

Regression analysis result of impacts on risk bearing capacity of investors and influencing factors is revealed in Table 15. As shown in the model summary, R²=0.564 (adjusted R²=0.558) suggests the explained degree of impact on emotional tolerance by 6

variables: Systematic, Conservatism, Opportunism, Representativeness, Optimistic and Perceived is 56.4%, that is to say, these 6 variables have 56.4% level of emotional tolerance of investors.

Table 16 Co-efficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.037	.042		73.094	.000
Systematic	.581	.042	.450	13.967	.000
Conservatism	.566	.042	.438	13.609	.000
Opportunism	.144	.042	.111	3.462	.001
Representativeness	.145	.042	.112	3.488	.001
Optimistic	.278	.042	.215	6.672	.000
Perceived	-.406	.042	-.314	-9.765	.000

a. Dependent Variable: dependent variables

The regression model coefficient of investors' level of emotional tolerance and influencing factors is shown in Table. According to the result of regression coefficient, we built a regression formula with

non-standardized coefficient. Hence the regression model is:

$$Y(\text{emotional tolerance}) = (3.037) + (0.581) \text{ Systematic} + (0.566) \text{ Conservatism} + (0.144) \text{ Opportunism} + (0.145) \text{ Representativeness} + (0.278) \text{ Optimistic} - (0.406) \text{ Perceived}.$$

One can also note that the t test for the significance of individual independent variables (X1 to X6) indicates that the significance level of 0.05 (confidence level of 95), all these six independent variables are statistically significant in the model. It is noticeable that variable systematic is more powerful one, followed by conservatism.

9. SUGGESTION

Informational efficiency is a measure of the swiftness or the market's reaction to any new information. Thus, researchers or investors who have access to information more quickly can only able to use it to earn more profit.

10. CONCLUSION

In the stock markets, the real information efficiency values vary for the degrees of the information completeness and symmetry, as well as the rationality degree of market participants.

When degrees of information asymmetry and incompetence and participant irrationality are pretty high, the information efficiency will be greatly impaired. The consequence is abnormal volatility in security price is more frequent and it is very difficult for the market to achieve stable dynamic equilibrium. A single news item can have a big but temporary effect on a stock. However, what determines the totality of all relevant information is the long-term performance of a stock or the market. Most successful investors will tell that they made most if not all their profits by taking advantage of long-term market moves, some of which lasted decades, or are ongoing.

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Social Media and its Impact on Arts and Science College Students in Virudhunagar District

P. Rajmohan and A.A.Magesan

Department of Commerce, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – Social media is a platform for people to discuss their issues and opinions. Before knowing the aspects of social media people must have to know what is social media? Social media are computer tools that allow people to share or exchange information's, ideas, images, videos and even more with each other through a particular network. The study was conducted to examine the impact of students' use of social media networks. The study revealed that majority of the respondents had mobile phones with internet facility and had knowledge of the social media networks. As a result they visit their social media networks and spend between one to two hours every day. In addition, the study revealed that the use of social media had affected academic performance of the respondents negatively and further confirmed that there was a strong positive relationship between the use of social media and academic performance.

Keywords: Social media, Impact, Arts and science college students.

1. INTRODUCTION

Now a day's social media has been the important part of one's life from shopping to electronic mails, education and business tool. Social media plays a vital role in transforming people's life style. Social media includes social networking sites and blogs where people can easily connect with each other. Since the emergence of these social networking sites like Twitter and facebook as key tools for news, journalists and their organizations have performed a high-wire act. These network sites have become a day to day routine for the people. Social media has been mainly defined to refer to "the many relatively inexpensive and widely accessible electronic tools that facilitate anyone to publish and access information, collaborate on a common effort, or build relationship".

2. REVIEW OF RELATED LITERATURE

Jocabsen and Forste, found a negative relationship between the use of various media, including mobile phones, and self-reported GPA among first year university students in the United States. In Taiwan, Yen at el., identified

an association between mobile phone use and respondents and report that respondents have allowed phone use to interfere with their academic activities. Similarly, Hong et al., reported that daily use of mobile phones is correlated with self-reported measure of academic difficulty among a sample of Taiwanese university students. In a survey of Spanish high school students Sanchez-Martinez and Otero, found a correlation between "intensive" mobile phone use and school failure. Ahmed Qazi, Hanqittai Hsich, Pasek and Hanqittai, conducted on the same topic revealed no correlation between social media and students' academic performance. A study conducted at Whittemore school of Business and Economic on one thousand, one hundred and twenty seven students revealed that there is no correlation between how much time is spent on social networking sites.

3. METHODOLOGY

The present paper is based on both the secondary and primary data collected relating to the social media and its impact on arts and science college students. The secondary data collected provides background and supportive information relating to the study. Primary data are also collected through a statistical survey with various arts and science colleges in Virudhunagar district. A formal enquiry was made by using interview schedule designed for the purpose, from 250 arts and science college students selected conveniently.

4. ANALYSIS AND DISCUSSION

The respondents were asked whether they have mobile phone, out of the total respondents of 250, all the college students have a own mobile phones. A follow up question as to whether the respondents had internet facility on their phones showed that a

majority of the respondents representing 97.2 per cent told that they have internet facility on their mobile phones. A further follow up question was to find out whether the college students had knowledge on social media networks. All the respondents representing 100 per cent had knowledge of social media networks. It can be clearly shows that most of the arts and science college students have mobile phone with internet facility on it and they also have knowledge of social media networks.

Table – 1 Favourite social media networks

S. No	Networks	Frequency	Percentage (%)
1.	Facebook	26	10.4
2.	WhatsApp	63	25.2
3.	Twitter	15	6.0
4.	Skype	13	5.2
5.	Instagram	19	7.6
6.	YouTube	114	45.6
Total		250	100

Source: Primary Data

A clear revelation of the Table 1 is that a most of 45.6 per cent of the respondents their favourite social media networks is 'youtube', followed by Whatsup 25.2 per cent, facebook 10.4 per cent, twitter 6 per cent, skype 5.2 per cent and so on. The analysis shows that youtube is the most favourite social media site in the arts and college students.

Table – 2 Daily time spent on the Internet

S. No	Response	Frequency	Percentage (%)
1.	Less than 1 hours	17	6.8
2.	1 to 2 hours	143	57.2
3.	2 to 3 hours	69	27.6
4.	More than 3 hours	21	8.4
Total		250	100

Source: Primary Data

The arts and college students were asked how much time they spent on their social media networks, 143 respondents representing 57.2 per cent indicated that they spent one to two hours, 69 respondents representing 27.6 per cent spent two to three hours and 21

respondents representing 8.4 per cent said they spent more than three hours a day on the social media networks.

Table – 3 Reasons for Using Social Media

S. No	Response	Frequency	Percentage (%)
1.	Chatting	167	66.8
2.	Downloading music and Video	46	18.4
3.	Academic Work	37	14.8
Total		250	100

Source: Primary Data

Table 3 clearly shows that 167 respondents representing 66.8 per cent said they use the social media to chat with friends, 46 representing 18.4 per cent use it to download music and video and 37 respondents representing 14.8 per cent use it for their academic work. The analysis indicates a great majority of the respondents 85.2 per cent do not use the social media networks for academic work.

Table – 4 Social Media Affect Student's Academic Work

S. No	Response	Frequency	Percentage (%)
1.	Yes	164	65.6
2.	No	86	34.4
Total		250	100

Source: Primary Data

The respondents were asked whether the use of the social media networks affects their academic work, 164 respondents representing 65.6 per cent answered the social media networks affects their academic work and the remaining 86 respondents representing 34.4 per cent said that affect their academic work.

Table – 5 Improvement in Academic Work by Using of Social Media

S. No	Response	Frequency	Percentage (%)
1.	Yes	93	37.2
2.	No	157	62.8
Total		250	100

Source: Primary Data

Table 5, out 250 respondents, majority of 157 representing 62.8 per cent respondents said that no improvement in their academic work by the use of social media networks and the remaining 93 representing 37.2 per cent respondents stated that the use of social media to improve their academic work. It was confirmed in the study that most of the respondents use the social media networks for

other purposes rather than academic work. The implication is that the use of social media may likely no bring any improvement in the academic work of respondents.

5. TESTING OF HYPOTHESIS

H1: There is no significant relationship between the use of social media and academic performance.

Table - 6 Correlations

Variables		Academic Work	Use of Social Media
Academic Work	Pearson Correlation	1	.897**
	Sig. (2-tailed)		.000
	N	250	250
Use of Social Media	Pearson Correlation	.897**	1
	Sig. (2-tailed)	.000	
	N	250	250

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

Table 6, there is a strong and positive relationship between academic performance and the use of social media to 0.01 level. In other words, the more use of social media networks, the less academic performance of arts and science college students will record. This implies students who use the social media networks frequently turn to perform poorly performance for academically.

