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On

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(I.I.D.R.E.M.H.M.S-2018)

February 25th : Hyderabad

February 27th : Shikohabad

Organized by

RAMPROS EDUCATION RESEARCH CENTER CONSULTANCY

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PREFACE

I feel very happy to be part of the team and convener for the International Conference & Award Function on "Importance of Inter-disciplinary Research in Engineering, Management, Humanities, Medical Sciences" I.I.D.R.E.M.H.M.S-2018 on 25th February 2018 and a Special Issue is being published in UGC approved journal by IARA.

I welcome the participants of.I.D.R.E.M.H.M.S-2018. The main goal of organizing this conference is to share and enhance the knowledge of each and every individual in this computer world. We have given a good opportunity for those who have a thirst in knowing the present technological developments and also share their ideas. Furthermore, this conference will also facilitate the participants to expose and share various novel ideas.

The conference aims to bridge the researchers working in academia and other professionals through research presentations and keynote addresses in current technological trends. It reflects the growing importance of intelligent Computing systems as a field of research and practice. You will get ample opportunities to widen your knowledge and network.

I thank the conference committee for extending their valuable time in organizing the program and all the authors, reviewers, and other contributors for their sparkling efforts and their belief in the excellence of.I.D.R.E.M.H.M.S-2018.

Ms. T. Kavitha
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I extend my best wishes to participants, members of.the managing committee and organizers of this International Conference a grand success. My best wishes to all for a great success.

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I extend my best wishes to the participants, members of the managing committee and organizers of this International Conference a grand success. My best wishes to all for a grand success.

Dalel Singh
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IMPLEMENTATION OF RF CONTROLLED ROBOTIC BOAT WITH WIRELESS VEDIO AND VOICE

Dr. S. V. S. Prasad[1] and J. Satish[2]
Professor[1] and M.Tech (ES) [2], MLR Institute of Technology, Hyderabad

ABSTRACT

This venture is a model vessel that can go in water. This robot is controlled by 9V rechargeable battery. The heading of the robot can be controlled by a RF remote. This can be advanced and invert heading utilizing outfitted engines of 60RPM. Additionally this robot can take sharp turnings towards left and right bearings. This task utilizes ATMega8/168/328 MCU as its controller. A high delicate remote camera with voice is interfaced to the pack. At the point when the robot is proceeding onward water surface, the framework transmits pictures and voice motions around the robot to TV at a remote place. Client can screen the pictures and voice motions on Television. The RF modules utilized here are STT-433 MHz Transmitter, STR-433 MHz Receiver [1], HT12E RF Encoder and HT12D RF Decoder. The four changes are interfaced to the RF transmitter through RF Encoder. The encoder ceaselessly peruses the status of the switches, passes the information to the RF transmitter and the transmitter transmits the information. This venture utilizes 9V battery. This task is much valuable for mines discovery and observation applications.

INTRODUCTION

is venture is a model watercraft that can go in water. This robot is controlled by 9V rechargeable battery. The heading of the robot can be controlled by a RF remote. This can be pushed ahead and turn around course utilizing outfitted engines of 60RPM. Additionally this robot can take sharp turnings towards left and right bearings. This venture utilizes AT89S52 MCU as its controller. A high delicate remote camera with voice is interfaced to the pack.

At the point when the robot is proceeding onward water surface, the framework transmits picture and voice motions around the robot to TV at a remote place. Client can screen the pictures and voice motions on TV.

The RF modules utilized here are STT-433 MHz Transmitter, STR-433 MHz Receiver, HT12E RF Encoder and HT12D RF Decoder. The three changes are interfaced to the RF transmitter through RF Encoder. The encoder persistently peruses the status of the switches, passes the information to the RF transmitter and the transmitter transmits the information [1-2].

This task utilizes 9V battery. This undertaking is much valuable for mines discovery and observation applications.

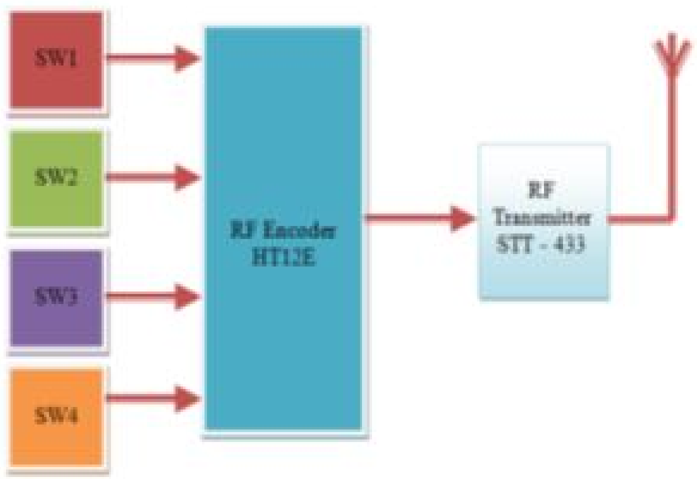


Fig-1: RF Transmitter Block Diagram

PROPOSED METHOD

Independent Guided Vehicle is new and inventive idea. These vehicles are utilized for multi reason. This robot works with IR transmission – gathering guideline. This vehicle can be moved utilizing equipped engines without anyone's control. Additionally this robot can take sharp turnings at whatever point an impediment is distinguished. This task utilizes This venture is a model vessel that can go in water. This robot is fueled by 12V rechargeable battery. The heading of the robot can be controlled by a Bluetooth. This can be advanced and invert bearing utilizing adapted engines of 60RPM. Additionally this robot can take sharp turnings towards left and right headings. This venture utilizes LPC2148 as its controller [3].

BLOCK DIAGRAM

A high delicate remote camera is interfaced to the pack. At the point when the robot is proceeding onward water surface, the framework transmits pictures and voice motions around the robot to TV at a remote place. Client can screen the pictures and voice motions on Television. The Bluetooth module is utilized here. Bluetooth is remote innovation standard for trading information over short separations (utilizing short-avelength radio waves in the ISM band from 2.4 to 2.485 GHz) from settled and cell phones, building individual range systems (PANs). This undertaking utilizes 12V battery

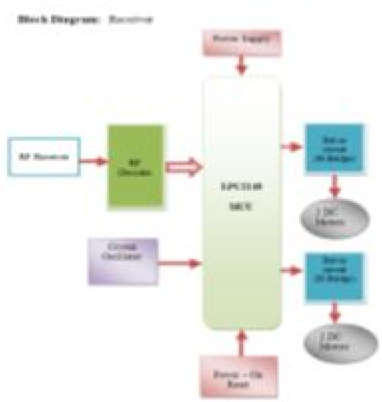


Fig-2: RF Receiver block diagram

EXISTING SYSTEM

Self-governing Guided Vehicle is new and inventive idea. These vehicles are utilized for multi reason. This robot works with IR transmission – gathering rule. This vehicle can be moved utilizing outfitted engines without anyone's control. Additionally this robot can take sharp turnings at whatever point a snag is distinguished. This task utilizes ATMEGA328 MCU as its controller.

This venture has an IR transmitter and a beneficiary. At whatever point a hindrance is recognized, the IR light will be reflected, and gotten by the IR recipient. This sends a flag to microcontroller and the heading of the robot will be changed to keep away from impact with the snag.

In this task, L293D H-Bridge is utilized to drive the adapted DC engine. The Device is a solid coordinated high voltage, high flow four channel driver intended to acknowledge standard DTL or TTL rationale levels and drive inductive burdens, (for example, transfers solenoids, DC and venturing engines) and exchanging power transistors. To improve use as two extensions each match of channels is outfitted with an empowerinput. This project uses 12V battery [3].

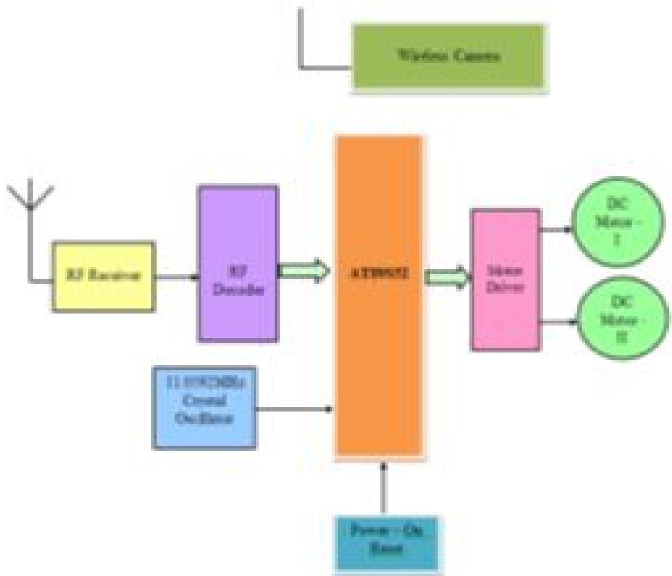


Fig-3: Block diagram of RF controlled robotic boat

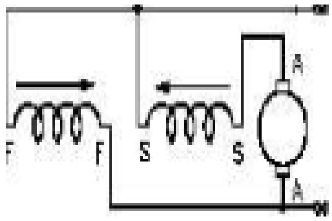
HARDWARE MODULES

DC Motors

A DC motor is an electric motor that runs on direct current (DC) electricity.

DC Motor connection

Figure indicates schematically the distinctive techniques o associating the field and armature circuits in a D Engine. The roundabout image speaks to the armature circuit, and the squares along the edge of the circle speak to the brush observer framework. The bearing of the bolts shows the course of the attractive fields [5-15].



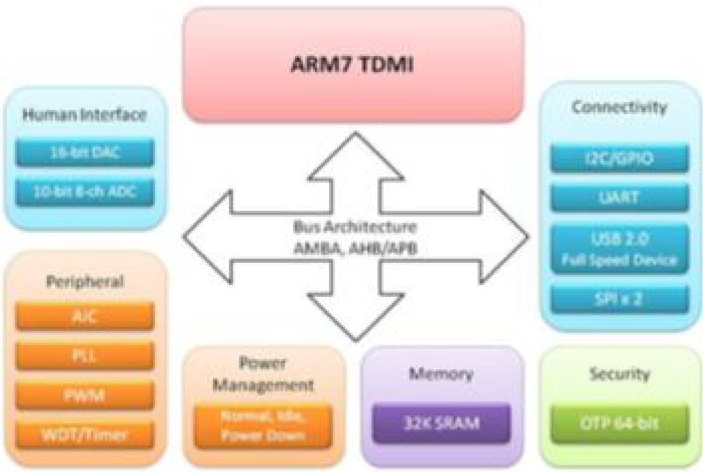
DC Motor connection

ARM 7

The LPC2148 depend on a 16/32 bit ARM7TDMI™ CPU with ongoing copying and installed follow bolster, together with 128/512 kilobytes of implanted fast glimmer memory [4-5].

A 128-piece wide memory interface and one of a kind quickening agent engineering empower 32-bit code execution at greatest clock rate. For basic code measure applications, the option 16-bit Thumb Mode diminishes code by over 30% with negligible execution punishment. With their minimal 64 stick bundle, low power utilization, different 32-bit clocks, 4-channel 10-bit ADC, USB PORT, PWM channels and 46 GPIO lines with up to 9 outer intrude on pins these microcontrollers are especially reasonable for mechanical control, medicinal frameworks, get to control and purpose of-offer.

With an extensive variety of serial correspondences interfaces, they are likewise exceptionally appropriate for correspondence entryways [4], convention converters and inserted delicate modems and additionally numerous other broadly useful applications.



ARM 7 Block diagram

RF TECHNOLOGY

Radio recurrence is a recurrence or rate of wavering inside the scope of around 3 Hz to 300 GHz. This range compares to recurrence of substituting current electrical signs used to create and identify radio waves Since a large portion of this range is past the vibration rate that most mechanical frameworks can react to, RF as a rule alludes to motions in electrical circuits. RF is broadly utilized on the grounds that it doesn't require any viewable pathway, less twists and no obstruction [6-9].

SOFTWARE TOOLS

Keil compiler is programming utilized where the machine dialect code is composed and ordered. After arrangement, the machine source code is changed over into hex code which is to be dumped into the microcontroller for additionally preparing. Keil compiler additionally underpins C dialect code.

PROLOAD

Proload is programming which acknowledges just hex documents. Once the machine code is changed over into hex code, that hex code must be dumped into the microcontroller [5] set in the software engineer unit and this is finished by the Proload. Developer pack contains a microcontroller on it other than the one which is to be modified. This microcontroller has a program in it written such that it acknowledges the hex record from the keil compiler and dumps this hex document into the microcontroller which is to be modified [5]. As this software engineer pack requires control supply to be worked, this power supply is given from the power supply circuit composed previously. It ought to be noticed that this software engineer pack contains a power supply segment in the board itself however keeping in mind the end goal to switch on that power supply, a source is required. Hence this is expert from the power supply board with a yield of 12volts or from a connector associated with 230 V Air conditioning [7-10].

ADVANTAGES

- Not blocked by common materials: can penetrate most solids and pass through walls
- Longer range
- Not light sensitive
- Not as sensitive to weather/environmental conditions

APPLICATIONS

- In military Applications
- Forest Applications
- Agriculture
- Mining

CONCLUSION

In this task we have considered and actualized a Multi-Landscape Robot Intended to Go on Water Surface, Indoor and Open air Uneven Surfaces with the assistance of RF remote correspondence.

Future Scope: This application can be implemented DTMF technology. This is to operate the robot from remote place.

Drawback: Transmitter part is an extra hardware module which increases the cost.

This robot cannot be controlled by us. It takes own decision about the movement

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A MATRIX APPROACH TO ENCRYPT DATA USING QUADRATIC FORMS

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Lecturer[2], Department of Computer Science, St. Mary Centenary Degree College, Secunderabad

ABSTRACT
Cryptography is used widely for the purpose of secure communication and password management. It comprises the techniques of encryption and decryption mechanism. Using the encryption mechanism a plaintext is converted into a cipher text and in decryption with the help of a secure key the encrypted message is decoded into a plain text. Mathematical principles can be employed for encryption determinants to encrypt and decrypt our message and to transmit them securely. Security of information has become a popular subject during the last decades. Since matrices have unique powerful concept, and can be easily understood, it could be applied as an efficient way of encrypting and storing text. This paper introduces a way of using numerals for the text represented in matrices for cryptography. The encryption system uses a matrix to store the text entered by the sender, using an algorithm to encrypt these values.

Keywords: Cryptography, encryption, decryption, inverse matrix, quadratic forms

I. INTRODUCTION
With the rapid development of network and multimedia technologies, the digital information has been applied to many areas in real-world applications. Communication has become a very important aspect in today's life. So, security plays an important role in transferring the data. One such way to secure information is cryptography. Cryptography is an old art of sending secret messages between sender and receiver. With the advancement of internet technologies, cryptography becomes a crucial aspect for secure communications to protect important data from eavesdroppers. Network security is most focused subject which is becoming more and more complex to maintain. As a result researchers are engaged to develop different cryptographic techniques to enhance network security. But each of these techniques has their own merits and demerits.

Cryptography, to most people, is concerned with keeping communications private. Indeed, the protection of sensitive communications has been the emphasis of Cryptography throughout much of its history. Encryption is the transformation of data into some unreadable form. Its purpose is to ensure privacy by keeping the information hidden from anyone for whom it is not intended, even those who can see the encrypted data. Decryption is the reverse of encryption; it is the transformation of encrypted data back into some intelligible form.

Encryption and decryption require the use of some secret information, usually referred to as a key. Depending on the encryption mechanism used, the same key might be used for both encryption and decryption, while for other mechanisms, the keys used for encryption and decryption might be different.

An encryption algorithm is used to convert plaintext (P) into cipher text (C). This requires encryption (E) and decryption

(D) functions, such that

E (P) = C, D(C) = P………………(1)

Encryption algorithms are idempotent. Each encryption creates cipher text that can be decrypted into plaintext. Repeated encryptions may generate different cipher text, but the original plaintext can always be recovered by using the decryption algorithm the number of times the encryption algorithm has been used.

II. PROPOSED CRYPTOSYSTEM
We consider any text S to be encrypted. Let the length of the text be n (including blank spaces). Each symbol (either an alphabet or blank space) in the text is assigned a numerical label can be converted in to a matrix called message matrix M of size m X n where n < m and n is the least such that m x n>=1. In such case the size of the Encoder (The induced Diagonal matrix of a Quadratic form of suitable variables) becomes n. Then the Encoder need not be an arbitrary matrix where as it may be taken as a Diagonal matrix of size n whose inverse can be readily obtained.