H2: There is no significant relationship between the use of social media and age of the respondents.

Table – 7 ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	112.618	6	18.770	191.786	.000
Within Groups	23.782	243	.098		
Total	136.400	249			

Table 7 makes it clearly shows that since the P value is less than 0.05 in case of age at 5 per cent level of significance, the null hypothesis is rejected. Hence, it is concluded that there is a relationship between the use of social media and age of the respondents.

7. CONCLUSION

The study was conducted to examine the impact of students’ use of social media networks. The study revealed that majority of the respondents had mobile phones with internet facility and had knowledge of the social media networks. As a result they visit their social media networks and spend between one to two hours every day. In addition, the study revealed that the use of social media had affected academic performance of the respondents negatively and further confirmed that there was a strong positive relationship between the use of social media and academic performance. The hypothesis H1 relationship between use of social media and academic performance revealed a strong positive relationship at significant level of 0.01. The study further reveled that most respondents use the social media networks to chat other than academic purpose. Social media is impacting students positively and negatively. Negative practices of social media make them materialistic, angry and addicted to too many bad things. Positive practices of social media enhance the students social intelligence and understanding of human behaviours.

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A Study on Creating a Business Model in Online Banking with Customer Co-creation

C. Revathi¹ and R. Neelamegam²

¹Department of Management studies, V.V.V College for Women (Autonomous), Virudhunagar.

²Department of Management studies, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – In the past few decades, the customer has been silent and hidden such as watching television or listening to lecture. But in present era, the customers do not want to just provide feedback or provide suggestions but also to be a co-designer or co-creator of the products they avail of. The study focuses on appraising customer's preferences for utilizing services of online banking provided by the banks. The present paper deals with the factors influencing the preference of customers for choosing online banking services. The study examines the customer perception, preference, problems and suggestions about online banking services. The study would help the banks to improve the level of online banking and to know potential issues or services that should be introduced. It would also facilitate the customers to overcome the issues in online banking industry by making the customers as the active co-designer or co-creator- by framing an apt business model for online banking.

Keywords: Online banking, Customer preference, Business model.

1. INTRODUCTION

In the present era, most of the organizations are changing their business operations through internet. These business organizations are adopting the advanced technology through internet facility. Banks cater to the needs of agriculturists, industrialists, traders and to all the other sections of the society. Thus, they accelerate the economic growth of a country. The increased trend towards electronic delivery of banking products and services is occurring due to a combination of consumer demand and the increasingly competitive environment of the global banking industry. Since it is now possible to render all banking services electronically, with adequate security and at lower costs, many banks now feel the pressure to do business through the Internet. Customers are now demanding more customized products /services on online at a lower price. While the banks in developed countries use the Internet to operate as banks without a physical location,

banks in developing countries are still using the Internet primarily just as an information delivery tool to improve their relationships with their customers.

2. REVIEW OF LITERATURE:

According to Ahmad and Al-Zu'bi (2011), security had a significant influence on customer satisfaction. Privacy is another important element which always concerns customers. It is always the customers hope that the banks can protect their personal and financial information especially when they do transactions via online banking.

R. Garg, (2013), examined the customer's perceptions towards internet banking facility and also analyzed the customer's satisfaction with various parameters of internet banking services. In total 180 respondents were surveyed to achieve the objective of the study. The study found that perception of customers towards internet banking service quality was largely influenced by the 'reliability', 'user-friendliness', 'responsiveness', 'accuracy', 'speed of service' and 'compatibility'.

According to Hanson & Kalyanam (2007), e-banking has popularized with very fast pace. As people have started using ATMs, the customer visits to bank branches have reduced and it reduced the requirement of bank branches even more when internet banking was introduced to the customers in late 1990s.

Tom E (2001) examined that in addition to previous electronic banking delivery systems-automated teller machine (ATMs) and telephone transaction processing centers, online banking provides banks a new and more efficient electronic delivery tool.

3. OBJECTIVES OF THE STUDY

1. To identify the factors influencing the customer's preference for online banking services
2. To study the level of **customers'** satisfaction with online banking service.
3. To identify the future expectations of customers for online banking services.

4. RESEARCH METHODOLOGY

This study is intended to cover the satisfaction level and future expectations of customers who avail of Online banking services

from the banking sectors in **Virudhunagar** town. The data gathered for the study was collected from both primary and secondary sources. The sampling technique used is Simple Random sampling, where the sample size of 90 respondents represents the customers of online banking service. The primary data collected for the study were analyzed with the help of various statistical measures such as simple percentage analysis, Friedman test, ANOVA and Multiple Regression.

5. ANALYSIS OF DATA

Table: 1 Respondent's Demographic profile

Variables		No. of Respondents	%
Age of Respondents	upto 25 years	35	39
	between 26-50	42	47
	above 50	13	14
Gender	Male	65	72
	Female	25	28
Educational Qualification	no proper schooling	7	8
	School Level	20	22
	College level	23	26
	Professional	25	28
	Diploma	15	17
Occupation	Student	19	21
	Business	35	39
	Agriculture	10	11
	Employee	26	29

Source: Primary data

From the above table it is clear that 47% of the respondents belong to the age group between 26-50 years, 39% belong to up to 25 years and 14% are in the age group of above 50 years. As specified in above table it is clear that 72% of the respondents are male and 28% of the respondents belong to female group. The **above** table reveals that 7% are Illiterate respondents, 22% are school level educated respondents, 26% are college level respondents, 28% are professional level respondents, and 17% are diploma level respondents. It is also clear that 21% of the respondents' occupational status is studentship, 39% are businessman, 11% carry on agriculture and 29% are salaried employees.

Fried man test

The **Friedman's test** is a non-parametric statistical test developed by the U.S. economist Milton Friedman. The *test* is a non-parametric alternative to ANOVA with repeated measures. It is used to *test* for differences between groups when the dependent variable being measured is ordinal.

In this research, Fried man test was used to test the difference between ranks assigned by the customers to their future expectations for online banking.

H₀: There is no significant difference in the ranks assigned by the customers to their future expectations to **for** online banking.

The result of mean ranks and significance in ranking the source of information is given below.

Table: 2 - Ranks

	Mean Rank
Reasonable cost	1.26
Security	2.52
Quality of service	3.11
Ease of use of all ages	2.63

The above table shows that reasonable cost is ranked first with mean rank of 1.26; Security and safety of data is ranked second with mean rank of 2.52 followed by ease of use by all ages with third rank having 2.63 as mean rank. Quality of service is ranked fourth with 3.11 mean.

Table: 3 Test Statistics^a

N	90
Chi-Square	5.495
df	3
Asymp. Sig.	.139
a. Friedman Test	

The Friedman test was conducted to determine whether the ranks assigned by the customers to their future expectations to **for** online banking are the same. Results of that analysis indicated that there is a no differential rank ordered for the four attributes in their future expectation, with $\chi^2 = 5.495$ and $p, 0.139 < .05$. Hence, null hypothesis is accepted.

Analysis of Variance

ANOVA technique is used when an independent variable is of nominal scale with more than two categories and the dependent variable is metric or at least on interval scale. In the present study, one-way ANOVA was used to analyze the relationship between customers’ different occupation status and factors influencing the usage of online banking.

H_0 : There is no significant difference between customers’ occupation status and their importance towards factors influencing the usage of online banking.

Table: 4 ANOVA

Factors		Sum of Squares	df	Mean Square	F	Sig.
Time saving	Between Groups	15.192	4	3.798	5.453	.001
	Within Groups	59.208	85	.697		
	Total	74.400	89			
Easy and convenience	Between Groups	32.431	4	8.108	9.913	.000
	Within Groups	69.524	85	.818		
	Total	101.956	89			
Speed	Between Groups	14.742	4	3.686	4.038	.005
	Within Groups	77.580	85	.913		
	Total	92.322	89			
Security	Between Groups	14.441	4	3.610	6.863	.000
	Within Groups	44.714	85	.526		
	Total	59.156	89			
Transparency	Between Groups	27.556	4	6.889	9.934	.000
	Within Groups	58.944	85	.693		
	Total	86.500	89			

At 5% level of significance (9% level of confidence), this analysis does not support the null hypothesis as the ‘p’ values of all factors are less than the significance value of 0.01.

Thus, there is difference in customer’s occupation status and their importance towards factors influencing the usage of online banking.

Regression model

Multiple regression analysis is to explain the variation in one variable (called the dependent variable), based on the variation in two or more other variables (called the independent variables). Here the

Dependent variable

Y= Usage of online banking

Independent Variables

- X₁ = Age
- X₂ = Education
- X₃ = Awareness about online services
- X₄ = Convenience
- X₅ = Web design
- X₆ = Service quality

Table: 5 ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.142	1	6.142	4.123	.043 ^a
	Residual	384.392	88	1.490		
	Total	390.535	89			
a. Predictors: (Constant), Service Quality, Web designing and content, Convenience, Awareness about online services, age, Education						
b. Dependent Variable: Usage of online banking						

From ANOVA analysis summary table, the statistical significance of the model is to be proved first. From the above table the p-value

0.043, which is less than 0.05, which means this model is acceptable.