Then the message matrix is converted in to a New Matrix X (Encoded Matrix) using Matrix Multiplication as X= ME. Then this is sent to the Receiver. Then the receiver decode this matrix with the help of a matrix D (Decoder matrix) which is nothing but the inverse of the encoder) i.e., $D=E^{-1}$, to get the message matrix back as $M = XE^{-1}$.

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Then with the previously used codes the receiver can get back the message in terms of the numerals which again can be converted to the original text message. When the length / size of the text message is too large, the value of n become higher, leading to the need of higher order diagonal matrices induced from the quadratic forms of higher number of variables.

III. ALGORITHM

Encoding Process

1. Convert the text message of length l in to a stream of Numerals using a user friendly scheme for both the sender and the receiver.
2. Place the numerals in to a matrix of order nxm where n<m and n is the least such that m x n ≥ 1 where n depends on the size of the message and call this as a Message matrix M.
3. Multiply this message matrix by the Encoder E of size n. (Normally an induced diagonal matrix compatible for the product X= ME.) and get the encoded matrix X.
4. Convert the message matrix in to the stream of numbers that contains the encrypted message and sent to the receiver.

Decoding Process

1. Place the encrypted stream of numbers that represent the encrypted message in to a matrix
2. Multiply the encoded matrix X with the decoder $D = E^{-1}$ (The inverse of E) to get back the message matrix M
3. Convert this message matrix in to a stream of numbers with the help of the originally used scheme.
4. Convert this stream of numerals in to the text of the original message.

IV. RESULTS AND DISCUSSIONS

Consider the text message: BEST WISHES

To every letter we associate a number. We associate 0 to blank or space, 1 to A, -1 to B, 2 to C, -2 to D, etc…

Blank	A	B	C	D	E	F	G	H	I
0	1	-1	2	-2	3	-3	4	-4	5
J	K	L	M	N	O	P	Q	R	S
-5	6	-6	7	-7	8	-8	9	-9	10
T	U	V	W	X	Y	Z			
-10	11	-11	12	-12	13	-13			

So our message is given by a string as:

B	E	S	T		W	I	S	H	E	S
-1	3	10	-10	0	12	5	10	-4	3	10

Now we arrange these numbers into matrix M, known as Message Matrix. We use column wise for arrangement.

$$M=\begin{bmatrix} -1 & 0 & -4 \\ 3 & 12 & 3 \\ 10 & 5 & 10 \\ -10 & 10 & 0 \end{bmatrix} \text{ of order (4x3)}$$

Then we perform the product M E, where E is an encoding matrix which is non-singular given by

$$E=\begin{bmatrix} -3 & -3 & -4 \\ 0 & 1 & 1 \\ 4 & 3 & 4 \end{bmatrix} \text{ whose } E^{-1}=\begin{bmatrix} 1 & 0 & 1 \\ 4 & 4 & 3 \\ -4 & -3 & -3 \end{bmatrix}$$

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Then we get

$$X= ME= \begin{bmatrix} -1 & 0 & -4 \\ 3 & 12 & 3 \\ 10 & 5 & 10 \\ -10 & 10 & 0 \end{bmatrix} * \begin{bmatrix} -3 & -3 & -4 \\ 0 & 1 & 1 \\ 4 & 3 & 4 \end{bmatrix}$$

$$= \begin{bmatrix} -13 & -9 & -12 \\ 3 & 12 & 12 \\ 10 & 5 & 5 \\ 30 & 40 & 50 \end{bmatrix}$$

The encoded message will be sent as

-13, 3, 10, 30,-9, 12, 5, 40, -12, 12, 5, 50

This encoded matrix is decoded using inverse of E as

$$M= XE^{-1}= \begin{bmatrix} -13 & -9 & -12 \\ 3 & 12 & 12 \\ 10 & 5 & 5 \\ 30 & 40 & 50 \end{bmatrix} * \begin{bmatrix} 1 & 0 & 1 \\ 4 & 4 & 3 \\ -4 & -3 & -3 \end{bmatrix}$$

$$= \begin{bmatrix} -1 & 0 & -4 \\ 3 & 12 & 3 \\ 10 & 5 & 10 \\ -10 & 10 & 0 \end{bmatrix}$$

The matrix is again converted into string using numerals as:

-1	3	10	-10	0	12	5	10	-4	3	10	0
B	E	S	T		W	I	S	H	E	S	

V. QUADRATIC FORM

A homogenous polynomial of degree 2 in n variables is called quadratic form. General form of quadratic form in two variables is $ax^2+2cxy+by^2$--------------------- (2)

In three variables it is $ax^2+by^2+cz^2+2dxy+2eyz+2fxz$-------------(3)

The matrix for the given Quadratic form for (3) is

$$\begin{bmatrix} a & d & f \\ d & b & e \\ f & e & c \end{bmatrix} \text{------------------ (4)}$$

For eg if quadratic form is $2x_1^2+ x_2^2+ x_3^2+2x_1x_2-2x_1x_3-4x_2x_3$ then the matrix of the quadratic form is

$$\begin{bmatrix} 2 & 1 & -1 \\ 1 & 1 & -2 \\ -1 & -2 & 1 \end{bmatrix}$$

VI. ENCRYPTION AND DECRYPTION PROCESS USING QUADRATIC FORM AS ENCODER

1. Use the given matrix for the quadratic form as encoder.

$$E = \begin{bmatrix} 2 & 1 & -1 \\ 1 & 1 & -2 \\ -1 & -2 & 1 \end{bmatrix}$$

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2. Now consider the text BEST WISHES to be encrypted. Its matrix form is

$$M=\begin{bmatrix} -1 & 0 & -4 \\ 3 & 12 & 3 \\ 10 & 5 & 10 \\ -10 & 10 & 0 \end{bmatrix}$$

3. The encoded matrix is given by X= ME as:

$$X=\begin{bmatrix} -1 & 0 & -4 \\ 3 & 12 & 3 \\ 10 & 5 & 10 \\ -10 & 10 & 0 \end{bmatrix} * \begin{bmatrix} 2 & 1 & -1 \\ 1 & 1 & -2 \\ -1 & -2 & 1 \end{bmatrix}$$

$$=\begin{bmatrix} 2 & 7 & 3 \\ 15 & 9 & -24 \\ 15 & -5 & -10 \\ -10 & 0 & -10 \end{bmatrix}$$

Here the encoded numeric message is 2, 15, 15,-10, 7, 9,-5, 0, 3,-24,-10,-10

4. Now the encoded message and the key matrix sent to the receiver.
5. Now inverse matrix for E is:

$$E^{-1}=\begin{bmatrix} 3/4 & -1/4 & 1/4 \\ -1/4 & -1/4 & -3/4 \\ 1/4 & -3/4 & -1/4 \end{bmatrix}$$

6. The encoded numeric message is to be decoded by first writing the encoded matrix X from the received message as:

$$X=\begin{bmatrix} 2 & 7 & 3 \\ 15 & 9 & -24 \\ 15 & -5 & -10 \\ -10 & 0 & -10 \end{bmatrix}$$

7. Now multiply it with inverse matrix of E as:

$$M= XE^{-1}=\begin{bmatrix} 2 & 7 & 3 \\ 15 & 9 & -24 \\ 15 & -5 & -10 \\ -10 & 0 & -10 \end{bmatrix} * \begin{bmatrix} 3/4 & -1/4 & 1/4 \\ -1/4 & -1/4 & -3/4 \\ 1/4 & -3/4 & -1/4 \end{bmatrix}$$

$$=\begin{bmatrix} -1 & 0 & -4 \\ 3 & 12 & 3 \\ 10 & 5 & 10 \\ -10 & 10 & 0 \end{bmatrix}$$

8. The matrix M is converted to numeric message as -1,3,10,-10,0,12,5,10,-4,3,10,0
9. This stream of numerals is converted into message as:

-1	3	10	-10	0	12	5	10	-4	3	10	0
B	E	S	T		W	I	S	H	E	S	

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VII. A WORD ON SECURITY

In case of using the standard codes one could recognize intuitively or by any way the codes of use from the codes allotted for the alphabets. So the use of codes in a random or chaotic way or by using some process increases the security level. So the messengers are advised to make use of their convenient system of codes in order to have higher security level.

We define the operator + (The string addition) as usual in the case of addition of strings. Example: Best + wishes = Best wishes. Using this operation we decompose the messages of larger length in to messages of shorter lengths and finally these are coined to get the message of larger length.

VIII. CONCLUSION

The use of this proposed algorithm has been studied thoroughly and examined. This paper presents a text encryption method based on simple matrix operations like multiplication and inverse. Experiment results have shown that the proposed encryption system is reasonably feasible and effective and it can be extensively used for the purpose of secure data storage and transmission. Matrices are well known tool for storage of huge data. We have used basic matrix properties and matrix multiplication for communicating any message. So manipulations involved in sending any message is simple, but it is strong since until one knows the key matrix, determining A is not possible. Even if one obtains A, still it is not possible to know the message unless the way in which the matrix was constructed is known.

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ENHANCE INTERFACE ASSIGNMENT IN MULTI-CHANNEL MULTI-INTERFACE FUTURE NETWORKS

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ABSTRACT
Multiple channels are available for use in IEEE 802.11. Multiple channels can increase the available network capacity, but require new protocols to exploit the available capacity. This paper studies the problem of improving the capacity of multi-channel wireless networks by using multiple interfaces. We consider the scenario when multiple interfaces are available, but the number of available interfaces is lesser than the number of available channels. We propose algorithms for assigning interfaces to channels that do not require modifications to IEEE 802.11. We also propose a routing protocol that is suitable for use with the proposed interface assignment strategy.

I. INTRODUCTION
IEEE 802.11 [1] is a widely used technology for wireless local area networks. IEEE 802.11 offers multiple nonoverlapping channels that are separated in frequency. For example, IEEE 802.11b offers 3 non-overlapping channels, while IEEE 802.11a offers 12 non-overlapping channels. Multiple channels have been exploited in infrastructure-based networks by assigning different channels to adjacent access points, thereby minimizing interference between access points. However, typical multi-hop wireless network configurations require a single common channel to be used by all nodes to ensure network connectivity. Our goal in this paper is to utilize the multiple channels in multi-hop wireless networks. Inexpensive commodity IEEE 802.11 hardware has accelerated the use of wireless local area networks. This trend of reducing hardware costs is expected to continue [2], and it is already feasible to equip nodes with multiple 802.11 interfaces. However, it is still expensive to equip a node with one interface for each channel (recall that IEEE 802.11a has 12 non-overlapping channels) . Many IEEE 802.11 interfaces can be switched from one channel to another, albeit at the cost of a switching delay, thereby allowing an interface to access multiple channels. In this paper, we study the multi-channel problem when the number of interfaces is lesser than the number of channels, and address the following questions: What is a suitable strategy for assigning interfaces to channels? What is the impact of interface assignment on the routing protocol? ∗This research was supported in part by NSF grant ANI-0125859 and a Vodafone Graduate Fellowship. In this paper, we propose an interface assignment strategy that keeps one interface fixed and switches the other interfaces. The interface assignment strategy ensures that any two nodes within communication range of each other can communicate without requiring specialized coordination algorithms. We then propose routing strategies that are well-suited for use with the proposed interface assignment strategy. Past work on multichannel, multi-interface wireless networks has mostly focused on MAC protocols, while we primarily focus on the routing and interface assignment problem on top of existing IEEE 802.11 MAC protocol. The rest of the paper is organized as follows. Section II presents the related work. Section III motivates the benefits of multiple interfaces, and the need for specialized routing protocols for multi-channel, multi-interface networks. Section IV describes the interface assignment strategy, and Section V describes the routing protocol. Section VI has a discussion on other issues with multi-channel, multi-interface networks and we conclude in Section VII.

II. RELATED WORK
Several researchers have proposed MAC protocols based on IEEE 802.11 for utilizing multiple channels. Nasipuri et al. [3], [4], and Jain et al. [5] propose a class of protocols where all nodes have an interface on each channel. The protocols differ in the metric used to choose a channel for communication between a pair of nodes. The metric may simply be to use an idle channel [3], or the signal power observed at the sender [4], or the received signal power at the receiver [5]. These protocols are expensive to implement as an interface is needed for each channel. Wu et al. [6] propose a MAC layer solution that requires two interfaces. One interface is assigned to a common channel for control purposes, and the second interface is switched between the remaining channels and used for data exchange. RTS/CTS packets (as in IEEE 802.11) are exchanged on the control channel, and the exchange also determines the appropriate data channel to be used for subsequent DATA/ACK exchange. Hung et al. [7] propose a similar two-interface solution that uses a channel load-aware algorithm to choose the appropriate data channel to be used for DATA/ACK exchange. While both proposals require only two interfaces to support any number of channels, the common control channel may become a bottleneck to performance. Since RTS/CTS exchange precedes each data transmission, the approach does not scale when the number of data channels is large (e.g., 12 channels with 802.11a). So et al. [8] propose a MAC solution for multiple channels that uses a single interface.Nodes periodically switch to a common channel, and

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stay on the common channel for a fixed negotiation duration when the channel to be used for later data transmission is decided. At the end of the fixed negotiation phase, nodes switch to the chosen channel for data communication. This proposal requires a single interface and can be implemented by extending IEEE 802.11 Power Save Mode. However, the solution requires tight synchronization among nodes, which is still a hard problem for multi-hop networks. All the multi-channel MAC proposals described above require changes to IEEE 802.11, and therefore cannot be deployed by using commodity hardware. In contrast, our proposal can be implemented with standard 802.11 interfaces. Adya et al. [9] propose a link-layer solution for striping data over multiple interfaces. The proposal does not use interface switching, and for full utilization of available channels, an interface is necessary for each channel. Hence, this proposal is expensive to implement when large number of channels are available. Bahl et al. [10] propose SSCH, a link-layer solution that uses a single interface, and can run over unmodified IEEE 802.11 MAC. Nodes implementing SSCH use a pseudorandom sequence, driven by a set of seeds, to decide which channel to switch the interface to every time slot. The pseudorandom sequence used by any two nodes is guaranteed to overlap periodically, thereby ensuring any two nodes within communication range can communicate with each other. Frequently communicating nodes can partially synchronize their seeds to increase the overlap frequency. While a single interface is sufficient for SSCH operation, it may introduce significant delay with multi-hop communication, as packets may be delayed at each hop if the subsequent hop node is on a different channel. Draves et al. [11] propose WCETT, a new metric for routing in multi-channel networks. The metric is used with LQSR, a source routing protocol, and ensures “high-quality” routes are selected. In contrast to our work, LQSR does not use interface switching, and is not designed for the scenario when number of available interfaces is less than the number of available channels. Shacham et al. [12] propose a architecture for multi-channel networks that uses a single interface. Each node has a default channel for receiving data. A node with a packet to transmit has to switch to the channel of the receiver before transmitting data. However, the proposal does not consider the impact of switching delay. Further, the routes used in the architecture may not utilize multiple channels. So et al. [13] propose a routing protocol for multi-channel networks that uses a single interface at each node. We propose to use multiple interfaces, which may offer better performance than a single interface solution. Raniwala et al. [14], [15] propose routing and interface assignment algorithms for mesh networks. Their goal is similar to our work in addressing the scenario where the number of available interfaces is less than the number of available channels. However their approach is different in the following key aspects. Raniwala’s protocol assumes traffic load between all nodes are known, and centralized algorithms are used to derive an assignment of interfaces to channels and for route computation. In contrast, we do not make any assumptions on the traffic characteristics, and our algorithms are completely distributed. In addition, the routes selected by their approach may be significantly longer than our proposal as interface switching is not used. In the context of wired networks, Marsan et al. [16] have studied the performance of multichannel CSMA/CD MAC protocols, and shown that significant reduction in delay average and variance is possible even when the number of interfaces is less than the number of channels. The goal of our work is to answer a similar question with multi-channel CSMA/CA based wireless networks. We intend to study the impact of routing strategies as well.

III. MOTIVATION

In this section, we first motivate the benefits of using a multi-interface solution for exploiting multiple channels. We then identify the need for specialized routing protocols for multi-channel, multi-interface networks. A. Benefits of using multiple interfaces We define “interface” to be a network interface card equipped with a half-duplex radio transceiver, e.g., a commodity 802.11 wireless card. In most multi-hop networks, a single channel is used, and therefore a single interface suffices. However, when multiple channels are available, having more than one interface is beneficial. As noted while describing related work, there are single interface approaches ([8], [10], [13]) for exploiting multiple channels. When using a single interface, if the interfaces of two nodes are on different channels, then they cannot communicate. For reducing synchronization requirements and overheads, each interface has to stay on a channel for many packet transmission durations (100ms in [8] and 10ms in [10]). As a result, when packets are traversing multi-hop paths, packets may be delayed at each hop, unless the next hop is on the same channel as well. Thus, when a single interface is used, there is an increase in the end-to-end latency if different hops traversed are on different channels. Otherwise, if most hops are on the same channel, transmissions on consecutive hops interfere, reducing the maximum capacity. In either case, TCP throughput is significantly affected. When at least two interfaces are available, we propose keeping one interface permanently assigned to a channel to greatly simplify coordination, while switching the second interface (based on traffic requirements) to avoid delaying a packet at each hop. We defer discussion of the proposed approaches till later in the paper, but multiple interfaces are required to derive both simplicity in coordination and minimal delays. A second benefit is the ability to receive and transmit data in parallel. Half-duplex wireless interfaces cannot simultaneously transmit and receive data. However, when multiple (say two) interfaces and multiple channels are available, while one interface is receiving data on one channel, the second interface can simultaneously transmit data on a different channel. In many cases, this can double the maximum throughput achievable on a multi-hop route. Our proposed architecture exploits this benefit of using multiple interfaces as well. B. Issues with interface switching The ability to switch an interface from one channel to another is a key property we exploit to utilize all the available channels, even when the number of interfaces available is significantly lesser than the number of available channels. We assume that channels are separated in frequency, and switching an interface requires changing the frequency of operation. Switching an interface from one channel to another incurs some delay D which may be non-negligible. In the current literature, estimates for D (for switching between channels on the same frequency band) with commodity IEEE 802.11 hardware are in the range of a few milliseconds [17] to a few hundred microseconds [18]. It is expected that with improving technology, the switching delay will reduce to a few tens of microseconds [10]. Protocols that utilize interface switching need to be flexible enough to accommodate a range of switching delays. The routing protocol may have to account for the switching cost while selecting routes. Interface switching is possible across different frequency bands as well. For example, wireless cards are currently available that support both IEEE 802.11a (operates on 5 GHz band) and IEEE 802.11b (operates on 2.4 GHz band), and can switch between the two bands. However, with the currently available hardware, switching across bands incurs a large delay, but the switching delay is expected to reduce in the future. The architecture presented in this paper allows for the utilization of channels on the same band as well as channels on different bands. C. Need for specialized routing protocols Existing routing protocols for multi-hop networks such as DSR [19] and AODV [20] support multiple interfaces at each node. However, those protocols typically select shortest-hop routes, which may not be suitable for multi-channel networks, as was noted in [11]. In addition, if route selection does not consider the interface switching cost, then the chosen routes may require frequent channel switching, degrading network performance. Thus, there is a need for customized protocols for multi-interface, multi-channel networks. Figure 1 illustrates a scenario that highlights the need for specialized routing protocols for multi-channel networks. In the figure, node A is communicating with node D using route A-C-D. Node E wishes to communicate with node F, and either of B or C can be used as the intermediate node. Assume all nodes have a single interface, and assume C and B can relay at most w bytes per second. If node C is chosen as the intermediate node, then node C has to forward data along both routes A-C-D and E-C-F, and the throughput received by each flow is at most w/2. On the other hand if node B is chosen as the intermediate node, then both routes A-C-D and E-B-F can be simultaneously used (assuming channels used D E C B A F Fig. 1. Impact of route selection on effective utilization of multiple channels on routes A-C-D and E-B-F can be chosen to be orthogonal), and each flow receives a rate of w. Although this example assumed each node had a single interface, similar issues arise even when multiple interfaces are available. The above scenario highlights the need for the routing protocol to appropriately distribute routes among nodes in the neighborhood. In the case of single channel networks, the throughput obtained is the same whether B or C is chosen as the intermediate node. When a single channel is available, and say, when C is transmitting a packet along route A-C-D, B cannot transmit a packet even if it is chosen as the intermediate node (as the common channel is busy). Consequently, routing protocols designed for single channel networks do not need to distribute routes within a “neighborhood”. However, to exploit the benefit of multiple channels, it is important for a routing protocol to ensure routes are carefully distributed in the network.

IV. INTERFACE ASSIGNMENT

In this section, we identify the different interface assignment strategies possible. We then describe our proposal and discuss issues involved. A. Classification of interface assignment strategies Interface assignment strategies can be classified into static, dynamic, and hybrid strategies. 1. Static Assignment: Static assignment strategies assign each interface to a channel either permanently, or for “long intervals” of time where “long interval” is defined relative to the interface switching time. For example, [11], [14] use static interface assignment. Static assignment can be further classified into two types: 1) Common channel approach: In this approach, interfaces of all nodes are assigned to a common set of channels (e.g. [11]). For example, if two interfaces are used at each node, then the two interfaces are assigned to the same two channels at every node. The benefit of this approach is that the connectivity of the network is the same as that of a single channel approach. Note that the scenario where a single channel and a single interface is used is a special case of the static, common channel assignment strategy. 2) Varying channel approach: In this approach, interfaces of different nodes may be assigned to a different set of channels (e.g. [14]). With this approach, there is a possibility that the length of the routes between nodes may increase. Also, unless the interface assignment is done carefully, network partitions may arise. Static assignment strategies are well-suited for use when the interface switching delay is large. In addition, if the number of available interfaces is equal to the number of available channels, interface assignment problem becomes trivial. Static assignment strategies do not require special coordination among nodes (except perhaps to assign interfaces over long intervals of time) for data communication. With static assignment, nodes that share a channel on one of their interfaces can directly communicate with each other, while others cannot. Thus, the effect of static channel assignment is to control the network topology by deciding which nodes can communicate with each other. 2. Dynamic Assignment: Dynamic assignment strategies allow any interface to be assigned to any channel, and interfaces can frequently switch from one channel to another. In this setting, two nodes that need to communicate with each other need a coordination mechanism to ensure they are on a common channel at some point of time. For example, the coordination mechanism may require all nodes to visit a common "rendezvous" channel periodically (e.g. [8]), or require other mechanisms such as the use of pseudo-random sequences (e.g. [10]), etc. The benefit of dynamic assignment is the ability to switch an interface to any channel, thereby offering the potential to cover many channels with few interfaces. The key challenge with dynamic switching strategies is to coordinate the decisions of when to switch interfaces as well as what channel to switch the interfaces to, among the nodes in the network. 3. Hybrid Assignment: Hybrid assignment strategies combine static and dynamic assignment strategies by applying a static assignment for some interfaces and a dynamic assignment for other interfaces. Hybrid strategies can be further classified based on whether the interfaces that apply static assignment use a common channel approach, or a varying channel approach. An example of hybrid assignment with common channel at the MAC layer is [6], which assigns one interface of each node statically to a common "control" channel, and other interface can be dynamically switched among other "data" channels. We propose to use a hybrid channel assignment strategy with varying channel assignment. Hybrid assignment strategies are attractive as they allow simplified coordination algorithms supported by static assignment while retaining the flexibility of dynamic assignment. B. Interface Assignment Protocol We assume that there are M interfaces available at each node, where the value of M may be different for different nodes. Some K of the M interfaces at each node are statically assigned to K channels, and we designate these interfaces as "fixed interfaces", and the corresponding channels as "fixed channels". The other M − K interfaces, designated as "switchable interfaces", are dynamically assigned to any of the remaining M − K channels, based on data traffic. Different nodes may assign their K interfaces to a different set of K channels. It is also possible for each node to use a different value of K, and it is also possible to vary K with time. To simplify rest of the discussion, we assume M = 2, K = 1 for FIXED SWITCHABLE SWITCHABLE FIXED SWITCHABLE SWITCHABLESWITCHABLESWITCHABLE FIXED 1 2 Node C Node A Node B 3 1 Fig. 2. Example of switching protocol operation (M = 2, K = 1) all nodes, i.e., there is one fixed, and one switchable interface (although the proposed protocol is applicable to any values of M and K). We illustrate the use of fixed and switchable interface with the example topology in Figure 2. Assume node A wishes to exchange data with nodes B and C. Further, assume that the fixed interface of node A is on channel 1, while the fixed interface of nodes B and C are on channels 2 and 3 respectively. When A has to send a packet to B, A switches its switchable interface to channel 2 and transmits the packet. Since B is always listening to channel 2 with its fixed interface, B can receive the transmission of A. Now if B has to send a packet back to A, B switches its switchable interface to channel 1 and transmits the packet. Since A is listening to channel 1 with its fixed interface, the packet from B can be received. Similarly, if A has to subsequently send a packet to C, it switches to channel 3 and sends the packet. Note that B and C can at any time send a packet to A on channel 1. Thus, there is no need for coordination among A, B, and C on when to schedule transmissions. 1) Supporting Broadcasts: In wireless networks, all packets transmitted on a channel can be received by all neighboring nodes listening to that channel. In single-channel networks this property is used to support efficient neighborhood broadcast, which is used by on-demand routing protocols in the route discovery process. However, a similar broadcast property is not inherently available when multiple channels are used, as nodes in a neighborhood may be listening to different channels. For achieving an equivalent broadcast property when using multiple channels, the broadcast packet has to be separately transmitted on all channels. Thus, broadcast can be more expensive than in single channel networks. Furthermore, the broadcast packets on different channels may be sent at slightly different times (as the switchable interface has to be switched through all channels). Thus, nodes with fixed interfaces on different channels may receive the broadcast at different times. Routing protocols may have to account for the modified broadcast semantics. An enhancement is possible when the number of available channels is large, and at least three interfaces are available. One channel can be set apart in the whole network for broadcast purposes, and each node can assign one interface permanently to the broadcast channel (e.g., when M = 3, K = 2). All broadcast transmissions can be sent on the special broadcast channel. The use of a broadcast channel differs from existing MAC proposals that use a common control channel, as the control channel is used for every unicast/broadcast transmission, while the broadcast channel is used infrequently for broadcast transmissions only. 2) Fixed interface assignment and discovery: The use of fixed interfaces raises two questions. How does a node X decide what channel to assign to the fixed interface? How do neighbors of node X know about the fixed channel used by X? We propose two approaches for solving this problem. In the

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first approach, each node uses some well-known function f (e.g., f can be a function which generates a hash based on its input) of its node identifier to select the channel to assign to the fixed interface. Neighbors of a node X can use the same function f to compute the fixed channel used by X. This approach is simple, but there is a possibility that some channels in a neighborhood will not be used by any node. In the second approach, initially every node selects a random channel as the fixed channel. Each node periodically broadcasts a “Hello” packet informing its neighbors of its fixed channel. Based on the received “Hello” packets, nodes may (with some probability, to avoid oscillations) choose to set their fixed channel to an unused or a lightly loaded channel. “Hello” packets may be anyway needed in the face of mobility and this mechanism is expected to be inexpensive. This approach ensures that there is a high probability that all channels are used. One improvement is to consider the channel quality, in addition to the information received from neighbors, when deciding on the choice of a fixed channel. 3) Switchable interface management: The switchable interface on a node X is used to transmit data whenever the fixed channel of the destination is different from the fixed channel of X. One issue to be resolved is how frequently to switch channels. For example, consider a stream of packets at a node X where the even-numbered packets are to destination A, and the odd numbered packets are to destination B, with A and B on different channels. Thus, a policy is needed to decide when to switch an interface, and what channel to switch the interface to? One possibility is to alternately switch between channels for each packet. However, such frequent switching may be very expensive when the switching delay is large. Another possibility is to switch over longer intervals of time, thereby amortizing the cost of switching among multiple packets. Based on the above discussion, we propose an architecture, depicted in Figure 3. Each channel has a separate queue. The switchable interface services at most k packets on one channel, before switching to another channel (only if there are packets for some other channel). In addition, the switchable interface stays on a channel for at most t seconds, before switching to another channel (again, switching happens only if there are packets for some other channel). The two conditions in conjunction ensure that the extra latency introduced by the switching protocol is bounded by t, while the switching cost is amortized among up to k packets. The parameters k and t can be suitably set to trade-off latency with performance. The switching algorithm may need to support fairness. For example, in the architecture described above, when switching an interface, we can support fairness by switching to a channel having the oldest data packet in its queue. 4) Key benefits of the proposed interface assignment strategy: The proposed switching architecture and protocols have many useful properties. 1) The architecture can be built over existing MAC protocols, such as IEEE 802.11. FIXED 1 2 3 N QUEUES SWITCHABLE Fig. 3. Example architecture with N channels and two interfaces (M = 2, K = 1) 2) The sender and receiver nodes do not need to synchronize for channel switching. In addition, there is no need for specialized coordination algorithms to guarantee that the sender and receiver are on the same channel. 3) By carefully balancing the assignment of fixed interface over the available channels, the number of contending transmissions in a neighborhood significantly reduces. 4) The protocol can easily scale if the number of available channels increases.

V. ROUTING STRATEGY

Various routing protocols have been proposed for multihop wireless networks. Most of the commonly used routing protocols such as DSR and AODV select shortest-path routes. However, the shortest path metric may not be suitable for multi-channel, multi-interface networks as it does not exploit the available channel diversity. For example, the shortest path metric does not distinguish between a route with x hops, each on a different channel (resulting in low contention), and another route with all x hops on a single channel (resulting in high contention). Further, the shortest path metric does not account for the impact of interface switching. In this section, we first discuss techniques to quantify the cost of interface switching and channel diversity, and then propose routing heuristics that incorporate the impact of switching cost and channel diversity. A. Cost of interface switching Switching delay impacts a route only if a node is forwarding data along multiple routes. If all data through a node is along one route, then after the interface is initially switched on to the desired channel, no further switching is necessary. More formally, switching delay impacts a node only if the number of distinct, non-fixed channels a node uses is more than the number of available interfaces. We designate nodes impacted by the switching delay as “interface bottlenecked” nodes. The cost of switching for a channel is a combination of the switching delay and how frequently an interface is switched to that channel.For example, when we use the strategy (described in Section IV-B.3) of switching once only in k packets, switching cost is amortized over k packets. So, if the switching delay is D seconds for each switch, we can assign the switching cost to be D/k for each packet. The cost of interface switching along a route may be measured in terms of the number of “interface bottlenecked” nodes along the route, or in terms of the total switching cost along each node in the route. B. Measuring channel diversity The availability of multiple interfaces enables a node to transmit and receive data in parallel, provided different channels are used for transmission and reception. If each node along a route chooses different channels for reception and transmission, higher throughput can be achieved. More

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formally, if a node along a route can interfere with r other nodes along the route, then for higher performance, the channels used by the node (for receiving data) and the r interfering nodes must be different. We define “diversity cost” to be the cost incurred by a node on a route due to interference with other nodes along the same route. One way of measuring diversity cost (max-interference method) that we propose is as follows. If a node X along a route has i other interfering nodes receiving on the same channel as X, then the diversity cost of X is defined to be i. Since the end-to-end performance is impacted by the performance of a bottleneck link along the route, the diversity cost of the whole route is defined as the maximum diversity cost of any node along the route. Diversity cost can also be measured using the ETT metric, defined in [11]. Expected Transmission Time (ETT) is the average transmission time for packet exchange between two nodes, after accounting for retransmissions. In [11], the sum of ETT on all hops of a route that use a common channel is defined to be the diversity cost for that channel. The diversity cost of the whole route is defined as the maximum diversity cost of any channel along the route. C. Routing Heuristics The routing protocol has to select routes which have low switching cost as well as low diversity cost, for maximizing the throughput obtained. In addition, the routing protocol has to account for global resource usage as well (e.g., total number of hops traversed along a route), to avoid inefficient resource utilization. Thus, we can compute the total cost of a route as the weighted combination of the switching cost, the diversity cost, and the global resource usage cost. It is part of our ongoing work to study the appropriate weights to be used, and the trade-offs involved with different weights. Different routing heuristics can be developed by using different approaches to measure each cost, and by using different approaches for combining the costs. To illustrate the possibilities, we propose two different metrics that can be used for routing. 1) Enhanced shortest path metric: This metric measures the switching cost as the number of interface bottlenecked links, the diversity cost using the maximum interference method, and the global resource usage cost as the total number of hops on the route. This metric is simple to use and can be computed as part of the route discovery process itself. 2) Enhanced WCETT metric: Draves et al. proposed a metric called “WCETT” [11] based on ETT. But WCETT does not account for switching cost, and hence we propose the “enhanced WCETT” metric. Enhanced WCETT metric measures the switching cost as the sum of switching delays along the route, the diversity cost using the ETT metric, and the global resource usage cost as the sum of ETT values along the path. WCETT metric has been shown to perform well (when interface switching is not used) in multi-channel scenarios, but requires the ETT values on every link to be periodically estimated. D. Routing Protocol Suitable reactive or proactive routing strategies can be devised to implement the proposed routing heuristics. We now explain one possible implementation based on DSR, a reactive source-routed protocol. The source node broadcasts a route request (RREQ) packet. Any non-destination node that receives the route request packet (for the first time), rebroadcasts the packet after adding the appropriate costs (based on the heuristic being used) for the link over which RREQ was received, to the packet. The destination node sends a route reply (RREP) to the source node for every RREQ that it receives. The RREP contains all the cost information aggregated in the RREQ, and can be used by the source node to select the least cost route. As we noted earlier, broadcast is more expensive with multiple channels because a copy of the packet has to be separately sent on each channel. The total broadcast cost can be reduced by using a two-phase route discovery process. In the first phase, each node forwards the RREQ packet only on the channel with the least cost. If a RREP is not received within a timeout interval, a second phase that involves a full route discovery (similar to the single-phase mechanism described above) is invoked. The two-phase route discovery process reduces the total broadcast cost when the first phase discovers at least one route. However, the discovered routes may not be optimal, as locally optimizing costs during the discovery process may not lead to a globally minimum cost route.