Table: 6 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.787 ^a	.607	.594	.6472
a. Predictors: (Constant), Service Quality, Web designing and content, Convenience, Awareness about online services, age, Education				
b. Dependent Variable: Usage of online banking				

Multiple regression analysis result of impacts of factors usage of online banking services is revealed in Table. As shown in the model summary, R²=0.607 (adjusted R²=0.594) suggests the explained degree of

impact on risk bearing capacity of investors by 6 variables: Age, Education, Awareness about online services, Convenience, Web design and Service quality 60.7%, that is to say, these 6 variables have 60.7% level of influence on usage of online banking services.

Table: 7 Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.978	.355		5.574	.000
Age	.528	.081	.000	-.011	.001
Education	.066	.093	.066	.711	.023
Awareness about online services	-.032	.094	-.032	-.347	.043
Web designing and content	-.037	.091	-.032	-.408	.001
Convenience	.026	.082	.022	.320	.000
Service Quality	.120	.074	.109	1.631	.006
a. Dependent Variable: Usage of online banking					

The regression model coefficient of impacts of factors on customers online banking service is shown in Table . According to the result of regression coefficient, we built a regression model with non-standardized coefficient. Hence the regression model is:

$$Y = (1.978) + (0.528) \text{ Age} + (0.066) \text{ Education} - (0.032) \text{ Awareness} - (0.037) \text{ Web designing} + (0.026) \text{ Convenience} + (0.120) \text{ Service Quality}$$

One can also note that the t test for the significance of individual independent variables (X1 to X6) indicates that the significance level of 0.05 (confidence level of 95), all these six independent variables are statistically significant in the model. However, of these six variables age is the dominating influencing variable, followed by service quality.

6. IMPLICATION OF THE STUDY

- From the above analysis it is found that 47 % of the respondents are under the age category between 26-50 years and 72% are male customers.
- Under the category of educational qualification 29% of the respondents are professionals. On the basis of occupation 39% of respondents are business people who use online banking services.
- From the result of Friedman test there is no significant difference in the ranks assigned by the customers to their future expectations towards online banking.
- From the result of ANOVA there is no significant difference between customers' occupation status and their importance towards factors influencing the usage of online banking.
- A model is built using regression and it is found that there is a positive impact by the variables age, education, convenience and service quality towards online banking services. The variables web design and awareness on online banking have a negative impact towards online services.

7. SUGGESTIONS

- The bank should come forward with more meaningful advertisements and awareness campaigns to create awareness among customer's regarding online banking services and to make online banking popular among the entire age and occupation category of people.
- Banks should organize public exhibitions and talk shows and make products accessible to all customers.
- Banks may try to win customers confidence by providing adequate security to transaction, and the technology should be such way that can be utilized by all age category of people.

8. CONCLUSION

Since the customers are using online banking nowadays due to its relative advantages over traditional method, the bank should make customers to participate in decision making process while introducing a new business model. The most important factor to be considered in online banking is security, where the information provided by the customer should be kept confidential. Also the bank **should** assure that information will not be misused and **the** privacy will be respected. Generally, young customers are less risk **averse** than the aged customers. So bank must target young customers for the online banking services.

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Competence of Academic Administrators Virudhunagar District in Identifying Emotions: A Delineation

R.Shobana Devi and P.Sundara Pandian

Department of Commerce, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – Emotional Intelligence is the ability to acquire and apply knowledge from one's emotions and the emotions of others in order to be more successful and lead a more fulfilling life. The ability to accurately recognize emotions is the most basic Emotional Intelligence skill. This basic aspect of Emotional Intelligence involves recognizing and correctly identifying emotion in people and the world around them. Identifying emotions is important because the better the emotional read one has on a situation, the more appropriately one can respond. The main objective of the study is to know the ability of awareness of Academic Administrators in identifying emotions. In order to find the relationship between the Experience and aware of their own emotions, a one way ANOVA test was employed. In order to find the relationship between the Age and Understanding Others' Emotions of the respondents, a Chi-square test was employed. In order to find the relationship between the Age of the respondents and the opinion about the importance of identifying emotions, a One way ANOVA test was employed.

Keywords: Emotional Intelligence, Identifying Emotions, Emotional Cue

1. INTRODUCTION

Emotional Intelligence is the ability to acquire and apply knowledge from one's emotions and the emotions of others in order to be more successful and lead a more fulfilling life.[1] It is the capacity for recognizing one's own feelings and those of others, for motivating ourselves, and for managing emotions well in us and in our relationships. It can also be defined as a set of abilities that help us respond to the world around us appropriately.[2]

Emotional intelligence is the intelligent use of emotions. Most people have trouble in managing situations that are emotionally charged, especially when the emotions aroused are anger and anxiety.[3] When this difficulty is accompanied by, or causes poor communications skills, then people really do get into trouble. Those individuals who are able to handle their emotions, not just the expression or regulation of them, but who are also able to generate the kinds of emotions that are

productive and efficient, are indeed emotionally intelligent.

It is not possible to leave one's emotions at home. Hence people carry emotions with them and a smart manager needs to tackle the emotions of the employees intelligently. People vary enormously in the skill which they use to manage their own emotions and the emotions of others - and that can make the difference between a good manager and a bad one.[4] Most of the professionals, managers and executives are fairly smart people but there can be huge difference in how well they handle people. That is, the manager may be a genius in technical, product or service knowledge-but get fail marks in terms of the skills in handling people.

Emotional Intelligence helps in the empowerment of individuals to be at their best as it enables them to understand their own and others' emotions too. Everyone experiences and relates to feelings and emotions. Even the world around us communicates and sends emotional messages. Emotions contain valuable information about relationships and about the world around us. This ability to perceive emotions starts with being aware of these emotional clues, and they mean.

Emotional Intelligence is one of the contemporaneous approaches that are helping individuals to increase their ability to be aware of their emotions. This approach also helps them to balance their emotional and rational mind. Emotions are just concepts which are energized by feelings. The concept introduces the factor of mind and so each emotion has its own cluster of ideas associated with it. Once a person learns to identify his full range of major emotional responses, then he can use them to

clear confusion from the traditional debates about truth and goodness.

The ability to accurately recognize emotions is the most basic Emotional Intelligence skill. This basic aspect of Emotional Intelligence involves recognizing and correctly identifying emotion in people and the world around them. Identifying emotions is important because the better the emotional read one has on a situation, the more appropriately one can respond.

Performance on this ability involves attention to, and awareness of, emotions. But, simple awareness is not enough. We must also have the ability to discern between sadness and fear, anger and disgust. Beyond that, the degree to which fear, anger, or happiness is present must be determined. Staying aware of our body sensations helps us to do that and to remain grounded. Having noticed the signs that emotions are occurring, our next step is to understand and identify those emotions. Asking oneself the following questions will help to understand the ways that emotion has affected. [5]

- What am I feeling now?
- What are my senses telling me?
- What is it that I want?
- What judgments or conclusions have I made (and are they accurate)?
- What is this emotion trying to tell me?

The answers to these questions are vital to using one's emotions in the service of one's life goals, rather than allowing one's emotions to use one. Often, one's physiological (body) reactions suggest vital clues to the nature of one's emotional state.

2. IMPORTANCE OF IDENTIFYING EMOTIONS SKILL

Garbage in, garbage out, it is difficult, if not impossible, to recover from faulty emotional data. Basing actions on incorrect information is a recipe for disaster. One needs to be aware of his own feelings and emotions so that he has accurate data and information about

the world around him. Being aware of other's emotions is a key to working with people.

The ability to accurately recognize emotions is the most basic Emotional Intelligence skill. This basic aspect of Emotional Intelligence involves recognizing and correctly identifying emotion in people and the world around you. Identifying emotions is important because the better the emotional read one have on a situation, the more appropriately he can respond.

The ability to accurately recognize emotions is the most basic Emotional Intelligence skill. The better the emotional read one have on a situation, the more appropriately he can respond to it. It is difficult, if not impossible, to recover from faulty emotional data. Being aware of other's emotions is critical to building a successful workplace environment and quality interpersonal relationships.

3. REVIEW OF LITERATURE

David Rosete, Joseph Ciarrochi [6] in their study "Emotional intelligence and its relationship to workplace performance outcomes of leadership effectiveness", Correlation and regression analyses revealed that higher EI was associated with higher leadership effectiveness, and that EI explained variance not explained by either personality or IQ.