VI. DISCUSSION

In this section, we discuss other issues that may arise in multi-channel, multi-interface networks. A. Impact of mobility In the previous sections, we have not explicitly studied the impact of mobility. The main impact of mobility is that the neighbor set frequently changes. Protocols may have to be designed to be resilient to changes to neighbor set. For example, some of the interface assignment and routing strategies that we proposed are resilient to changes to the neighbor set. Consider the “Hello” packet mechanism used to periodically discover the fixed channels of neighbors, and for balancing the fixed channel assignment in the neighborhood. The “Hello” packet mechanism automatically handles changing neighbor sets. High levels of mobility may require more frequent “Hello” packet exchange increasing the overhead, but the overheads will still consume a very small fraction of the available channel bandwidth. Similarly, other protocols may be designed that are suitable for use even in mobile topologies. Another impact of mobility is the possibility of higher channel fading, leading to link breakages. It may be possible to exploit the resilience multiple channels offer against channel fading by developing a suitable interface assignment protocol. B. Topology Control The performance of wireless MAC protocols such as IEEE 802.11 significantly degrades when the number of contending transmissions increases. Many topology control strategies have been proposed for dense networks to reduce the number of contending transmissions, for example by using transmission power control. The use of multiple channels offers a similar benefit by distributing nodes across channels, thereby reducing the average number of contending nodes in a neighborhood by a factor of N, where N is the number of channels available. A carefully designed interface assignment strategy, along with a suitable routing algorithm, can dynamically adapt to the density of nodes in a neighborhood. If the node density is low, connectivity is maintained by using frequent interface switching. If the node density is high, sufficient connectivity is obtained without frequent interface switching, and the routing algorithm will mostly use routes that incur little switching cost. An open issue is to integrate protocols for multiple channels with transmission power control approaches for topology control. C. Other issues with multiple channels In this paper we have argued that multiple interfaces are useful for exploiting multiple channels. One open question is the number of interfaces that are needed for achieving maximum capacity improvement. Note that if N channels are available, then for the simultaneous use of the N channels, we need at least $2 * N$ interfaces (a pair of interfaces are required for communication on each channel). Thus, in any neighborhood (neighborhood is informally defined as the a region where any two communications on the same channel interfere), the total number of interfaces available among all nodes in the neighborhood has to be at least $2 * N$. If the total number of interfaces is less than that, then the lack of sufficient number of interfaces will be a bottleneck to performance. On the other hand, if the total number of interfaces is significantly larger than $2 * N$, then the contention on the channels will be a bottleneck to performance. Thus, selecting the number of interfaces M each node should have depends on the network density, topology, and the desired cost or performance. Multiple channels may be used to derive other benefits. For example, we have proposed to use a single-path routing algorithm. In single channel networks, multi-path routing algorithms are often not effective as the chosen paths have to be interference-disjoint (i.e., the paths should not interfere on the wireless channel), and it is often difficult to find such paths. On the other hand, if multiple channels are available, then it is sufficient for the paths to be node-disjoint, as it may be possible to select routes that use different channels. When the node density is high, the number of node-disjoint paths may be large, while the number of interference-disjoint paths is still small. Hence, multiple channels may simplify the use of multi-path routing algorithms. VII. CONCLUSION In this paper, we have argued that capacity improvements with multi-channel networks can be exploited even when the number of available interfaces is smaller than the number of available channels. We have presented an interface assignment strategy that allows nodes to communicate with each other in a multi-channel environment without requiring specialized coordination algorithms. We have identified the need for specialized routing protocols for multi-interface networks, and have proposed routing heuristics that includes the impact of switching delay. On-going work is studying alternate metrics and routing strategies for multi-channel, multi-interface networks. Detailed performance evaluation is also part of on-going work.

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BUSINESS STUDY IN MOBILE MARKETING

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ABSTRACT
Start-ups in coming future in India to offer affordable plans and prices, enabling attractive tarrifs for the cell phones users to access Internet on their handsets starting from the first mobile phone which was introduced by Motorola, the mobile phones have evolved before. The major reasons for this increase in smart phones are declining hands sets costs, low tariffs, faster band with and greater connectivity. The distributed networks and wireless telecommunications has created a tremendous potential platform for providing business services. This paper tries to understand the acceptance level and behavior of consumer towards the increasing mobile marketing communication. It demonstrates as to how the statistical compilation varies with smart phones, desktop, tablets and other devices in present generation with different countries. Mobile marketing is now emerging as one of the best platform for advertising, brand awareness, promotions in the world.

Keywords: Consumers, marketing communication, Advertising, Mobile Marketing, privacy.

INTRODUCTION

India is the place where every year new mobile users are entering into this segment which is very bright opportunity for marketers to market their products through mobile marketing. Mobile apps and desktop apps have really grown in importance with the rise of the smart phone and tablet devices. Mobile marketing is a mutti-channel, digital marketing strategy aimed at reaching a target audience on their smart phones, tablets and other mobile devices, via websites, email, sms and mms social media, and apps. Mobile is disrupting the way people engage with brands. Mobile is the most personal channel that exits – it's in some one's pocket, sits next, to their bed, and is checked throughout the day. Every thing that can be done on a desktop computer is now available on a mobile device. From opening an email to visiting your website to reading your context, its all accessible through a small mobile screen.

2. RESEARCH OBJECTIVES

- To understand the consumer acceptance level across different verticals based on the demographics for mobile marketing communication.
- To identify the facilitating and limiting factors associated with mobile marketing communication in country.
- To identify basic strategies that can help Marketers Bridge the gap between the customers and the brand.
- Mobile marketing works in a similar fashion across all age groups.
- Younger generation prefers accessing internet via mobile platform.

3. RESEARCH METHODOLOGY

It's important to remember that marketing directly to mobile devices is more personal than targeting an audience through other channels. When reaching some one on a mobile device either through email, sms or mms, we are reaching that person in his/her pocket or purse. A similar way to reach our audience on mobile devices is mms. This paper tries to understand the Indian consumer behavior towards increasing mobile marketing. It demonstrate the statistical compilation varies with smartphones, Desktop, tablets and other devices varies with other countries. The data collected for this paper is from secondary sources.

4. CONSUMER ACCEPTANCE AND RESPONSE TO MOBILE MARKETING

In 21st century customer is the king, every company stands by that. Customers are to be reached by various channels but in today's world mobile marketing communication is the one which reaches more end customers. Marketing of the product is done for creating a positive impression of the brand, for better brand recall, to increase sales and to generate awareness.

Customer in this fast moving life does not have time for something they don't need.

What **customers** need is:

- Personalized advertisements according to their needs.
- Advertisements which they have given permission for.
- No spams and inconvenience caused by unnecessary promotion.

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5. TECHNIQUES FOR MOBILE MARKETING ANALYTICS

These are the related techniques which we recommend as important for managing mobile marketing analytics effectively.

5.1 App Marketing

5.2 Mobile Advertising

5.3 Mobile E – Commerce

5.4 SMS Marketing Techniques.

5.1 App Marketing: The modern marketer can reap massive benefits from the mobile app revolution useful marketing software is becoming increasingly available in app form, making tools and data readily available on the go

1	Hoot suite	16.39%
2	Buffer	6.46%
3	Nimble	1.49%
4	Feedly: Blogs, RSS News Reader	2.98%
5	Face Book	17.88%
6	Blogger	1.32%
7	Linkedin	8.11%
8	Mashable	3.31%
9	TED	2.98%
10	Quora	0.66%
11	Quick Win Digital Marketing lite	0.66%
12	Dropbox	4.64%
13	Evernote	6.95%
14	Analytics pro2	16.39%
15	Google Analytics	13.58%
16	Other	6.95%

5.2 Mobile Advertising: Mobile Advertising is a form of advertising via mobile (wireless) phones or other mobile devices. It is subset of mobile marketing. It is estimated that mobile app install ads accounted for 30% of all mobile advertising revenue in 2014, and will top over $ 6.8bn by the end of 2019, other ways mobile advertising can be purchased include working with a mobile Demand side platform World's Top 10 mobile Ads companies.

Sl.No.	Ads Companies
1	Adfonic
2	Google's Admob
3	Amobee
4	Chart boost
5	Flurry
6	Hasoffers
7	Hunt
8	In mobi
9	Millennial Media
10	Tapjoy

❖ **Global Advertising**

The explosion of social networks and consumer – generated media over the last few year continues to have a significant impact on advertising.

People trust completely / some what

Sl.No.	Ads	Percentage
1	Branded websites	58%
2	Online video ads	36%
3	Ads on social networks	36%
4	Online banner ads	33%
5	Display ads on Mobile Devices	33%
6	Text ads on Mobile Phones	29%

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5.3 Mobile E – Commerce

For private consumers around the globe the most well known form of e-commerce falls into the business to consumer (B2C) category, which include retail or online shopping.It refers to online purchases from bricks-and-mortar retailers, such as Wal-Mart, as well as from web-only online retailing corporations such as Amazon.com or Rakuten.

This statistic provide information on the average order value of online shopping orders worldwide in the third quarter of 2017.

Devices	Order value in U.S. dollars
Traditional	146.46
Tablet	109.4
Smartphone	104.63
Other	94.09

5.4 SMS Marketing: It's a channel with a host of potential benefits, but sms marketing has fallen out of fashion some what recently with marketers in the US and Europe – Prompting the question: is sms still relevant.

KEY BENEFITS OF SMS MARKETING

- Immediate: Messages are delivered to phones within seconds of being sent.
- Direct: Texts are sent directly to Individuals, forcing them to engage.
- High open-rate: 82% of survey respondents said they open every sms text they receive.

There are broad demographic difference when it comes to sms usage. For example just 75% of 50-64 year old Americans use their phone for text messaging compared to 97% of 18-29 year olds.

There is also a gender split – women tend to read text messages less frequently than men.

Gender	Question	Percentage
Female	No, I don't read text messages	0.57%
	No, I only read texts from people I know	20.76%
	Yes, I read every text message	78.67%
Male	No, I don't read text messages	1.59%
	No, I only read texts from people I know	12.75%
	Yes, I read every text message	85.66%

SMS marketing has been a particularly popular way of staying in contact with customers – both potential and existing.

6. DISCUSSION

The average time spent on the mobile phone for various reasons has drastically increased over the years. One very important issue that has emerged as a limiting factor for the growth of marketing communications and shopping online is the fear over the security of the transaction. People are not convinced when it comes to the actual execution of these messages. An environment of trust needs to be created in order to overcome this issue. Also, most of the respondents were seen worried over the privacy concerns. This is a major issue that needs to be addressed on an immediate basis. The importance of customer profiling, target segment and sending customized communication messages can be understood clearly by the fact that various profession groups respond differently to various mobile marketing messages.

7. CONCLUSION

It can concluded from the research that mobile phones now have a much greater in common man's life and can act as a very important tool for the marketers and a platform for mobile marketing communications. The marketers now have an opportunity to reach newer markets and customer target segments, where it was really difficult and expensive to carry on effective marketing activities. It is reaching much deeper in the Indian population where a PC/laptop has never reached. Companies should focus more on one to one marketing so as to target the right class of customers, increase sales and creating brand awareness.

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REVIEW ON MOMENT BASED IMAGE WATERMARKING METHODS

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ABSTRACT
Digital image watermarking is a method used for image authentication and copyright protection. Watermark is a signal embedded into the host image to be later detected or extracted. This paper presents a brief review on various moment based image watermarking methods. Further, invariant image watermarking method using Tchebichef moments is presented in detail. The watermark signal is obtained by performing image reconstruction with the modified Tchebichef moments of the original image. The watermarked image is obtained by adding the original image with the watermark signal. Tchebichef moment invariants which are invariant to image scaling, rotation and translation are used as features for obtaining invariant image watermark. Simulation results are carried out by considering standard images. From the simulation results, it is observed that this method is robust with respect to geometric distortions like rotation, scale, translation, median filtering and Gaussian noise addition as well as affine transformations.

Keywords: Moments, Tchebichef Moment Invariants, Image Watermarking

1. INTRODUCTION
Image watermarking is a technique used for image authentication and copyright protection. Watermark is a signal embedded into the host image to be later detected or extracted. The watermarked image may be prone to various types of attacks. These attacks attempt to either destroy the embedded watermark or even completely remove it from the image. Therefore, robustness againstdifferent kinds of geometric attacks is an essential requirement of image watermarking techniques. Rotation, scaling, shearing, flipping and affine transformation are examples of these geometric attacks. A digital watermarking is a method that embeds a watermark in a digital data by making small changes in the host data. The embedded watermark must be perceptually invisible and it must be difficult to change or remove it against the intentional or unintentional attacks such as linear and nonlinear filtering, compression, image enhancement and geometric transformations.The existing watermarking techniques are classified into either spatial or transform domain techniques. In the spatial domain method, a pseudo random noise pattern is added to the pixels in an image. In the transform domain method, the watermark signal is added in the transform domain rather than in the spatial domain. The obtained results after addition of the watermark is inverse transformed to get the watermarked image.

In this paper, we present a brief review on moment based methods for image watermarking. Their advantages and disadvantages are also focused. Simulation results are carried out using the method suggested in [14] by considering the standard images. Further, robustness of this method against various attacks on image is also carried out. Stirmark software is used to generate various attacks on images. This paper is organized into three sections. Section 2 presents the literature survey. Review on Tchebichef moments is presented in section 3. Watermarking method using Tchebichef moments is presented in section 4. Simulation results are presented in section 5. The last section presents the conclusions about the work.

2. LITERATURE SURVEY
Some of the well known transforms used for the watermark are Discrete Cosine Transform[5], Discrete Wavelet Transform[7], Singular value decomposition[9], Fourier Transform[6,10], Fourier-Mellin Transform[8], Zernike moments[1] and Geometric moments[3], . M.Farzam et al.[11] proposed a zernike moment based watermarking technique that divides the given image into co centric rings and watermark signal is added to the zernike moments of each ring. The watermark image is obtained by reconstructing the image from the zernike moments of the co centric rings. Their method works for rotational invariance only. In order to have a watermarking method that works for rotation, scale and translation of the original image, Hyung Shin Kim et al. [1] proposed a robust image watermarking scheme using zernike moments. They achieved rotational invariance by taking the magnitude of the zernike moments. Image normalization method is used for translation and scale invariance. This method suffers from the two errors namely, geometric and numerical errors. Masoud Alghoniemy et al. [3] proposed a watermarking procedure using geometric moments. They proposed a method that works for attacks like rotation, scale, median filtering, gaussian filtering, flipping . Their method fails in detecting the watermark when the watermarked image is subjected to small cropping, large rotational angles and histogram equalization. Another drawback of this method is that it fails to preserve the contrast of original

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image after watermarking. Venkataramana et al. [13,14] proposed watermark insertion and detection scheme using Krawtchouk moments and Tchebichef moments. They reported the results connected with image rotation, translation and scaling. Performance evaluation of moment based watermarking methods is presented in [16]. The next section presents the review on Tchebichef moments.

3. REVIEW ON TCHEBICHEF MOMENTS

In this section, we give a brief review of Tchebichef moments and Tchebichef moment invariants [14].

Tchebichef moments T_{pq} of order (p,q) for a digital image of size M x N are defined as[12]

$$T_{pq} = \frac{1}{\rho(p,N)\rho(q,N)} \sum_{x=0}^{M-1}\sum_{y=0}^{N-1} t_p(x)t_q(y)f(x,y) \qquad (1)$$

Where $t_p(x)$ and $t_q(y)$ are the discrete scaled Tchebichef polynomials of order p and q respectively and $\rho(.)$ is the squared norm of scaled polynomials which is given by

$$\rho(n,N) = \frac{(2n)!(N+n)!}{\beta(n,N)^2\ (N-n-1)!(2n+1)!}$$

$$= \frac{N(1-\frac{1}{N^2})(1-\frac{2^2}{N^2})............(1-\frac{n^2}{N^2})}{\beta(n,N)^2\ (2n+1)}$$

$$for\ \ n = 0,1,......, N-1$$

where $\beta(n,N)$ is a suitable constant which is independent of x. The most suitable choice for $\beta(n,N)$ is $\beta(n,N) = N^n$

The scaled Tchebichef polynomials of order 'n' is given by

$$t_n(x) = \frac{n!}{\beta(n,N)} \sum_{k=0}^{n} (-1)^{n-k} \binom{N-1-k}{n-k}\binom{n+k}{n}\binom{x}{k}$$

The recursive formula for scaled Tchebichef polynomials is given by

$$t_n(x) = \frac{(2n-1)t_1(x)t_{n-1}(x) - (n-1)(1-\frac{(n-1)^2}{N^2})t_{n-2}(x)}{n}$$

$$for\ \ n = 2,3,......., N-1$$

with $t_0(x) = 1$ *and* $t_1(x) = (2x+1-N)/N$

If Tchebichef moments of order $(M_{\max}, N_{\max})$, Then image reconstruction can be obtained using the formula

$$f(x,y) = \sum_{p=0}^{M_{\max}}\sum_{q=0}^{N_{\max}} T_{pq}\, t_p(x)t_q(y) \qquad (2)$$

In terms of Stirling numbers of first kind, $t_n(x)$ can be represented as

$$t_n(x) = \frac{1}{\beta(n,N)} \sum_{k=0}^{n} C_k(n,N) \sum_{i=0}^{k} s_k^{(i)} x^i \qquad (3)$$

where $S_k^{(i)}$ are the Stirling numbers of first kind which satisfies $\frac{x!}{(x-k)!} = \sum_{i=0}^{k} s_k^{(i)} x^i$ and

$$C_k(n,N) = \frac{n!}{k!}(-1)^{n-k}\binom{N-1-k}{n-k}\binom{n+k}{n} \qquad (4)$$

Tchebichef moments invariants (TMI) are expressed in terms of Geometric moments as [14]

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$$\tilde{T}_{pq} = \frac{1}{\rho(p,N)\beta(p,N)\rho(q,N)\beta(q,N)} \left(\sum_{k=0}^{p} C_k(p,N) \sum_{l=0}^{q} C_l(q,N) \sum_{n=0}^{k}\sum_{m=0}^{l} s_k^{(n)} s_l^{(m)} \tilde{v}_{nm}\right) \quad (5)$$

Where

$$\tilde{v}_{nm} = \sum_{i=0}^{M-1}\sum_{j=o}^{N-1} \frac{MN/2}{M_{00}} f(i,j) \left\{[(x_i - \bar{x})\cos\theta + (y_j - \bar{y})\sin\theta]\sqrt{\frac{MN/2}{M_{00}}} + \frac{M}{2}\right\}^n \left\{[(y_j - \bar{y})\cos\theta - (x_i - \bar{x})\sin\theta]\sqrt{\frac{MN/2}{M_{00}}} + \frac{N}{2}\right\}^m$$

$$\bar{x} = \frac{M_{10}}{M_{00}} \text{ and } \bar{y} = \frac{M_{01}}{M_{00}}$$

$$\text{and } M_{nm} = \sum_{i=0}^{M-1}\sum_{j=0}^{N-1} x_i^{\,n} y_j^{\,m} f(i,j)$$

4. WATERMARKING METHOD

In this section, we review watermark insertion and detection method using Tchebichef moments [14]. Let $\tilde{T}_{pq}$ and $\tilde{T}_{pq}^{h}$ be the Tchebichef moment invariants (TMI) of the original and distorted images where the super script 'h' can be considered as either 'r' for rotation or 's' for scaling or 't' for translation. The procedure for watermark insertion [14] is given below.

Step1: Calculate Tchebichef moments of the original image upto the order (M_{max} , N_{max}) and also calculate Tchebichef moment invariants upto some order ($\leq$ (M_{max} , N_{max})) and construct the Tchebichef moment invariants feature vector ($\tilde{T}_{pq}$).

Step2: Modify the Tchebichef moments by multiplying them by initially chosen factor (β) from $0<\beta<1$ and perform image reconstruction with modified moments using eq.(2).

Step3: Compute the TMI's of the image which was obtained by spatial domain addition of the original image with the image obtained in step2 upto the same order. The obtained values are denoted by a feature vector $\tilde{T}_{pq}^{*}$.

Step4: Calculate rms value between $\tilde{T}_{pq}$ and $\tilde{T}_{pq}^{*}$.

Step5: If this rms value is less than a threshold (T_1), change the value of β and repeat steps 2 to 4 otherwise go to next step.

Step6: Image obtained in step3 is checked for watermark visibility. If the watermark is invisible, that image is taken as the watermarked image, otherwise repeat steps 2 to 5.

The various steps required for watermark detection [14] are

Step1: Calculate TMI's of the given test image (upto that order for which TMI's are computed for watermarked image) and construct the TMI's feature vector. Let the feature vector of the test image be $\tilde{T}_{pq}^{test}$.

Step2: Compute the rms value between $\tilde{T}_{pq}^{test}$ and TMI's feature vector of the watermarked image $\tilde{T}_{pq}^{w}$.

Step3: If this rms value is less than the detection threshold (T_2) , the watermark is detected . Otherwise, watermark is not found in the test image.

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5. SIMULATION RESULTS

Simulation results are carried out by considering two standard images namely Lena, and baboon each of size 256 x 256.Tchebicxhef moments up to order (120,120) and TMI's upto order 5 are computed for each of the selected images. Original and watermarked images are shown in figures 1 and 2 . The detection threshold is chosen experimentally and these values are also entered in Table1. Stirmark software is used to generate the attacks on the image. Some of the test images are show in Figs.(3) and (4). We detected the watermark even if the watermarked image is subjected to all possible geometric distortions like rotation (all rotational angles), scale (75% scaled down and 120% scaled up images), median filtering and gaussian noise addition with noise variance upto 4 as well as affine transformed images generated by stirmark. We observe the detection failure if the test image is scaled down below 65% and scaled up above 150%.

6. CONCLUSIONS

In this paper, moment based watermarking method is reviewed. Further, simulation results are carried out using the method presented in section 4. We detected the watermark even if the test image is subjected to possible geometric distortions like rotation, scale, median filtering and gaussian noise addition as well as affine transformations.

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Table-1: Simulation results of Lena and Cameraman images

Image	Threshold (T_1)	Rms value between TMI's of the original and watermarked images	Detection Threshold (T_2)
Lena	0.33	0.36	0.32
Baboon	0.34	0.35	0.28

Fig-1: Original and watermarked Lena images.

Fig-2: Original and watermarked Baboon images.

Fig-3: Some of the test images Lena

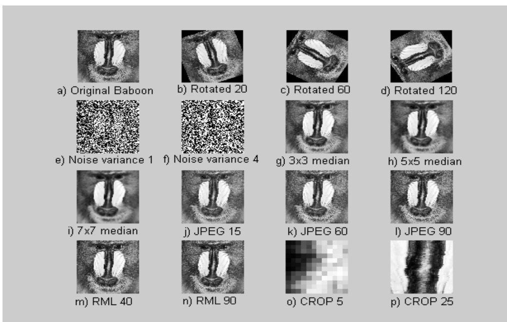

Fig-4: Some of the test images of Baboon

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HUMAN RESOURCE MANAGEMENTAND ITS IMPORTANCE FOR TODAY'S ORGANIZATIONS

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ABSTRACT

Today in the world, global competition is the basic element to define firms' strategies as a result industrial economy has been experienced to pass toward to knowledge economy. At an age where total quality is of primary importance, efficiency can only be achieved by the successful utilization of human resources. Human resource management is one of the necessary needs of today's business. Human resource management department has a very important role for supply of the human being to main resources of companies. Human resource management department has fundamental role for personnel recruiting, orientation and performance appraisal and so on. Human resource management issues to be addressed at the highest level in the organization and management of strategic decisions are required. This research will inform human resource management, scope and affecting factors on human resource management, human resource management functions and relationship between organizational effectiveness and human resources management.

Keywords: Human Resources Management, Management, Management Functions, Organizational effectiveness

1. INTRODUCTION

Today in the world, global competition is the basic element to define firms' strategies as a result industrial economy has been experienced to pass toward to knowledge economy. As being a competitive market development day by day it's very difficult to enhance sustainable growth for the firms' side. All researchers and practitioners are aware of the advantages and disadvantages of a competitive work environment and try to find ways for adapting to competitive conditions. These efforts have mostly focused on human resource management practices in the last two decades especially with the emergence of strategic human resource management approach.

There is a considerable difference between the prospects or prescriptions in favor of the "investment in man", and the practices of the companies. Human resources function is well developed and completely recognized, its importance is increasing, but nothing makes it possible to think that the most traditional constraints and priorities were confused: the control of market, requirements of finance and short-term profitability, surveillance of competitors, the possibility of recruiting a well- educated labor under advantageous conditions: many factors invite to found the idea of "strategy of human resources".

The relationship between perceived sufficiency of Human Resource Management practices, person-organization fit, and person-job fit has not been examined before. In the present study, it is hypothesized that perceived sufficiency of HRM practices contributes to actual and perceived person-organization fit and perceived person-job fit.

That is, if HRM practices are perceived as sufficient, the employee will have a better sense of fit with the organization and the job. In addition, the other hypothesis asserts that anxiety will influence the positive relationship between perceived sufficiency of HRM practices and person-organization fit and person-job fit. That is, although HRM practices are perceived as sufficient, persons with high anxiety may not have a better sense of fit with the organization and the job.

It is a necessity that the strategic approach to human resources issues to be addressed in modern organizations. Changing internal and external environmental conditions and new problems emerging and complex understanding of management-organization is the most important source of competitive advantage must not forget to give strategic importance to man. Into almost every part of the world as a result of globalization, operations, growth, downsizing, mergers, restructuring and corporate responsibility as the lives in the process, introduced concepts such as active and working every day to try a new technique in the management of human resources in organizations, management is becoming a very big importance and priority. Therefore, human resource management issues to be addressed at the highest level in the organization and management of strategic decisions are required. People in all matters related to the organization as a whole is brought together and integrate in a way compatible with its surroundings. Managers with strategic decisions and practices focus on results and it should reflect the thoughts and actions.

As the technology presents new solutions to the organizations, HRM departments start using cutting- edge technology solutions in the market. Purchasing the best-of-breed tool in the market seems the best solution. However, using tools directly commercial-off-the shelf brought new problems rather than informing the business processes.

Human resource management literature has generally focused on the constructs of commitment, job satisfaction, and organizational effectiveness. The fit between persons and organizations, and persons and jobs is a neglected area. However, when one considers the intended goals of HRM practices, a sense of fit may be suggested as an expected target. Thus, it seems worth studying whether the positive views of employees about HRM practices makes a difference in terms of their fit with the organization and the jobs that they undertake.

Previous studies have revealed that person-organization fit has significant effects on organizational commitment, performance, positive work attitudes, turnover intention, and the like. But the antecedents of person-organization fit have not been studied as frequent as the outcomes of person organization fit. Among the few antecedents that have been studied, organizational entry and socialization can be mentioned. The present study aims to make a contribution to the literature by examining the perceived sufficiency of HRM practices as an antecedent of person-organization fit.

2. HUMAN RESOURCE MANAGEMENT (HRM)

Although it was commonly accepted that HRM practices had formally started with industrial revolution, the fact is that the roots of HRM lie deep in the past. Just as the employees who shared the tasks that have to be done in modern organizations, humans in ancient societies also, divided work among themselves. So it can be said that division of labor has been practiced since prehistoric times. Tasks were allocated according to skills such as the ability to find food or plants, track animals or cook (Price, 2007) but the major contribution to the development of the HRM systems is provided by industrial revolution in the 1800's.

The terms of human resource management (HRM) and human resources (HR) have largely replaced instead of personnel management (PM) in the processes of managing people in the organizations. While human resource management is defined as a strategic and coherent approach for the organization's most valued assets behind on the workers, there is no upon description of it. Personnel department is mostly to manage the paperwork around hiring and paying people.

More recently, organizations consider the HR department as playing a major role in staffing, training and helping to manage people so that people and the organization are performing at maximum capability in a highly fulfilling manner (McNamara, 1998). In the global business, HRM is increasingly considered a contemporary development to reshape employment relationships as a tool that may have effectively replaced other management traditions like Personnel Management (PM) and Industrial Relations (IR) (Marchington & Wilkinson, 2002).

Since the 1980s, human resource management (HRM) strategy has become an important topic for the management area, HRM strategy has achieved its prominence because it provides competitiveness and promote managerial efficiency in the business area. The rise of human resource management in the 1980s brought managerial scholars to the link between the management of people and performance. A number of attempts were made to put empirical facts with the theoretical bones of the knowledge based firms and the specific HRM views concerning how the systems on HR practice, which can make an increment on the organizational performance. The approach that focuses on individual HR practices and the link with the performance continued since early 1990s (Hendry & Pettigrew, 1990).

HRM is used in a global context which contains ; "(a) specific human resource practices such as recruitment, selection, and appraisal; (b) formal human resource policies, which direct and partially constrain the development of specific practices; and (c) overarching human resource philosophies, which specify the values that inform an organization's policies and practices (Gilley et.al. 2002).

2.1. SCOPE OF HRM

As HRM has tools of a system which attracts, develops, motivates, and retains the effective functioning related with the people managing, the scope of HRM is very wide. Researches in behavioral sciences show that new trends in managing workers and advances in the field of training have expanded the scope of HR function in recent years. The Indian Institute of Personnel Management has specified the scope of HRM thus (Truss, 2001)

- Personnel aspect: This is concerned with manpower planning, recruitment, selection, placement, transfer, promotion, training and development, lay off and retrenchment, remuneration, incentives, productivity, etc.
- Welfare aspect: It deals with working conditions and amenities such as canteens, creches, rest and lunch rooms, housing, transport, medical assistance, education, health and safety, recreation facilities, etc.
- Industrial relations aspect: This covers union-management relations, joint consultation, collective bargaining, grievance and disciplinary procedures, settlement of disputes, etc.

The main aim of the human resources management is using the salaried staff in an organization effectively and salutary for the organization's benefits. Thanks to this productive work environment, organization can reach its goals and continue its functions.

Today, operating organizations continue their existence for different goals according to organization's type and aims. These organizations can be classified as private, non-governmental and public establishment. While the preferential aim of the public establishments are fulfilling the public's needs, private establishments' aim is earning profit. Non-governmental (civil) establishments' aim is fulfilling the public's needs and carrying on their business like public establishments (Akçakaya, 2010). These three kind of establishments' common aim is giving quality service. There is an important issue to be considered here: All these three organizations need a common ground. This common ground is human resource.No matter how strong the financial resources of an organization, probability of success will be low if the human resources do not have sufficient activity. Low effectiveness of human resources means that the organization slogs on reaching the targets set for the future and profitability level.

Another important matter is the opinions of the employees about the organizations that they work for. In this point, the performance pf the employees depends on the their satisfaction of the work (Uyargil et.al., 2010). Employees' salary, communication with their colleagues and managers, social and regal rights provided by the organization, working conditions, and effects of the organization on employees are belong to human resources managements' area to fulfill. Making the necessary arrangements will lead to increased motivation. With increased motivation, employees will connected to their works and at the same time they will be more productive and successful on their works.