Kremenitzer, Janet [7] in his paper "Emotional Intelligence Ability and the Teacher Candidate" highlights the important concept of developing greater emotional intelligence abilities in teacher candidates as part of the training they receive within their teacher education institutions.

Cary Cherniss and Daniel Goleman. San Francisco, CA: Jossey-Bass [8] in their book "The Emotionally Intelligent Workplace" set out a framework of emotional intelligence (EI) that reflects how an individual's potential for mastering the skills of Self-Awareness, Self-Management, Social Awareness, and

Relationship Management translates into on-the-job success.

4. OBJECTIVES OF THE STUDY

The main objective of the study is to know the ability of awareness of Academic Administrators in identifying emotions.

5. RESEARCH DESIGN AND METHODOLOGY

In view of considerable data – from survey research as well as secondary sources – collected and presented in this research report, ‘descriptive research’ is considered the most appropriate for the present study. Hence, the study is descriptive and analytical. The research problem, the null hypothesis and interview schedule are formulated and framed accordingly. The suggestions of the study emerge from the inferences drawn from the sample survey of Academic Administrators in Tamilnadu.

5.1. Primary Data

Primary data was collected and used in the present research. The primary data was collected from the respondent in Virudhunagar District by using the interview schedule method by structured questionnaire. The respondents with varying background were selected based on their age, education and the like.

5.2. Secondary Data

The researcher collected secondary data information’s through the journals, magazines, books and related websites.

5.3. Sample Design

The researcher has taken 60 respondents from the study area. Convenient sampling technique was adopted for data collection.

6. EXPERIENCE AND AWARE OF EMOTIONS

Emotional Awareness means knowing when feeling are present in oneself and others. Such awareness is one’s guide in fine-tuning on- the-job performance of every kind, managing our unruly feelings, keeping ourselves motivated, tuning in with accuracy to the feelings of those around them, and

developing good work-related social skills, including those essential for leadership and teamwork.

H₀: There is no significant association between the experience and the awareness of emotions.

H₁: There is a significant association between the experience and the awareness of emotions.

In order to find the relationship between the Experience and aware of their own emotions, a one way ANOVA test was employed and the result of the test is shown in the following table.

Table 1 Experience and Aware of Emotions

Factor	Calculated value	Table value	Degrees of freedom	Remarks
Experience	4.79	4.26	(2,9)	Significant at 5% level

The critical value of F with (2, 9) degrees of freedom at 5% level of significance is 4.26. As the calculated value of F (4.79) is more than the critical value, the null hypothesis is rejected. Thus, there is a significant relationship between the experience and aware of emotions.

7. REASON FOR HIDING EMOTIONS

If people do try to maintain their own reality while operating in environments where individuals and their psychological well-being are not nurtured they find that the pain of feeling becomes excruciating. It seems sane in these situations to shut down. However, one does this at one’s own cost. One’s emotions bring with one a huge amount of information about the world in which they live. They tell us when one is safe, and when one is in danger. If one unconsciously shut down one’s emotions they may be placing oneself at risk.

It is implied from the study that 50% of the respondents hide their emotions otherwise it will create unhealthy relationship, 28.33% of the respondents hide their emotions to maintain leadership quality and 21.67% of the respondents hide their emotions to maintain emotional stability.

Table 2 Reason for Hiding Emotions

Reasons	No. of Respondents	Percentage
Otherwise create unhealthy relationship	30	50.00
To maintain leadership quality	17	28.33
To maintain emotional stability	13	21.67
Total	60	100.00

The fact which is known from the Table 2 is that majority of the respondents (50%) hide their emotions to create healthy relationship.

8. UNDERSTANDING OTHERS' EMOTIONS

Understanding someone’s point of view or perspective-knowing why they feel as they do-does not inevitably mean embracing it. Particularly in academic, understanding how someone feels need not lead to giving in, but to more skillful negotiation and management. As a result, tough decisions may generate less resentment and lasting ill will. A study on the reason for understanding others’ emotions becomes very important as all those reasons are taken into the considerations by the Academic Administrators in successful implementation of any program.

Table 3 Reason for Understanding Others’ Emotions

Reasons	Total score	Garrett Mean Score	Rank
To build a successful environment	9297	53.13	I
To keep quality in interpersonal relationship	9264	52.94	II
To tackle the situation	8216	50.38	III
To understand their character	7623	43.56	IV

In choosing the reason for understanding others’ emotion, the important reason is “To build a successful environment”, its total score and mean score are 9297 and

53.13 respectively in the Garrett ranking. The second most important reason is “To keep quality in interpersonal relationship”, with the total score of 9264 and the mean score of 52.94. “To tackle the situations” ranked III with the total score of 8216 with a mean score of 50.38. The IV rank being “To understand their character” with Garrett score of 7623 and the mean score of 43.56.

9. AGE AND UNDERSTANDING OTHERS' EMOTIONS

H₀: There is no significant association between the Age and Understanding Others' Emotions

H₁: There is a significant association between the Age and Understanding Others' Emotions

In order to find the relationship between the Age and Understanding Others' Emotions of the respondents, a Chi-square test was employed and the result of the test is shown in the following table.

Table 4 Age and Understanding Others' Emotions

Factor	Calculated Chi-Square value	Table value	Degrees of freedom	Remarks
Nature of the College	24.56	5.99	2	Significant at 5% level

The Chi-square test reveals that the calculated chi-square value (24.56) is greater than the table value (5.99) and the result is significant at 5% level. Hence, the hypothesis “Association between the Age and Understanding Others' Emotions” holds good. From the analysis, it can be inferred that there is a close relationship between the Age and Understanding Others' Emotions

10. DIFFERENT WAYS AND MEANS OF IDENTIFYING OTHERS' EMOTIONS

Being able to pick up on some emotional cue is particularly important in situations where people have reason to conceal their true feelings-a fact of life in the academic. Sensing what others feel without their saying so captures the essence of empathy. Others rarely tell us in words what they feel; instead they tell

us in their tone of voice, facial expression, or nonverbal ways.

One of the main mutual adjustments is in facial expression. When one see a happy face (or angry one), it evokes the corresponding emotion in one, albeit subtly. To the degree one take on the pace, posture, and facial expression on another person, one start to inhabit their emotional space; as one's body mimics the others, one begin to experience emotional attunement.

During the survey, it was observed that the samples Academic Administrators were exposed to a relative importance of different ways and means of identifying their Managements' emotions. An attempt was made to analyze the different ways and means

on a ranked basis. The respondents were desired to rank the following different ways and means of identifying their Managements' emotions in the order of importance.

- a. Tone/voice
- b. Facial expression
- c. Artistic expression
- d. Posture

The investigation discloses that in the order of importance of different ways and means of identifying their Managements' emotions 'Facial expression', 'Tone / Voice', 'Posture' and 'Artistic expression' are ranked 1,2,3,and 4 respectively. The following table highlights the ranking of importance of different ways and means of identifying their Managements' emotions.

Table 5 Different Ways And Means of Identifying Others' Emotions

Ways and Means	(Distribution of Respondents)					Weighted average score	Rank
	Rank I Score 5	Rank II Score 4	Rank III Score 3	Rank IV Score 2	Rank V Score 1		
Facial expression	73	52	33	12	5	4.01	I
Tone / voice	61	43	35	24	12	3.67	II
Posture	41	51	32	16	35	3.27	III
Artistic expression	21	35	44	33	42	2.77	IV

The above table brings out that the respondents feel "Facial expression" is the most important emotional cue to identify the Management's emotions.

11. AGE AND OPINION ABOUT THE IMPORTANCE OF IDENTIFYING EMOTIONS

People who are unable to know their feelings are at a tremendous disadvantage. In a sense, they are emotional illiterates, oblivious to a realm of reality that is crucial for success in life as a whole, let alone work.

H₀: There is no significant association between the age and the opinion about the importance of identifying emotions.

H₁: There is a significant association between the age of the respondents and the opinion about the importance of identifying emotions.

In order to find the relationship between the Age of the respondents and the opinion about the importance of identifying emotions, a One way ANOVA test was employed and the result of the test is shown in the following table.

Table 6 Age and Opinion About the Importance of Identifying Emotions

Factor	Calculated value	Table value	Degrees of freedom	Remarks
Importance of identifying emotions	2.15	4.26	(2,9)	Not Significant at 5% level

The critical value of F with (2, 9) degrees of freedom at 5% level of significance is 4.26. As the calculated value of F (2.15) is less than the critical value, the null hypothesis is accepted. Thus, there is no significant

relationship between the Age and opinion about the importance of identifying emotions.