Aims of human resource management can change with the definition that you make. Because, as the definition varies from one researcher to another, the aims of HRM can also change in accordance with the researchers' or practitioners' points of view. For example, according to Armstrong (2006, p.8), "the overall purpose of human resource management is to ensure that the organization is able to achieve success through people." Also, he pointed out that "HRM strategies aim to support programs for improving organizational effectiveness by developing policies in such areas as knowledge management, talent management, and generally creating 'a great place to work'. "

Like Armstrong (2006), Barutçugil (2004) also dealt with the aims of the HRM and he defined these aims in a similar way. A common point emphasized by these researchers is obtaining organizational goals through the employee. According to Barutçugil (2004), HRM aims (as quoted in Aray, 2008, p.4):

- To help all employees reach optimal performance and to use fully their capacity and potential,
- To convince employees to exert more effort for reaching organizational goals,
- To use human resources in an optimum way to reach organizational goals,
- To meet employees' career expectations and development,
- To unify organizational plans and HR strategies and create and maintain a corporate culture,
- To offer a working environment stimulating hidden creativity and energy,
- To create work conditions stimulating innovation, teamwork, and total quality concept,
- To encourage flexibility for achieving learning organization.

As it is mentioned above, being interrelated with all departments and external environment makes HRM a much more complex system, and HRM practices increasingly assume new responsibilities that are related with organizations. For that reason, researchers might have emphasized different aims or purposes of the HRM system.

2.2. AFFECTING FACTORS ON HRM

Traditionally, the personnel function centered on control and direction of employees for achievement of predetermined goals. The Human Resources Approach, in direct contrast to this, recognizes the worth of human being in the realization of corporate goals. It takes a supportive and developmental route to achieve results through the cooperative efforts of employees. When opportunities for growth and enhancement of skills are available, people will be stimulated to give their best, leading to greater job satisfaction and organizational effectiveness. The manager's role, too, has undergone a dramatic change over the years. From control and direction of employees, he is expected to move toward clarifying goals and paths and creating a supportive and growth oriented environment, where people are willing to take up assigned roles willingly and enthusiastically (Kumar, 2009). The effective use of people is the most critical factor in the successful accomplishment of corporate goals. To be effective, therefore, Human Resource managers need to understand the needs, aspirations, and concerns of employees proactively, face the challenges head-on and resolve issues amicably. They are expected to successfully evolve an appropriate corporate culture, take a strategic approach to the acquisition, motivation and development of human resources and introduce programs that reflect and support the core values of the organization and its people.

This is easier said than done in view of constant changes in environment characterized by the following things (Hendry et all, 1990).

Size Of Workforce: Corporate have grown in size considerably in recent years, thanks to global competition in almost all fields. The size of the work force, consequently, has increased, throwing up additional challenges before HR managers in the form of additional demands for better pay, benefits and working conditions from various sections of the workforce constantly.

Composition Of Workforce: The workforce composition is also changing over the years. The rising percentage of women and minorities in the work force is going to alter workplace equations dramatically. Demands for equal pay for equal work, putting an end to gender inequality and bias in certain occupations, the breaking down of grass ceiling have already been met.

Employee Expectations: "Instead of attempting to force employees to conform to 'corporate mould' future managers may well have to make more allowances for individual differences in people." (Hendry et all, 1990).

3. HUMAN RESOURCE MANAGEMENT FUNCTIONS

In general, human resources management aims to increase contributions of employees in organizations. Those contributions are new ideas, productively working and success. Human resources management should be responsible for social aims. This means human resources managers should behave fairly to social ethical norms and at the same time they should minimize the negative forces on organizations because of their demands from organizations. Human resources management is also responsible for organizations this it can be guessable from the concept. Their aims firstly establish fairly and higher standards of working places for every worker.

Robinson defined HRM role is the provision of assistance in HRM issues to line employees, or those directly involved in producing the organization's goods and services. Acquiring people's services, developing their skills, motivating them to high levels of performance, and ensuring their continuing maintenance and commitment to the organization are essential to achieving organizational goals. The authors proposed an HRM specific approach as consisting of four functions- staffing, training and development, motivation, and maintenance (1997).

In addition, Bratton and Gold (2003) define HRM as the strategic approach to managing employment relations which emphasizes that leveraging people's capabilities is critical to achieving sustainable competitive advantage. This is achieved through a distinctive set of integrated employment policies, programs and practices. The authors presented HRM functions as planning, recruitment and selection, appraisal and performance management, reward management, development, employee relations, health and safety, and union-management relations (Bratton & Jeffrey, 2003).

According to Dessler and his friends, function of HRM include assisting the organization in attracting the quality and quantity of candidates required with respect to the organization's strategy and operational goals, staffing needs, and desired culture. Helping to maintain performance standards and increase productivity through orientation, training, development, job design, effective communication, and performance appraisal. Helping to create a climate in which employees are encouraged to develop and utilize their

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skills to the fullest. Helping to establish and maintain cordial working relationship with employees. Helping to create and maintain safe and healthy work environment.

Development of programs to meet economic, psychological, and social needs of the employees. Helping the organization to retain productive employees and ensuring that the organization complies with provincial/territorial and federal laws affecting the work place such as human rights, employment equity, occupational health and safety (Dessler et.all. 1999).

Human resource management that is should be evaluated on the basis of business as a whole and the human resource management functions cannot be considered independent from each other. As it is mentioned before, Human Resource Management in accordance with the organization's culture, accurate and up-to-earth as part of a specific strategy of the organization to continue its activities is an inevitable necessity. Doubtlessly, the basic functions of Human Resource Management should be processed in the context of the strategies because both at the point of corporate sustainability and corporate activities they undertake an active role in the successful sustainability are accepted.

In human resource management, to provide the sufficient number of employees timely a plan should be made considering the organization’s present potential, development trend and strategic targets. It is called as human resource management which aims using the present human resources wisely, supplies the future human resource needs in terms of quality and quantity (Akyüz, 2001).

According to Barutcugil, when there is a need in the organization, human resource management is an operation which provides the proper employees for the organization. Human resource planning is a process in which the employees are evaluated from the entrance to the exit of the work. Human resource planning should be determined according to organization’s vision, mission and strategies. The required number of the employees, their quality, how and to what extent they should work are connected to the human resource management. With the planning, human resources are prevented from being less or more than the necessary (Barutçugil, 2004).

The quality of human resources in an organization depends on the success in recruiting process largely. In the employee selection process, cannot finding sufficient number of candidates, who have competence with the job, may lead not to fill some empty jobs and recruitment of noncompeting employees in the context of the job. It will result with some negative events such as increase in efficiency as well as increase in wage costs, laborforce transfer, job accidents, decrease in motivation and thus in job satisfaction, increase in supervision costs of the business that the employee recruited does not bear the qualities of the job in full. If the qualities of the employee. If the candidate's features is not meeting with the qualifications that employees is looking for, then in this situation, it is said to be made wrong employee choice.

Directly related to Human Resources planning is selection and recruitment of right people from internal or external sources. This obviously is another critical issue for HRM as it is directly related to cost and overall performance of the organization. Chawdhury (2002) emphasizes the importance of a talented workforce as “in an era of competition the growth of any organization is proportional to the growth of its talent.”

As important as selection and recruitment is to retain good employees and to encourage them to give of their best.Therefore consistent reward systems are interrelated to objective, defined and consistent performance appraisal systems. Taylor (2009) states that four points are important to make the employee “fall in love” with the organization: Reward fairly in line with market place, treat well: i.e. focus in recognition of every employee’s contribution, train and improve skills and develop talented people.

Human Resources planning in other words manpower planning is one of the important functions of any organization. According to Savaş (2006) the objectives of human resources planning are:

- To determine the manpower required according to the development plans of the organization ,
- To control the manpower costs which have an important effect on profitability ,
- To make the human resources work more effectively and efficiently,
- To highlight the career development of the employees as well as cover their needs and improve their work condition to make them work highly motivated,
- To determine the salary norms , to make job appraisals objectively and the wages accordingly,
- To relate manpower supply and organizations manpower demand.

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4. RELATIONSHIP BETWEEN ORGANIZATIONAL EFFECTIVENESS AND HUMANRESOURCES MANAGEMENT

Most of the early reviews of the literature were published by notable industrial psychologists as cited in Ferris (et al., 1999). As a consequence, these reviews tended to emphasize applied individual-level issues, such as employee testing, training and motivation.

Gilmer's (1960) discussion of situational variables explicated the importance of matching personnel strategies with organizational strategies. Further, Gilmer invited researchers to design measures to assess the relationship between "individual personalities" and "company personalities" (1960 as cited in Ferris et al., 1999).

Some researchers have proposed that evaluations of effectiveness should be based on financial measures (e.g., profit) and for years, human resources issues have been secondary to such measures. Today, many CEOs agree that profit alone is not enough to hold the enthusiasm and loyalties of employees or to call attention to the vital elements of a business that must receive attention if it is to perform effectively (Watson, 1991 as cited in Zellars & Fiorito, 1999). Under the threat of exit (Hill & Jones, 1992), organizations now recognize that they must fulfil responsibilities to many constituencies (Baumhart, 1968; Clarkson, 1991 as cited in Zellars & Fiorito, 1999), including employees.

Mohrman & Lawler III, (1997) advocates that an organization is created in which the human resource management practices of the past no longer fit. Organizations are faced with a situation that cries out for new solutions to the thorny challenges of integrating business and people needs.

Acquaah (2004) states that human resource management practices enhance organizational effectiveness and performance by attracting, identifying, and retaining employees with knowledge, skills, and abilities, and getting them to behave in a manner that will support the mission and objectives of the organization. Thus, the effectiveness of HRM practices depends on how it engenders the appropriate attitudes and behaviors in employees, in addition to its implementation.

Today, HR departments are expected to contribute to organizational performance (Ettore, et al. 1996; Fitz-enz, 1994; Mathes, 1993), and many organizations now believe that the success of the strategic management process largely depends on the extent to which the HR function is involved (Butler, et al. 1991 as cited in Zellars & Fiorito, 1999).

Studies at the last decade (e.g., Arthur, 1994; Delery & Dory, 1996; Huselid, 1995; Huselid & Becker, 1996; Huselid, Jackson & Schuler, 1997 as cited in Dyer & Shafer, 1998) have reported rather large effects on such outcomes as employee turnover, productivity, quality, profits, and even stock prices. Trouble is, for a variety of methodological reasons - including unreliable measures of HRM and OE, common method variance, poorly specified models, and cross-sectional rather than longitudinal research designs - these estimates strain credibility to the point of incredulity (Becker & Gerhart, 1996 as cited in Dyer & Shafer, 1998).

Over time, employees who feel neglected will seek alternatives and may withdraw either through increased absenteeism and turnover or decreased commitment. This may threaten the firm's survival or at least hinder its success as other sources of competitive advantage such as scale economies and protected markets wane – "what remains as a crucial, differentiating factor is the organization, its employees, and how they work" (Pfeffer, 1994, p.14 as cited in Zellars & Fiorito, 1999).

It is important that a firm adopt HRM practices that make best use of its employees. This trend has led to increased interest in the impact of HRM on organizational performance, and a number of studies have found a positive relationship between so-called "high-performance work practices" (Huselid, 1995) and different measures of company performance. Furthermore, there is some empirical support for the hypothesis that firms, which align their HRM practices with their business strategy, will achieve superior outcomes (Bae & Lawler, 1999).

Denison (1990 as cited in Schneider et al., 2003) measured employee attitudes in 34 publicly held firms and correlated aggregated employee attitudes with organizational financial performance for 5 successive years after the attitude data were collected. He found that organizations in which employees reported that an emphasis was placed on human resources tended to have superior short- term financial performance.

An organization needs to adopt specific HR policies and practices for different strategies. Thus, to be effective, an organization's HR policies must be consistent with other aspects of the organization. By having appropriate HR policies and practices in place, organizations can elicit employee behaviors that are consistent with an organization's strategy (Rose & Kumar, 2006).

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It is obvious that HR management practices should be an important part of the strategy of any large corporation. Yet researchers basing their views on a behavioral psychology perspective have argued that human resource management practices could contribute to competitive advantage as long as they reinforce the skills, attitudes and behaviors that result in lowering costs and enhancing product differentiation. Therefore, the important role of human resources practices in contributing to a firm's competitive advantage overlaps with the concept of efficiency as a human resources strategy for effective performance (Ozcelik & Ferman, 2006).

5. CONCLUSION

Corporations are undergoing dramatic changes with significant implications for how human resources are managed and the HR function is best organized and managed. The forces driving change include the rapid deployment of information technology, globalization of the economy, and the increasingly competitive dynamic business environments that corporations face. There is a growing consensus that effective human capital is critical to an organization's success and that the HR function's focus must be more strategic.

An effective Human Resources Management gives chance employees to contribute effectively and productively to the overall company direction and the accomplishment of the organization's goals and objectives. In working life, the most important value is employees. That is why Human Resources Management is the key factor for success of a business. Being a global world and being a part of global competitive markets processes force businesses to manage human factor more truly for every level.

A growing number of sources in HRM literature support the change and development of Human Resources perspectives from personnel management to HRM and then to Strategic HRM; they claim that, the human resources are the companies' most important assets, and effective management of these resources will contribute to the sustainable competitive advantage of firms. With the increasing value of employees as individuals, management of human resources with a classical approach is no longer satisfactory. This has led to the necessity of adopting a different administrative approach. As a result, the significance of human resources management has increased among other functions of administration. Nowadays; management of human resources is a rising star and a focus of attention in contemporary managing platform. The main reason for such an attention is the comprehension of the human factor by many institutions. It has been realized that employment of individuals efficiently by force and intimidation is not possible and more emphasis has been placed on methods and opportunities that enable people to work willingly.

At an age where total quality is of primary importance, efficiency can only be achieved by the successful utilization of human resources. Because, information that has given its name to this period is the product of human beings.

There is a consensus in the HRM field that, in order to stay competitive and reach business goals, high level managers must incorporate Human Resource Management strategies into their overall planning. A company's competitive success depends on having well informed and capable HR managers at the highest levels of decision making processes.

Human capital theory aims using HRM to increase the value of the organization's human capital and the value of the anticipated returns, such as productivity gains in the context literature where transaction cost theory has the perspective of economics. While the organizations are developing day by day agency theory appears to be particularly useful for understanding executive and managerial compensation practices and to predict occupation-based differences in job pricing methods.

Human resources with developed talents and creativity who are able to reach and utilize information constitute the main power of competition in the world market. Those companies and institutions that make investments on human resources and attempt to create working conditions that are compatible with their requirements and wishes, are the ones who reach success. The employees are the biggest support that institutions need during renovation periods. Institutions that were able to please their employees in the past and were able to implement loyalty and trust, can endure difficulties more easily. The merit given to humans not only increases personal productivity but it also uplifts the quality of the company and the team. The main purpose of human resources management is the employment of human resources in the most efficient and productive way.

Human resource management is one of the necessary needs of today's business. Human resource management department has a very important role for supply of the human being to main resources of companies. Human resource management department has fundamental role for personnel recruiting,

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orientation and performance appraisal and so on. The performance evaluation within this process, it's not only for evaluate of employees performance therewithal it's important to get strengthening of the bond between employee and employer. Performance evaluation is one of the important matters for companies getting successful. If the companies can use to performance evaluation correctly, it's bring to successful performance management and then bring success of the company. The aim of this study to give some information about human resource management and underline important of human resource department is then make prelude to performance evaluation and give some information about performance appraisal process.

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A STUDY ON SMART HOME AUTOMATION BASED ON INTERNET OF THINGS

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ABSTRACT
In day to day life, everything has been digitized. Digitization is something greater than invention because digitization leads to change. In the real-time certain home, devices need to be digitized and those include water heaters, a system to monitor water overflow in water tanks. This Internet of Things (IoT) project focuses on building a smart wireless home security system which sends alerts to the owner by using the Internet in case of any trespass and raises an alarm optionally.IOT will allow mobile devices and computers to remotely control all the functions and features of home appliances from anywhere around the world using internet connection. IOT is aimed at providing the user-friendly method to control the home appliances such as doors, lights, even in a condition of long-distance. The use of Network Address Translation (NAT) technology to control remotely via the Internet. People can operate the robot remotely by another smart mobile phone at any time. For IOT, objects are required to be made smart by embedding intelligence into them using technologies such as Wireless Sensor Networks (WSN) and Radio Frequency Identification (RFID). Raspberry Pi acts as the brain of the system.

Keywords:IOT, Smart Home, Sensors, Smart Phone, Internet

I. INTRODUCTION
In Ancient days its cumbersome to communicate and exchange information each other.IOT plays a Remarkable role in day to day life, In the world of digitization, the nonliving things had begun to interact with each other with the use of an idea known as IOT[internet of Things] which leads to a tremendous change in Human lifestyle [1]. IOT is an Advanced Automation and analytics system which exploits Networking, Sensing, Bigdata, Artificial intelligence, Medical field, Automation, Transportation, Home appliances, Robotics. These systems allow greater transparency control and performance applied to any system [2]. IOT essentially makes virtually anything “smart”. Objective: The main object of making this project is for reducing the power consumption and also to assist people who are disabled and are unable to monitor all the Home Appliances [3-5]. Automate chores such as watering your lawn, opening and closing Drapes, controlling lights, fans, controlling Electric water heater which alarms after reaching its setting point, Detects water overflow in water tanks and gives warning before the overflow of water tanks, Automatic door sensors, Health monitoring, Intimation of various parking slots around us, Smart home is now becoming prevalent with development of the IOT [6-8] .A smart home also referred to as a connected home or e Home is an environment for living that has highly advanced automatic systems. A smart home appears “intelligent” because its daily activities are monitored using an important hardware in IOT is sensors (Temperature sensor, sensor, Humidity sensor, pressure sensor, Gas RFID sensors, Image sensors). These devices consist of energy modules, power management modules, RF modules and sensing modules. RF modules manage communications through their Signal Processing, WIFI, Zigbee, Raspberry Pi, Bluetooth, Radio transceiver, Duplexer, RFID, FLIP (Frugal labs IOT platform) and BAW. A Smart home consists of many technologies via home networking for improving quality of living. Using wearable electronics this is small devices worn on the Head, Neck, Arms, Torso, and Feet (Head: Helmets, Glasses, Neck: Jewellery, Collars, Arm: Watches, Wristbands, Rings, Torso: Clothing, backpack, Feet: Shocks, Shoes] [9-10].These can monitor and makes a sense in the form of Alarm and gives the status of the Human body conditions. Use motion sensors to turn on Floodlights and cameras outside the home. For Example, This Home monitoring system helps the doctor and patient in both ways while they are remotely present each other. The user only just needs to have an Internet access on his PC or smartphone for data accessing and communication purpose. Thus in future we can create and saves the patients database, if the patient could come after 1,2 years then the doctor can treat the patient very well using this type of monitoring system.

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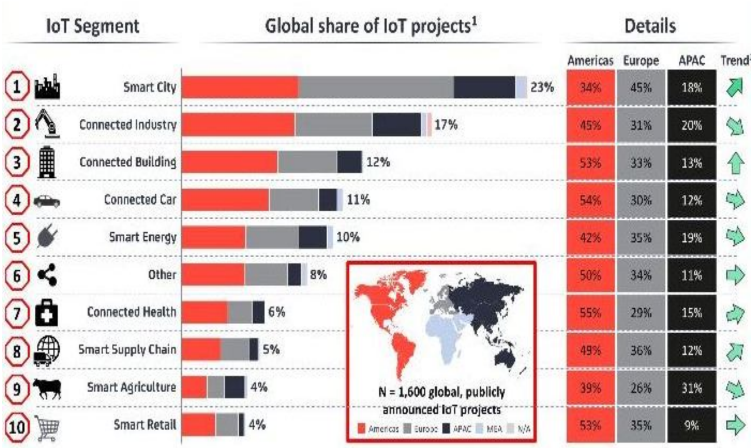

Figure-1: The most popular Internet of Things Applications [2]

Figure-2: Controlling of smart home system with smartphone [2]

In the Figure-1, it explains the 2018 database IOT projects contains extensive information on1600 real IOT use cases, including details on project location Industry End-user etc.IOT case studies which are part of “Smart city” initiatives make up the largest part of identified projects(23%) followed by projects implemented in “Industries” settings (17%) and projects evolving around connected “Buildings”(12%).In conjunction with the list, IOT Analytics also published a 32-page research summary document, detailing the most important findings of the IOT project research and contrasting the numbers to a similar study performed in 2016.IOT Analytics managing director “Knud Lasse Lueth,” said: The total number of IOT projects, that surged from 640 to 1600 in just span of 18 months.

II. LITERATURE ANALYSIS

Table-1: Comparision of Existing Methodology

S. NO	Name of the Author.	Year	Title name	Methodology	Remarks
1	S. Rajakumari -et al. [3]	2017	Upgraded living think-IOT and big data	Zigbee	• It is used to measure the quantity of air • It gives the warning before the overflow of water tank • It is the easiest and simplest way to implement the IOT • It stores a large amount of data. • In availability of parking slots, the first demerit is it gets updated only in one hour and forty minutes • It cannot store list of cities
2	Ravi Kishore Kodali-et al. [4]	2016	IOT Based Security and Home Automation System	TI-CC3200	• This is low-cost system • To operate home security system the user need not to have data connection

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3	Shopan Dey-et al. [5]	2011	Home Automation Using Internet of Things	Arudino	• This is ease system • It provides home system accessing remotely saving a lot of time • Another merit of this model is that turning of lights and fans and other electronic devices when they are not in use.
4	Honglei Ren-et al.[6]	2016	Secure Smart Home: A Voice and Internet-Based Authentical System for Remote accessing	Raspberry Pi 2 model B	• The voice print app will combine the Gaussian Mixture Model(GMM) with universal background provides a simplified I/O port for embedded system and transmit control signals between Raspberry Pi and the devices. • Voiceprint verification is used when the speaker claims to be a certain identity. Then a voice is used to verify this claim. • There are two types of errors that can occur in a voiceprint verification. • They are false rejection and false appearance. A false rejection error occurs when a valid identity utterance is rejected. A false acceptance error means accepting an identity claim for an imposter.
5	Sung-Jung Hsiao-et al.[7]	2016	Employing Cross -Platform Smart Home Control System with IOT Technology Based	Raspberry Pi	• The signal coverage is bigger than that of other communication protocols. • Most of the current mobile devices support the wireless communication of items of Wi-Fi.
6	Shunzhou Wang-et al.[8]	2015	Design of An Intelligent Housekeeping Robot Based on IOT	Cortex-M4 Processor	• Robots must be able to safely reach the target position and understand human needs in a different environment. • Robot's gas sensor can detect the composition of the home gas environment. • Robot track structure will suffer the longitudinal resistance when it performs on the vertical movement on the hard pavements.
7	Dr.M. Thiyagarajan-et al. [9]	2015	Integration in the physical world in IOT using android mobile phones.	Raspberry Pi	• Allocation of the resource is granting access to the web resource for the request raised by the client or customer. Here resources refer to the devices of the home and allocation of these devices to many levels of users to ensure the device security. • This paper presents an IOT service which has the sense in the device to collect the information and the process to

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					analyze the data and send the data over the web.
8	Dongyu Wang-et al.[10]	2015	Any Control – IOT based Home Appliances Monitoring and Controlling.	Integrated environment sensor	• Beacon developed a universal remote control with no wires or power cables. • Environment condition information would be very useful in other cases. Users can monitor their house condition with the data in remote place. • The sensor can communicate with PC through serial port. When the serial request was sent to the sensor, it will send back the sensor data package.
9	Saritha Agarwal-et al.[11]	2011	Internet of Things-A Paradigm Shift of Future of Internet Applications	Wireless sensor network	• In 1999, Kevin Ashton used the term IOT in one of his presentations as Proctor and Gamble while introducing the idea of using RFID in their supply chain. • The wireless network of sensor nodes would help the environment and objects around and communicate to other things. • RFID is a technology that connects the objects over-the-air so that objects can be tracked and the data about them can be shared by individuals and organizations.
10	S L S Sri Harsha-et al. [12]	2017	Enhanced Home Automation System using IOT	Raspberry Pi	• The system design can control lights, fans, AC's (ON/OFF adjust), regulate water, shutters. • Firebase [6] is a cloud storage and analytics technology provided by Google Inc. It provides functionalities such as cloud messaging authentication and cloud database.
11	Vagdevi P-et.al [13]	2017	Home: IOT Based Home Automation using NFC	Microcontroller	• This paper demonstrates the system for automation using NFC technology and monitoring via GPRS. • The system consists of NFC card, which is swipe across the reader on the entrance of the door for the door to be automatically locked or unlocked.
12	P. Siva Nagendra Reddy-et al. [14]	2016	An IOT Based Home Automation Using Android Application	Arduino	• The Arduino board is interfaced with the temperature sensor, LDR, and rain sensor in order to control the fan speed, light intensity. • It is also used to check the presence of rainfall. • Temperature is measured by using the LM35 sensor.
13	Adeel Ahmed-et al. [15]	2016	Cloud-Based Network Management and	Raspberry Pi	• Home Automation is amongst the very few industries which are believed to have a great impact

			Control for Building Automation		on the living standards of the people. • The research in this paper is focused on developing a product that is cheap and works on all the networks including 3G and 4G spectrums. • The Android device has a GUI providing the user with the platform to control the device as per will.
14	Raja Mukhopadhyay-et al. [16]	2016	Home Automation and Grid Mapping Technology Using IOT	Sensor	• Grid way mapping is an easy way to map an entire house. • This paper discusses how home automation system can be implemented is at the core of this technology. • The fusion of cloud computing and IOT significantly increases the benefit of the technology.
15	Young-Pill Kim-et al. [17]	2015	DAoT: Dynamic and Energy-aware Authentication for Smart Home Appliances in IOT	DH, MQV, LUCDIF	• IOT- accommodating authentication is required to solve MITM attacks and adapt resource requirements for diverse devices. • DAoT reflects 3 design goals-adaptiveness energy awareness and authentication. • Adaptiveness is required because security state of devices in IoT can change dynamically.
16	Hideki Matsuoka-et al. [18]	2014	Development of A Control System for Home Appliances based on BLE technique	Zigbee	• The main purpose of this research is to develop an appliance control system without restriction of the system. • A device" UHI" was proposed, worn on a finger to control any electric appliance and gives the evaluation. • In this paper, we will focus on how to connect the smartphone with different appliances based on BLE, which has the merits, e.g., low power consumption, minimization, and ready reminding service.
17	Nacer Khal -et al. [19]	2014	Wireless Sensors Networks for IOT	HTTP sensor	• The WSNs test-bed is composed of seven modes of crossbow MRP2600. • The gateway server is a key component in the system.

III. CONCLUSION

By 2022, the Global Home Automation market will top $79billion.Various Research works in Home Automation system.The core part of the development is the interoperability of different systems in the Home environment.Smartphone and WIFI as a communication protocol and Raspberry Pi as a server for monitoring and controlling the appliances of the Home.1PV6 and 6LOWPAN a single network server for classical as well as emerging aspects of Home Automation but the installation cost of this is high.Wireless solutions like Zigbee and 6LOWPAN are deployed since no cables have to laid. Arduino BT Board which is the Mobile-based Home Automation system.IOT based HA using GUI.Implementing remote control function with Smartphone and Bluetooth technology that provides help and assistance to the physically disabled person. Home automation using IOT like machinery, in this paper various equipment's electrical and electronic appliances are controlled. The advantage of home automation using IOT is the whole network consists of a single admin which makes the secure one as only admin has the authority to access all the data. In voiceprint IOT the system can be secured through voice print verification method based on GMM-UBM. The performance of voice print verification can be improved by an advanced algorithm like decay neutral network method. For the better security, smart home control standard should be designed.Thoughtful designs and innovative IOT resolution. The most powerful device of IOT the embedded control system is based on Cortex-M4 processor uses the wi-fi communication in the robot control. It increases the intelligent of the robot. Smart device explained can be presented in a smaller size to increase the applicable area by nanomaterial and Nanodevices. Enhanced IOT helps the living standards and also provides a safe environment without any worries.

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A STUDY ON SOLAR/WIND HYBRID ENERGY HARVESTING FOR SUPER CAPACITOR-BASED EMBEDDED SYSTEM

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ABSTRACT
For an electric -grid that creates autonomous power supply have some important that is: 1) Availability of power. 2) Strong and low cost. Energy harvester means storing energy So, here we store energy in a supercapacitor. We use solar and wind energy sources and then we harvest these sources and store in supercapacitors. These supercapacitors are the replacement of rechargeable batteries.

Keywords: Solar, Wind, Super Capacitor, Battery, Rectifier

INTRODUCTION
Energy is harvested and stored in place of batteries in industries. supercapacitor acts as a bridge between the normal capacitor and rechargeable batteries In this project we use solar and wind power energy sources. Hardware and software sources are used do this process. We use a battery and supercapacitor to store the energy that is created by solar /wind energies. Harvester requires dc voltage power. solar energy is stored by using solar panels and wind energy is stored by using wind turbines. We harvest the energies by using any microcontroller. We use a microcontroller for software purpose. The program code is dumped in the controller and the program runs. Energy is stored in harvester which can be used later. Harvesters are advantageous because it has easy power management and low maintenance. supercapacitor discharging time is milliseconds to seconds. Supercapacitor needs voltage balancing. It cannot use full energy spectrum for some applications. It discharges more when compared to an electrochemical battery. Here hybrid harvesters are attractive because they use both solar power energy and wind energy as they available at every time. If there is a problem like dark days and nights with no wind then buffered energy (stored energy) is used to overcome the shortage. In this supercapacitor also much important because the energy in this will stay for a longer time under repeatedly charging and discharging process. To harvest solar energy we use a solar panel, wind turbines for harvesting wind energy. Solar panel means it consists of multiple solar cells connected in series or parallel so that it gives higher outputs. In the embedded system we use wind turbines to convert mechanical energy into electrical energy. Harvester work is that turning input power into buffering power. Although harvester does not require software for efficient output as that is controlled by firmware i.e. microcontroller etc. These supercapacitor based harvesting systems emerge as an alternative for charging &discharging cycles.

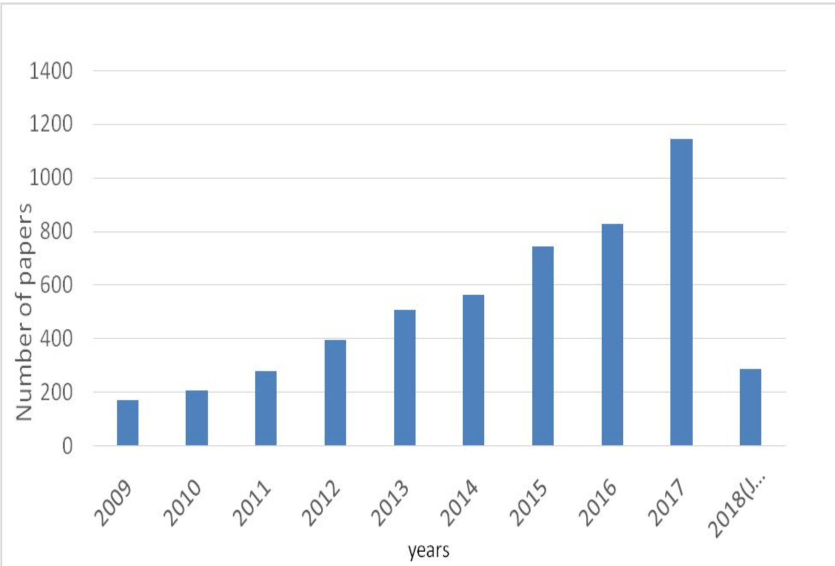

Figure-1: Intention of the Researcher towards Solar Energy

This data is taken from well-known site science direct.com. Actually, the research on this project was started in 2002. But we have taken the graph from 2009 as from then the scope of the project was increased. From the 2009 year to year, the research on this topic was increased and numbers of published papers are also increased. As we can see in the graph if we take data as of January 18th, 2018 more than 200 papers were published and still counting. So, we observe that the scope of this project is very high

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LITERATURE ANALYSIS

S.NO	Author name	Year	Title	Methodology	Remarks
1	M. Habibzadeh *et al* [1]	2018	"Hybrid Solar-Wind Energy Harvesting for Embedded Applications: Supercapacitor-based System Architectures and Design Tradeoffs"	It demonstrates a hybrid harvester design for the medium power range.	In this paper, we studied about 4 different classes of the energy harvester design system. This has both advantages and disadvantages.
2	Mohamadhadi Habibzadeh *et al* [3]	2017	Solar/wind hybrid energy harvesting for supercapacitor - based embedded system	Harvesting solar and wind energy and stored in supercapacitor	
3	M. Hassanalieragh *et al* [4]	2016	"UR-Solar Cap: An Open Source Intelligent Auto-Wakeup Solar Energy Harvesting System for Supercapacitor Based Energy Buffering"	It is designed for high efficiency and controllability and, importantly, supports auto-wakeup from a state of complete energy depletion	In this paper, we have solar power harvester, which is designed to operate even in harsh conditions
4	T. Soyata *et al* [7]	2016	"RF Energy Harvesting for Embedded Systems: A Survey of Tradeoffs and Methodology"	It is used for harvesting energy sources and uses the methodology for harvesting.	
5	Y. Zhu *et al* [9]	2015	"An energy autonomous 400 MHz active wireless saw temperature sensor powered by vibration energy harvesting"	The wireless temperature sensor is sensed by vibration energy harvesting.	In this paper, RFID has simply contemplated and made different choices based on the tradeoffs which may lead to expensive in manufacturing.
6	S. Rao *et al* [5]	2013	"Hybrid energy harvesting wireless systems: Performance evaluation and benchmarking"	Hybrid energy harvesting systems and sets an evaluation mark.	
7	D. Brunelli *et al* [2]	2009	"Design of a solar-harvesting circuit for battery-less embedded systems"	It presents Hypo Energy, a framework for extending the hybrid battery-super capacitor	

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				power supply lifetime.	
8.	Sravanthi chalasani *et al* [10]	2008	A Survey of Harvesting sources for embedded systems	It serves as a survey for identifying the sources of energy harvesting.	
9	F. I. Simjee *et al* [11]	2008	"Efficient charging of super capacitors for an extended lifetime of wireless sensor nodes".	This reviews the potential WSN applications and the specific issues and challenges associated with deploying WSNs for improved farming.	
10.	Kenji Amei Yukichi *et al* [12]	2002	"A maximum power control of wind generator system using a permanent magnet synchronous generator and a boost chopper circuit"	The wind generator system using a boost chopper for generation control of permanent magnet synchronous generator is proposed. And, the theoretical analysis of characteristics of power generation is discussed.	