12. SUMMARY

Emotional Intelligence is one of the simultaneous approaches that are helping individuals to increase their ability to be aware of their emotions. The ability to accurately recognize emotions is the most basic Emotional Intelligence skill. This basic aspect of Emotional Intelligence involves recognizing and correctly identifying emotion in people and the world around them. Identifying emotions is important because the better the emotional read one has on a situation, the more appropriately one can respond. The study reveals that there is a significant relationship between the Experiences and Aware emotions, Age and Understanding Others' Emotions. There is no significant relationship between the Age and opinion about the importance of identifying emotions. Most of the Academic Administrators hide their emotions to create healthy relationship. The respondents feel "Facial expression" is the most important emotional cue to identify the Others' emotions.

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MGNREGS A Facilitator for Rural Development in Tamilnadu

M.Suresh and P.Sundara Pandian

Department of Commerce, V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

Abstract – The intention of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is to provide a basic employment guarantee in rural areas. Poverty alleviation programmes comprising of wage employment programmes, rural housing schemes and a public distribution system have been initiated from time to time. The earlier wage employment programmes did not attain the goals and aims. The objectives of the study were to analyse the financial pattern of MGNREGS, employment generation, asset creation, achieving women empowerment under MGNREGS. MGNREGS has transformed our rural India by eradicating poverty enabling the safety net for the unemployed especially during famine and drought leading to sustainable development. Here the researcher has studied the overview of MGNREGS in Tamilnadu.

Keywords: MGNREGS; Rural Development; Tamilnadu

1. INTRODUCTION

In India, 72 percent of population lives in rural and remote villages. India's economy mainly depends upon rural development and growth. Rural growth tends to agricultural development and the improvement of rural infrastructure. After Independence, our country faced a lot of economic problems as well as social problems such as population growth, poverty, unemployment, lack of industrial development, inadequate infrastructure, ignorance, low level of savings and investment. In these circumstances, there is a need to reconstruct and trigger rural growth in order to relieve from the socio-economic problems. Poverty alleviation programmes comprising of wage employment programmes, rural housing schemes and a public distribution system have been initiated from time to time. The earlier wage employment programmes did not attain the goals and aims. In this situation, the Government of India implemented MGNREGS on 2nd February, 2006 with the objective of "enhancing livelihood security in rural areas by providing at least hundred days of guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work".

MGNREGS plays a vital role as a social change instrument which facilitates changes in the village. This scheme has the potential to transform the lives of millions of rural poor by guaranteeing wage employment through the creation of productive assets. The MGNREGS has reduced distress migration from poor regions, provided secured incomes for women, supported agricultural wages and increased incomes for wage workers who are arguably amongst the poorest in the country. The primary objective of the Act is augmenting wage employment and its auxiliary objective is strengthening natural resource management through works that address causes of chronic poverty like drought, deforestation and soil erosion and so encourage sustainable development. There are three overarching goals in MGNREGS: i) employment creation; ii) regeneration of the natural resource base and creation of productive assets in rural areas; and iii) strengthened grassroots processes of democracy through transparent and accountable governance. Another important aspect of MGNREGS is the increasing participation of women in it. It not only provides employment to them but by giving wage rate equal to that of a man, it has empowered the women economically as well as socially. It aims at creating sustainable rural livelihood through regeneration of the natural resource-base, i.e. augmenting productivity and supporting creation of durable assets and strengthening rural governance through decentralization and processes of transparency and accountability. In addition to this, the aim of MGNREGS is to create durable assets that would augment the basic resources available to the poor.

The intention of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is to provide a basic employment

guarantee in rural areas. As per Schedule I of the Act, the focus of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) shall be taken on the following works:

1. Water conservation and water harvesting;
2. Drought proofing, including afforestation and tree plantation;
3. Irrigation canals, including micro and minor irrigation works;
4. Provision of irrigation facility, plantation, horticulture, land development to land owned by households belonging to the SC/ST, or to land of the beneficiaries of land reforms, or to land of the beneficiaries under the Indira Awas Yojana/BPL families
5. Renovation of traditional water bodies, including de-silting of tanks;
6. Land development;
7. Flood-control and protection works, including drainage in waterlogged areas;
8. Rural connectivity through the construction of roads including culverts, drains where necessary, within the village area.
9. Any other work that may be notified by the Central Government in consultation with the State Government.

The above list of permissible works represents the initial thrust areas. In some circumstances, locations or seasons, it may be difficult to guarantee employment within this initial list of permissible works. In such circumstances, the State Governments may make use of Section 1(ix) of Schedule I, whereby new categories of work may be added to the list on the basis of consultations between the State Governments and the Central Government. Proposals for new categories of work should be discussed and approved in the State Employment Guarantee Council before reference to the Ministry of Rural Development. If the Central Government wishes to notify a new category of work it will refer the proposal to the State Governments whose responses must be sent within a month.

The financing pattern and establishment of the 'Employment Guarantee Funds' is taken by the Central and State Government. Under MGNREGS, the Central Government meets the cost towards the payment of wage, 3/4 of material cost and some percentage of administrative cost. State Governments meet the cost of unemployment allowance, 1/4 of material cost and administrative cost of State council. Since the State Governments pay the unemployment allowance, they are heavily incentivized to offer employment to workers. The objectives of the study were to find out whether the MGNREGS was being used for productive asset-creation, to gauge the development potential of the scheme, and to examine the village planning process crucial to the scheme success.

2. OBJECTIVES OF THE STUDY

- To know the financial pattern of MGNREGS
- To analyse the employment generated for rural people under MGNREGS
- To assess the asset creation in rural areas under MGNREGS.

3. RESEARCH METHODOLOGY

The study focuses on extensive study of secondary data which have been collected from annual reports, journals and periodicals publications from various websites and reports of Ministry of Rural Development Government of India.

4. MGNREGS IMPLEMENTATION STATUS REPORT FOR THE FINANCIAL YEAR 2017-2018

The Act came into force on February 2, 2006 and was implemented in a phased manner. With its spread over 625 districts across the country, the flagship program of the Government has the potential to increase the purchasing power of rural poor, reduce distress migration and to create useful assets in rural India. 5,11,58,907 rural households were provided jobs under MGNREGS during the year 2017–2018, with a National average of 46

working days per household. Also, it can foster social and gender equality as 23% workers under the scheme are Scheduled Castes, 17% Scheduled Tribes and 53% women. In the year

2017–2018, 29,55,152 households were completed hundred days of employment under MGNREGS.

Table 1 Employment provided communitywise through MGNREGS during the financial year 2017-2018 in India

S.No	STATES	SC	ST	OTHERS	TOTAL
1	ANDHRA PRADESH	2096592	715563	5829096	8641251
2	ARUNACHAL PRADESH	178	201726	18012	219916
3	ASSAM	257155	680217	3488381	4425753
4	BIHAR	3652387	253562	10927292	14833241
5	CHHATTISGARH	392391	1242097	2067475	3701963
6	GOA	789	9592	22726	33107
7	GUJARAT	237694	1341582	1953813	3533089
8	HARYANA	383850	76	501804	885730
9	HIMACHAL PRADESH	324594	73952	812632	1211178
10	JAMMU AND KASHMIR	76730	166115	942684	1185529
11	JHARKHAND	483490	1407972	2228185	4119647
12	KARNATAKA	935639	461382	4129982	5527003
13	KERALA	418010	110489	2807490	3335989
14	MADHYA PRADESH	1136316	2184084	3381224	6701624
15	MAHARASHTRA	804545	1164780	6448577	8417902
16	MANIPUR	15049	245826	287334	548209
17	MEGHALAYA	3882	497404	33056	534342
18	MIZORAM	38	189848	1436	191322
19	NAGALAND	3731	412269	15478	431478
20	ODISHA	1141842	1723627	3461481	6326950
21	PUNJAB	1042630	421	421415	1464466
22	RAJASTHAN	1820271	1809479	6122767	9752517
23	SIKKIM	3688	30016	47163	80867
24	TAMIL NADU	2142477	120284	5702123	7964884
25	TELANGANA	1183324	829650	3287842	5300816
26	TRIPURA	107119	247374	256328	610821
27	UTTAR PRADESH	5076839	158396	10236018	15471253
28	UTTARAKHAND	201978	39247	800520	1041745
29	WEST BENGAL	3092319	871340	7753897	11717556
30	ANDAMAN AND NICOBAR	4	3931	31351	35286
31	DADRA & NAGAR HAVELI	1	3496	52	3549
32	DAMAN & DIU	0	0	0	0
33	LAKSHADWEEP	9	7902	91	8002
34	PUDUCHERRY	18012	89	45737	63838
	Total	27053573	17203788	84063462	128320823

Source: www.nrega.ac.in

In respect of employment generated provided through MGNREGS during the financial year 2017-2018, Uttar Pradesh occupies the first position in its scheme coverage of 1,54,71,253 persons, followed by Bihar with scheme coverage of 1,48,33,241 persons. With regard to

Tamilnadu, employment generation in MGNREGS occupies the seventh position with 79,64,884 persons. Therefore, the employment generated through MGNREGS is quite good in Tamilnadu.

Table 2 Employment generated communitywise during the financial year 2017-2018 in Tamilnadu

S.No	DISTRICTS	SC	ST	OTHERS	TOTAL
1	ARIYALUR	33082	1666	135139	169887
2	COIMBATORE	50681	4195	94733	149609
3	CUDDALORE	153720	1880	284853	440453
4	DHARMAPURI	28435	5026	178398	211859
5	DINDIGUL	77100	728	226698	304526
6	ERODE	52716	2597	133091	188404
7	KANCHIPURAM	127500	4410	195839	327749
8	KANNIYAKUMARI	5732	640	94032	100404
9	KARUR	32345	87	101183	133615
10	KRISHNAGIRI	28093	1582	229810	259485
11	MADURAI	61152	476	223213	284841
12	NAGAPATTINAM	99375	326	134147	233848
13	NAMAKKAL	60370	14651	144098	219119
14	PERAMBALUR	35684	382	79393	115459
15	PUDUKKOTTAI	49134	95	227602	276831
16	RAMANATHAPURAM	51615	50	150746	202411
17	SALEM	85827	27069	301745	414641
18	SIVAGANGAI	40766	45	150417	191228
19	THANJAVUR	86587	193	201499	288279
20	THE NILGIRIS	13443	3212	30956	47611
21	THENI	30769	138	99592	130499
22	THOOTHUKKUDI	56654	161	140948	197763
23	TIRUCHIRAPPALLI	69033	2872	235542	307447
24	TIRUNELVELI	80232	349	206910	287491
25	TIRUPPUR	65467	240	118774	184481
26	TIRUVALLUR	104410	5675	174798	284883
27	TIRUVANNAMALAI	105940	19066	368126	493132
28	TIRUVARUR	95276	110	101315	196701
29	VELLORE	96912	7545	308840	413297
30	VILLUPURAM	202031	14744	467076	683851
31	VIRUDHUNAGAR	62396	74	162610	225080
	Total	2142477	120284	5702123	7964884

Source:www.nrega.ac.in

In respect of employment generated through MGNREGS in Tamilnadu during the financial year 2017-2018, Villupuram occupies the first position in its scheme coverage with employment generation of 6,83,851 followed by Thiruvannamalai with scheme coverage and employment generation of 4,93,132 persons under MGNREGS.

5. JOB CARD ISSUED UNDER MGNREGS

The single most important distinguishing feature of MGNREGS from employment programmes of the past is that provision of work is triggered by the demand for work by wage-seekers and provided as their

legal right. The job card is the key document recording workers’ entitlements under MGNREGS. The job card is the registered household’s legal instrument for applying for work, which also ensures transparency and protects workers against fraud.

The following table represents the job card issued under MGNREGS in National level and Tamilnadu during the year 2006-2007 to 2017-2018. As per the table, in the inaugural year 2006-2007 3,57,43,241 persons were getting job card under MGNREGS. In the year 2007-2008, 6,41,89,909 persons were getting job card under MGNREGS. In the year 2008-

2009,9,87,28,651 persons were job card holders. During the year 2009-2010, the job card were issued to 11,22,35,517 persons, 11,98,05,512 persons were job card holders in the year 2010-2011, 11,93,16,515 persons were job card holders in the year 2011-2012, 13,06,30,183 persons were job card holders in the year 2012-2013 and it further increased to 12,81,62,218 persons in the year 2013-2014 and it decreased in the year 2014-2015, the job card were issued to 12,72,50,651 persons. Subsequently in the year 2015-2016, the job card were issued to 13,01,22,675 persons and the followed years 2016-2017 and 2017-2018 was 12,69,16,298 persons 12,83,20,823 persons in respectively.

It reveals the fact that the MGNREGS has created significant amount of employment for the rural households in Tamilnadu. In the inaugural year 2006-2007, the job card issued and employment generated in Tamilnadu were 11,57,525 persons, from the year 2007-2008 onwards the job card were issued to 22,00,437 persons followed by 55,12,827 persons in 2008-2009, 65,35,710 persons in 2009-2010, 73,47,187 persons in 2010-2011, 80,31,947 persons in 2011-2012, 92,28,418 persons in 2012-2013, 84,97,290 persons in 2013-2014, 81,66,752 persons in 2014-2015, 83,92,576 persons in 2015-2016, 79,04,990 persons in 2016 – 2017 and 79,64,884 persons in 2017-2018.

Table 3 Job Card Issued Under MGNREGS

Year	India	Tamilnadu
2006-2007	3,57,43,241	11,57,525
2007-2008	6,41,89,909	22,00,437
2008-2009	9,87,28,651	55,12,827
2009-2010	11,22,35,517	65,35,710
2010-2011	11,98,05,512	73,47,187
2011-2012	11,93,16,515	80,31,947
2012-2013	13,06,30,183	92,28,418
2013-2014	12,81,62,218	84,97,290
2014-2015	12,72,50,651	81,66,752
2015-2016	13,01,22,675	83,92,576
2016-2017	12,69,16,298	79,04,990
2017-2018	12,83,20,823	79,64,884
CAGR	11.19%	17.36%

Source: www.nrega.ac.in

From the year 2006-2007, the job card issued shows an increasing trend except in the year 2011-2012 the issue of job card has decreased to some extent. In the year 2017-2018 the job cards were issued to 12,83,20,823 persons compared to 2016-2017 the job card were issued to 12,69,16,298 persons which shows a increasing trend. Over the twelve years of time frame, the job card issued is increased at compound annual growth rate of 11.19%

From the year 2006-2007, the State of Tamilnadu has very significant employment generation. The subsequent year the State has witnessed a significant increase of employment generation. In the year 2017-2018, the jobcard issued has increased to 79,64,884 persons compared to 79,04,990 persons in 2016-2017. Over the twelve years of time frame, the job card issued is increased at compound annual growth rate of 17.36%.

6. ASSET CREATION AT NATIONAL LEVEL

The MGNREGS twin objective is to generate employment opportunities and build the useful assets for the rural people. The MGNREGS stipulates that works must be targeted towards a set of specific rural development activities such as: water conservation and harvesting, afforestation, rural connectivity, flood control and protection such as construction and repair of embankments, land leveling, tree plantation, etc., Digging of new tanks/ponds, percolation tanks and construction of small check dams are also given importance. In the Inaugural year 2006-2007, 35,37,321 works were taken under MGNREGS. A portion of 14,78,416 works were completed and the remaining 20,58,905 works are in progress. In the year 2007-2008, 1,24,37,411 works were taken and a portion of 37,89,599 works were completed and the remaining 86,47,812 works are in progress. In the year 2008-2009, 2,29,48,071 works were taken, 78,59,350 works were completed and the remaining 1,50,88,721 works are in progress. In

the year 2009-2010, 55,04,924 works were taken, 51,42,853 works were completed and the remaining 3,62,071 works are in progress. In the year 2010-2011, 27,92,487 works were taken, 24,99,336 works were completed and the remaining 2,93,151 works are in progress. In the year 2011-2012, 38,72,236 works were taken, 32,86,240 works were completed and the remaining 5,85,996 works are in progress. In the year 2012-2013, 41,69,702 works were taken in which 29,59,597 works were completed and the remaining 12,09,475 works are in progress. In the year 2013-2014, 53,47,699 works were taken, 26,98,841 works were completed and the remaining 26,48,858

works are in progress and in the year 2014-2015 40,14,804 works were taken, 8,58,829 works were completed and the remaining 31,55,975 works are in progress and in the year 2015-2016 58,02,254 works were taken, 11,07,613 works were completed and the remaining 46,94,641 works are in progress. During the year 2016-2017, 3,67,84,324 works were taken, 3,54,20,068 works were completed and the remaining 13,64,256 works are in progress and in the year 2017-2018, 92,77,404 works were taken, 62,52,452 works were completed and the remaining 30,24,952 works are in progress. The following table shows the asset creation at National level.

Table 4 Asset Creation at National Level

Year	Work Taken up	Work Completed	Ongoing	Work Completion rate
2006-2007	35,37,321	14,78,416	20,58,905	41.794
2007-2008	1,24,37,411	37,89,599	86,47,812	30.469
2008-2009	2,29,48,071	78,59,350	1,50,88,721	34.248
2009-2010	55,04,924	51,42,853	3,62,071	93.422
2010-2011	27,92,487	24,99,336	2,93,151	89.502
2011-2012	38,72,236	32,86,240	5,85,996	84.866
2012-2013	41,69,072	29,59,597	12,09,475	70.978
2013-2014	53,47,699	26,98,841	26,48,858	50.467
2014-2015	40,14,804	8,58,829	31,55,975	21.139
2015-2016	58,02,254	11,07,613	46,94,641	19.09
2016-2017	3,67,84,324	3,54,20,068	13,64,256	96.29
2017-2018	92,77,404	62,52,452	30,24,952	67.39

Source: www.nrega.ac.in

From the above table, it is inferred that the work completed during the year 2006 -2007 was 41.794 and shows a decrease in the year 2007-2008 and 2008–2009 where it was 30.469 and 34.248. In the year 2009-2010, the completion showed an increasing trend by 93.422. During the year 2013-2014, 2014-2015 and 2015-2016 showed a declining trend in the work completion rate by 50.467, 21.139 and 19.09 respectively. During the year 2016-2017 and 2017-2018 showed a increasing trend in the work completion rate by 96.29 and 67.39 respectively.

7. ASSET CREATION IN TAMILNADU

In the Inaugural year 2006-2007, 33,598 works were undertaken under MGNREGS. A portion of 8,590 works were completed and the

remaining 25,008 works were in progress. In the year 2007-2008, 1,35,185 works were taken and a portion of 52,203 works were completed and the remaining 82,982 works were in progress. In the year 2008-2009, 3,04,073 works were taken, 63,426 works were completed and the remaining 2,40,647 works were in progress. In the year 2009-2010, 66,708 works were undertaken, 54,694 works were completed and the remaining 12,014 works were in progress. In the year 2010-2011, 41,660 works were undertaken, 41,452 works were completed and the remaining 208 works were in progress.

In the year 2011-2012, 57,679 works were taken, 56,206 works were completed and the remaining 1,473 works were in progress. In the

year 2012-2013, 84,446 works were taken, 75,868 works were completed and the remaining 8,578 works were in progress. In the year 2013-2014, 2,34,474 works were taken, 1,82,217 works were completed and the remaining 52,257 works are in progress and in the year 2014-2015, 4,37,607 works were taken, 1,25,662 works were completed and the remaining 3,11,945 works are in progress. During the year 2015-2016, 4,12,082 works

were taken, 1,76,377 works were completed and the remaining 2,35,705 works are in progress. In the year 2016-2017, 2,59,215 works were taken, 2,59,079 works were completed and the remaining 136 works are in progress and in the year 2017-2018, 4,34,466 works were taken, 3,76,528 works were completed and the remaining 57,938 works are in progress.

Table 5 Asset Creation in Tamilnadu

Year	Work Taken up	Work Completed	Ongoing	Work Completion rate
2006-2007	33,598	8,590	25,008	25.566
2007-2008	1,35,185	52,203	82,982	38.615
2008-2009	3,04,073	63,426	2,40,647	20.858
2009-2010	66,708	54,694	12,014	81.990
2010-2011	41,660	41,452	208	99.500
2011-2012	57,679	56,206	1,473	97.446
2012-2013	84,446	75,868	8,578	89.842
2013-2014	2,34,474	1,82,217	52,257	77.713
2014-2015	4,37,607	1,25,662	3,11,945	28.715
2015-2016	4,12,082	1,76,377	2,35,705	42.800
2016-2017	2,59,215	2,59,079	136	99.95
2017-2018	4,34,466	3,76,528	57,938	86.66

Source: www.nrega.ac.in

From the above table, it is inferred that the work completion rate during the year 2006-2007 was 25.566 and shows an increase in the year 2007 -2008 by 38.615. In the year 2010-2011, the work completion rate showed an increasing trend by 99.50. In the year 2014-2015, showed a declining trend in the work completion rate by 28.715 and in the year 2015-2016, the work completion rate showed an increasing trend by 42.80 and the followed year 2016-2017 and 2017-2018 showed a increasing trend in the work completion rate by 99.95 and 86.66 respectively.

8. FUND ALLOCATION UNDER MGNREGS

The MGNREGS was introduced with an aim of improving the purchasing power of the rural people, primarily semi or un-skilled workers and people living in rural India, whether or not they are below the poverty line. The Central government and State government have allotted huge amount for this scheme.

Under the MGNREGS the Central Government meets the cost towards the payment of wage, 3/4 of material cost and some percentage of administrative cost. State Governments meet the cost of unemployment allowance, 1/4 of material cost and administrative cost of State council. Since, the State Governments pay the unemployment allowance, they are heavily incentivized to offer employment to workers.

In India, in the inaugural year 2006-2007, the fund allotted was ₹11,300 crore. In the year 2007- 2008, the fund allotted was ₹12,000 crore. In the year 2008-2009, the fund allotted was ₹30,000 crore. In the year 2009-2010, the fund distributed was ₹39,100 crore and in 2010-2011 it was ₹40,100crore. In the year 2011-2012, the fund allotted was ₹40,000 croreand in the year 2012-2013 it was ₹33,000 crore. In the year 2013-2014, the fund allotted was ₹33,000 crore in the year 2014-2015 it was ₹34,000 crore and in the year 2015-2016 was ₹34,699 crore. In the year 2016-2017 the fund

allotted was ₹38,500 crore and in the year 2017-2018 was ₹48,000 crore.

In Tamilnadu, 2006-2007, the fund allotted was ₹25,210.92 lakhs and in 2007-2008 it was ₹70,113.96 lakhs. In the year 2008-2009, the fund allotted was ₹1,79,459.04 lakhs and in 2009-2010 the fund allotted was ₹2,41,131.95 lakhs. In the year 2010-2011, the fund allotted was ₹2,82,489.49 lakhs and in 2011-2012 the fund allotted was ₹3,68,274.27 lakhs. In the year 2012-2013, the fund allotted by the Central and State Government for MGNREGS was ₹6,22,060.78 lakhs, in 2013-2014 the fund allotted was ₹5,39,005.00 lakhs, in 2014-2015 the fund allotted was ₹4,84,274.36 lakhs, and in 2015-2016 the fund allotted was ₹5,70,059.91 lakhs. In the year 2016-107 the fund allotted was 4,55,277.91 lakhs and in 2017-2018 the fund allotted was 5,83,166.13 lakhs. The following table represents the fund allocation under MGNREGS at National level and Tamilnadu during the year 2006-2007 to 2017-2018.

Table 6 Fund Allocation under MGNREGS

Year	India (in ₹crores)	Tamilnadu (in ₹lakhs)
2006-2007	11,300	25,210.92
2007-2008	12,000	70,113.96
2008-2009	30,000	1,79,459.04
2009-2010	39,100	2,41,131.95
2010-2011	40,100	2,82,489.49
2011-2012	40,000	3,68,274.27
2012-2013	33,000	6,22,060.78
2013-2014	33,000	5,39,005.00
2014-2015	34,000	4,84,274.36
2015-2016	34,699	5,70,059.91
2016-2017	38,500	4,55,277.91
2017-2018	48,000	5,83,166.13
CAGR	12.75%	29.79%

Source: www.nrega.ac.in

The table shows the total funds available under MGNREGS. In India, it can be seen that the fund shows both increasing and decreasing trends from 2006 -2007 to 2017-2018. The above analysis shows the total funds available (share of Central and State Government) in MGNREGS. Over the twelve years of time frame, the total fund allocation

was increased at compound annual growth rate of 12.75%.

In Tamilnadu, it can be seen that the fund shows both increasing and decreasing trends from 2006 -2007 to 2017- 2018. The above analysis shows the total funds available (share of Central and State Government) in MGNREGS. Over the twelve years of time frame, the total fund allocation was increased at compound annual growth rate of 29.79%.

9. EXPENDITURE ON MGNREGS

The below table relates to total expenditure incurred under the scheme. In India, in the year 2006-2007, the total expenditure under MGNREGS amounted to ₹8,823.355 crore followed by 2007-2008 it was ₹15,858.68 crore and in 2008-2009 the expenditure spent under MGNREGS was ₹27,250.92 crore and in 2009-2010 onwards the expenditure spent under MGNREGS it was ₹37,909.77 crore and in 2010-2011, the expenditure under MGNREGS was ₹39,377.27 crore. In the year 2011-2012, it was ₹38,034.76 crore and in 2012-2013 it was ₹39,778.28 crore. During the year 2013-2014, the amount of expenditure spent under MGNREGS was ₹38,601.59 crore in 2014-2015 it was ₹38,759.28 crore, in 2015-2016 it was 43,564.17 crore, in 2016-2017 it was ₹58,062.92 crore and in 2017-2018 it was 63,649.55 crore.

In Tamilnadu, 2006-2007 the total expenditure under MGNREGS amounted to ₹15,163.63 lakhs followed by 2007-2008 it was ₹51,642.38 lakhs in 2008-2009 the expenditure spent under MGNREGS was ₹1,76,123.47 lakhs, in 2009-2010 onwards the expenditure spent under MGNREGS it was ₹2,32,331.96 lakhs and in 2010-2011 the expenditure under MGNREGS was ₹2,72,321.51 lakhs. In the year 2011-2012, it was ₹3,05,194.13 lakhs and in 2012-2013 it was ₹4,12,128.79 lakhs. During the year 2013-2014, the amount of expenditure spent under MGNREGS was ₹3,93,853.20 lakhs in 2014-2015 it was ₹3,90,751.35 lakhs, in 2015-2016 it was 6,25,648.88 lakhs. In

2016-2017 it was 5,67,014.79 lakhs and in 2017-2018 it was 6,35,346.38 lakhs. The following table represents the total expenditure under MGNREGS at National level and Tamilnadu during the year 2006-2007 to 2017-2018.

Table 7 Expenditure on MGNREGS

Year	India (in ₹crores)	Tamilnadu (in ₹lakhs)
2006-2007	8,823.35	15,163.63
2007-2008	15,858.68	51,642.38
2008-2009	27,250.92	1,76,123.50
2009-2010	37,909.77	2,32,331.96
2010-2011	39,377.27	2,72,321.51
2011-2012	38,034.76	3,05,194.13
2012-2013	39,778.28	4,12,128.79
2013-2014	38,601.59	3,93,853.20
2014-2015	38,759.28	3,90,751.35
2015-2016	43,564.17	6,25,648.88
2016-2017	58,062.92	5,67,014.79
2017-2018	63,649.55	6,35,346.38
CAGR	17.82%	36.34%

Source: www.nrega.ac.in

The above table relates to the financial aspects of the scheme. In India, it can be seen that the year wise expenditure shows both increasing and decreasing trends from 2006-2007 to 2017-2018. Over the twelve years of time frame, the total expenditure was increased at compound annual growth rate of 17.82%.

In Tamilnadu, it can be seen that the year wise expenditure shows both increasing and decreasing trends from 2006-2007 to 2017-2018. Over the twelve years of time frame, the total expenditure was increased at compound annual growth rate of 36.34%.

10. HOUSEHOLDS COMPLETED HUNDRED DAYS OF EMPLOYMENT

The MGNREGS main aim is to give employment opportunity to all rural household people who are willing to work under this scheme. The Act provides hundred days of guaranteed wage employment in a financial year to every rural household whose adult members volunteer to undertake unskilled manual work. This scheme is different from the earlier employment programmes launched by the Government of India.

In National level the below table shows that in the year 2006-2007, 22,36,227 lakhs households were given a minimum of hundred days of employment. In the year 2007-2008, the total numbers of households received to the tune of 36,01,926 lakhs and this further increased to 65,21,268 lakhs households in 2008-2009, 70,83,663 lakhs households in 2009-2010, 55,61,812 lakhs households in 2010-2011. In the year 2011-2012, it was 40,54,492 lakhs households and this further increased to 51,73,796 lakhs households in 2012-2013, 46,59,447 lakhs households in 2013-2014 it decreased to 24,40,401 lakhs households in 2014-2015 and it increased to 48,52,514 lakhs households in 2015-2016 respectively. During the year 2016-2017 lakhs the total number of households completed it was 39,91,202 lakhs it was 29,55,152 lakhs.

In Tamilnadu, the below table shows that in the year 2006-2007, 1,824 households were completed a minimum of hundred days of employment. In the year 2009-2010, the total numbers of households completed it was 77,053 followed by 2008-2009 it was 5,08,122 lakhs households, in 2009-2010 it was 7,60,689 lakhs households, in 2010-2011 it was 11,02,070 lakhs households, in 2011-2012 it was 6,02,703 and this further increased to 13,48,723 lakhs households, 9,20,784 lakhs households and 3,17,651 lakhs households in 2012-2013 and 2015-2016 respectively. During the year 2015-2016, the total numbers of households completed hundred days of employment it was 8,44,908 lakhs households.

Table 8 Households Completed Hundred Days of Employment

Year	India (in lakhs)	Tamilnadu (in lakhs)
2006-2007	22,36,227	1,824
2007-2008	36,01,926	77,053
2008-2009	65,21,268	5,08,122
2009-2010	70,83,663	7,60,689
2010-2011	55,61,812	11,02,070
2011-2012	40,54,492	6,02,703
2012-2013	51,73,796	13,48,723
2013-2014	46,59,447	9,20,784

Year	India (in lakhs)	Tamilnadu (in lakhs)
2014-2015	24,40,401	3,17,651
2015-2016	48,52,514	8,44,908
2016-2017	39,91,202	13,20,733
2017-2018	29,55,152	1,50,236
CAGR	2.34%	44.21%

Source :www.nrega.ac.in

In India, from the year 2006-2007, the households completed hundred days employment shows an increasing trend except in the years 2010-2012 the households completed hundred days employment has decreased to some extent. In the year 2015-2016, the households completed hundred days employment were 48,52,514 compared to 2014-2015 where the issue was 24,40,401 which shows a increasing trend. Over the twelve years of time frame, the household completed hundred days of employment under the scheme was increased at a compound annual growth rate of 2.34%.

In Tamilnadu, from the year 2006-2007, the households completed hundred days employment shows an increasing trend except in the year 2011-2012 the households completed hundred days employment has decreased to some extent. In the year 2015-2016, the households completed hundred days employment were 8,44,908 lakhs households compared to 2014-2015 where the issue was 3,17,651 lakhs households which shows a increasing trend. Over the twelve years of time frame, the household completed under the scheme hundred days employment was at the compound annual growth rate of 44.21%.

10. WOMEN PARTICIPATION RATE UNDER MGNREGS

Under MGNREGS, around one-third beneficiaries shall be women who have registered and requested work under the scheme. Also, it can foster social and gender equality as 23% workers under the scheme are Scheduled Castes, 17% Scheduled Tribes and 50% women. MGNREGS can guarantee employment at the legal minimum wages to men as well as to women, can generate assets

that reduce drudgery of women, give ownership of assets to women and can empower women in many other ways by giving wages in their hands. An employment guarantee programme can also encourage mobilization of women, giving them collective strength to bargain for a better deal in the economy.

Women participation witnessed a significant amount of employment generation. In inaugural year 2006-2007, our country had generated 40% of employment opportunities to women who volunteered to do manual works in rural area followed by 44% in 2007- 2008, 50% in 2008-2009, 48% in 2009-2010, 47% in 2010-2011, 48% in 2011-2012, 51% in 2012-2013, 55% in 2013-2014, 79% in 2014-2015, 50% in 2015-2016, 56% in 2016-2017 and followed by 53% in 2017-2018.

In inaugural year 2006-2007, the State of Tamilnadu had generated 81% of employment opportunities to women who volunteered to do manual works in rural area followed by 82% in 2007- 2008, 79% in 2008-2009, 83% in 2009-2010, 83% in 2010-2011, 83% in 2011-2012, 84% in 2012-2013, 83% in 2013-2014, 85% in 2014-2015, 79% in 2015-2016, 85% in 2016-2017 and followed by 85% in 2017-2018.

Table 9 Women Participation Rate under MGNREGS

Year	Women Participation Rate	
	India	Tamilnadu
2006-2007	40%	81%
2007-2008	44%	82%
2008-2009	50%	79%
2009-2010	48%	83%
2010-2011	47%	83%
2011-2012	48%	83%
2012-2013	51%	84%
2013-2014	55%	83%
2014-2015	79%	85%
2015-2016	50%	79%
2016-2017	56%	85%
2017-2018	53%	85%

Source: www.nrega.nic.in

In National level, from the year 2006-2007 it shows an increasing trend except in the years 2009-2012 the women participation rate has decreased to some extent. In the year 2017-2018, the women participation rate were 53% compared to 2016-2017 the women participation rate was 56% which shows an decreasing trend. In Tamilnadu, from the year 2006-2007 it shows an increasing trend except in the year 2008-2009 the women participation rate has decreased to some extent. In the year 2016-2017, compared to 2016-2017 the women participation rate was 85% remain the same.

11. SUMMARY

Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is considered as a “Silver Bullet” for eradicating rural poverty and unemployment, by way of generating demand for productive labour force in Indian villages. It provides an alternative source of livelihood which will have an impact on reducing migration, restricting child labour, alleviating poverty and making villages self- sustaining through productive assets creation such as road construction, cleaning up of water tanks, soil and water conservation work, etc., This article throws light on employment generation, rural asset building and financial pattern in Tamilnadu. MGNREGS has transformed our rural India by eradicating poverty. Regarding the year 2017-2018, 79,64,884 persons were getting job cards under MGNREGS and 1,50,236 households have completed hundred days employment through this scheme.

In the year 2017-2018, 86.66% of works were completed under MGNREGS. MGNREGS has transformed our rural India by eradicating poverty enabling the safety net for the unemployed especially during famine and drought leading to sustainable development. The MGNREGS has brought a positive reinforcement to the downtrodden people and jobless people. Ultimately the MGNREGS has achieved its goal and has brought economic independence to the individual and the community at large.

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