PROPOSED METHODOLOGY

In the proposed methodology, we are overcoming the drawback of voltage which can be stepped up from 12v to 110-200v. Here 12v which is coming from battery and 3.3v which is coming from supercapacitor is stepped up by using an inverter to get a voltage of 110-200v.

CONCLUSION

Solar and wind power energy sources are stored in supercapacitor whose value is 3.3v, and also a battery is connected to it whose value is 12v, these both are combined into an inverter (AC/DC) this gives efficient output. Here solar/wind energy is given to a supercapacitor. but supercapacitor stores only low voltage . in order to get high voltages, we are using the battery. The battery output (DC) is given to inverters to convert 12v pure DC into AC. Here in our project, we can convert 12v DC to 110-180v AC. In this paper, we are use using solar and wind power sources by harvesting and storing energy sources. As we have seen the scope of this project is increasing if we overcome the drawbacks of the previous papers this will have a good future scope. The energy harvester is that it will be of low cost and maintainability and it can be changed according to changing new trends.

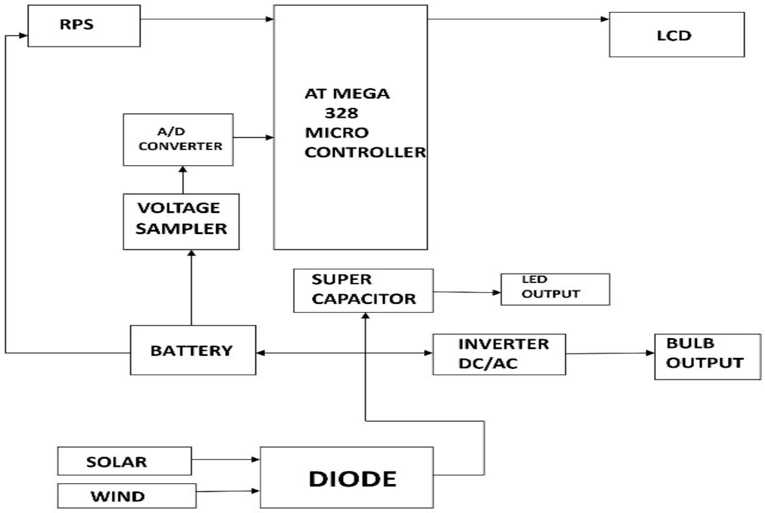

Figure-1: Architectural diagram of energy harvester

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A STUDY ON VARIOUS HEALTH PARAMETERS MONITORING USING PPG SENSOR

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ABSTRACT
Heart and sugar related diseases are increasing day by day. Medical researchers say that most of the people all over the world die because of not getting proper on time treatment for heart attack or by unmaintained sugar levels or other heart-related diseases. To reduce the effect of such diseases or attacks we intend to design a portable device which monitors your health parameters (like heart rate, cardiac out, blood oxygen saturation, blood pressure, blood glucose, etc.) and displays them at your mobile or PC screen using Li-Fi technology.

Keywords: Blood Glucose, Hypertension, Li-Fi, PPG Sensors

INTRODUCTION
Heart-related diseases are increasing all over the world. People often misinterpret the symptoms of heart-related diseases with acidity problem as they don't have any essay and low cost mean to measure their BP, HR, etc. Which then increases the effect of such diseases. Neglecting heart-related diseases may cause a huge damage to your life for Example: if a person has high BP problem but he is not aware of his BP value at present and is working continuously may have a very adverse effect on his life. Let's take another Example: A person is intensely working out at GYM unaware of his increasing heart rate may bring him into trouble [1-2]. A major cause of heart attack is known to be a high change in heart rate but measuring your heart condition on a day to day basis seems costly enough which everyone can't afford. Around 85% of humans are suffering from blood pressure, cardiac arrest, blood oxygen saturation (low blood oxygen saturation may lead to respiratory or cardiac arrest) normal blood oxygen saturation levels in human are considered 95-100 percent. PPG technology is used in most of the medical devices. Blood pressure is a very important clinical parameter[3-5]. We should maintain our normal blood pressure levels i.e. 120/90 to 140/90. One other disease is Diabetes (i.e. sugar) which has now been common in many individuals all around the globe. The main problem with this disease is that there are no visible symptoms of it [6], [9]. A person having high sugar may not even know that he has one until it gets worse (In higher stages) and talking of the people having Diabetes and even having the knowledge of it are not able to maintain it at minimal as they don't have access to monitor their sugar levels on a daily basis [7-8]. Blood glucose levels have to maintained properly if not it may lead to fainting. The normal conditions blood sugar levels should be in between 4.0 to 6.0 mmol/L i.e. (72 to 108 mg/dl) and if a person is fasting then the blood sugar levels are 7.8 mmol/L. If blood glucose level increases there will be a chance of getting diabetes so it is important to maintain our blood glucose levels [10], [19]. In this competitive world with so much of pollution around you, it is very necessary to be conscious about your health and well-being, and this only is possible if you are regularly monitoring your BP, HR, Cardiac out, Blood Oxygen, and glucose etc. Keeping the above health issues in mind we intend to design a noninvasive and portable system to monitor heart rate, cardiac out, blood oxygen saturation, blood pressure, blood glucose using PPG (Photo Plethysmography). PPG is a low-cost optical technique that is used to measure blood volume changes in the microvascular bed of tissue. The proposed device can measure the above-mentioned parameters with an accuracy of ±10% and transmits the data to the Mobile or PC using Li-Fi technology.

LITERATURE ANALYSIS
The literature survey was taken from latest years of papers as shown in Table I. We found that most of them used both PPG & ECG and compared them to get values for BP, Heart rate, etc. which makes the estimation of these parameters costly. Most of them used Bluetooth modules or serial communications to transfer the calculated data to mobile phones or PC, some didn't even transfer their data, they just displayed that on 16x2 LCD display, due to which we are not able to store the estimated value for future reference. One of them used an electronic BP machine and attached it to an XBee module and transmitted the recorded data to the PC using another XBee module as a receiver and stored the data in the PC using Microsoft Visual Studio.

Table-I: Comparison of Existing Methodology

Sr. No.	Author Name	Year	Title	Methodology	Remarks
1	Arulananth.T.S *et al* [1]	2017	Fingertip-based heartbeat monitoring system using embedded systems	• Heart rate is measured using PPG technology • The observed value is	• Arduino model could be changed, a smaller version could be used. • The output could be

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				displayed using LCD display	sent to the devices (like mobile phones etc) • Other things also could be measured (like Blood Pressure, Blood Oxygen Saturation)
2	Zunyi Tang *et al* [2]	2016	A Chair-based Unobtrusive Cuffless Blood Pressure Monitoring System Based on Pulse Arrival Time	• BP Estimation using Pulse Arrival Time • Real-time ignal Processing and Data Analysis • BP is estimated using ECG & PPG sensor outputs	
3	Kelvin KF Tsoi *et al* [3]	2016	Blood Pressure Monitoring on the Cloud System in Elderly Community Centres	• Electronic BP machine is used • The result is sent to the doctor using cloud omputing mechanism	• Normal BP machine is used
4	Anwar Mujadin *et al* [4]	2017	Design A Non-invasive Digital Blood Pressure Meter Using High Sensitivity Pressure Gauge MPX5050GP	• Here high sensitivity pressure gauge MPX5050GP is used	• Air in the normal BP sensor (Brachial cuff) is filled using high sensitivity pressure gauge MPX5050GP
5	Abhishek Eckhart *et al* [5]	2014	Design and development of multi-parameter patient monitoring system with wireless communication	• Interfaced PPG sensor, Temperature sensor, ECG electrodes with pic controller	• Information is transmitted sing GSM module • ECG electrodes & PPG sensors both are used
6	Aleksei Anisimov *et al* [6]	2014	Evaluation of PWPT-based method for cuff-less monitoring of arterial blood pressure	• PWPT method is used for BP measurement	• Facts about the cuff-less BP measurement provided
7	Zachary Cohen *et al* [7]	2017	Optical-based sensor prototype for continuous monitoring of the blood pressure	• PPG sensor used to measure heart rate, hence deducing BP	• BP easurement using PPG sensor is shown with sensor waveforms
8	D.Agro *et al* [8]	2017	PPG embedded system for blood pressure monitoring	• PPG measurements are performed via reflectance mode	• Silicon Photo Multiplier Detectors are applied • The design is directly interfaced with the computer using RS232

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9	Dong Yang *et al* [9]	2017	spO2 and heart rate measurement with wearable watch board based on PPG	• It is designed to measure blood oxygen saturation & heart rate • Bluetooth 4.0 is used to transfer data to mobile & PC	• Green LED is used for PPG measurement
10	Scalise L *et al* [10]	2017	The measurement of blood pressure without contact: an LDV-based techniques	• Laser Doppler Vibrometer (LDV)	
11	Wan-Hua Lin *et al* [11]	2017	Using a new PPG indicator to increase the accuracy of PPT-based continuous cuff-less blood pressure stimation	• Enhancing the PTT measured value by multiplying it with peak values of 1st derivatives PPG signal	• Uses both PPT and PPG signals for using the measurement
12	Atharva Bhujbal *et al* [12]	2016	Automated oxygen level and blood pressure sensing using embedded system	• BP & Heart Rate is measured using the PIZO sensor & Optoelectronic sensor	• The values measured are displayed on the mobile app using Bluetooth
13	Fan Pan *et al* [13]	2017	Variation of the Korotkoff Stethoscope Sounds During Blood Pressure Measurement: Analysis Using a Convolutional Neural Network	• The BP measurement is done using CUFF and Stethoscope signal processing using Korotkoff sound analysis	• The total analysis is done using Convolutional Neural Network analysis & Korotkoff sound analysis
14	Tonny Heng Yew Ling *et al* [14]	2015	X-Bee wireless blood pressure monitoring system with Microsoft visual studio computer interfacing	• The BP measurement is done using electronic BP device, the output of this device is then sent to the PC using X-Bee Tx & Rx modules	• Two X-Bee are used to transmit the data from the device to the circuit
15	Shaikh Anowarul Fattah *et al* [15]	2017	wrist-card: PPG sensor based wrist wearable unit for the low-cost personalized cardio healthcare system	• The BP, Heart Rate, Blood Oxygen, are measured using PPG sensor	• The measured values are displayed on mobile app using Bluetooth
16	Chun-Chieh Hsiao *et al* [16]	2017	Design and Implementation of Auscultation Blood Pressure	• BP measurement is done using PPG and PCG technology	• The analysis of the waveforms is done using Matlab software in PC

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			Measurement using Vascular Transit Time and Physiological Parameters		• The waveforms are transferred to the PC using Bluetooth
17	Zhengling He *et al* [17]	2017	Cuff-less Blood Pressure Estimation Using Kalman Filter on Android Platform	• BP measurement is done using PPG & ECG technique	• The waveforms are filtered using Kalman filter • The data is transferred to an Android device using Bluetooth
18	Swathi Ramasahayam *et al* [18]	2013	Non-Invasive Estimation Of Blood Glucose Using Near Infrared Spectroscopy And Double Regression Analysis	• PPG technology with near infrared sensor is used to measure Blood Glucose	• The Blood Glucose value is measured and displayed on a 16x2 LCD screen

PROPOSED METHODOLOGY

According to the literature analysis, all research community has implemented only two or more parameters like BP, HR, Cardiac Out, Blood Oxygen Saturation & Glucose. The methodology in the above papers has not saved the details for the patient’s or his/her doctor’s future reference.

The above papers either use Bluetooth or wired medium to transfer their data to PC or Mobile. We propose a device where we measure all parameters like BP, HR, Cardiac Out, Blood Oxygen Saturation & Glucose. We also share the collected data to the PC or Mobile of the user using Li-Fi technology which is better than Bluetooth in every aspect.

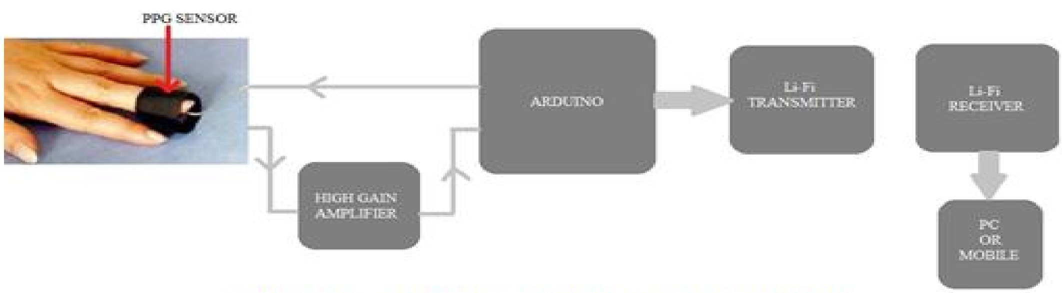

Figure 1: Block Diagram of Proposed Methodology

CONCLUSION

Considering the high cost of diagnosis of Cardio-vascular diseases and Diabetes which is not affordable by a common man.We used PPG sensor which is a low-cost alternative for recording BP, Cardiac Out, Blood Oxygen Saturation, Heart rate & Glucose. The PPG sensor is capable of estimating different parameters. We intend to use the PPG sensor at maximum to get a low-cost device that can be used by any individual to monitor one’s cardiovascular parameters and Glucose to lead a healthy life. This would be a low cost that device that measures the above parameters and then forwards the estimated value transmitted using Li-Fi technology for faster transmission.

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SMART BABY CRADLE USING ARDUINO AND IOT

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ABSTRACT
Caring for a newly born infant is one of the most crucial tasks of parenting. A newly born infant has more chances of getting affected by the disease-causing microorganisms. Lack of proper can even worsen the situation. The estimated death rate of infants was about 8.4 lakhs in 2016. Flu, Pneumonia, improper breastfeeding, diarrheal diseases and many other infections have caused infant deaths. All the above diseases are preventable if certain signs are identifies are identified well in advance. This can be reduced by detecting certain parameters such as heart rate, temperature, weight and another factor like and safe surroundings. This paper proposes the idea of smart baby cradle using electronic sensors, Arduino, GSM module and IoT which requires a low cost.

Keywords : component; formatting; style; styling; insert (keywords)

I. INTRODUCTION
The aim of this paper is to design a smart baby cradle at a very low cost that can abruptly decrease Infant death rate in rural areas [1-3],[38-39]. The baby cradle is equipped with wearable sensors and collects biological data periodically. The cradle also is programmed such that it reminds the mother of breastfeeding and also about the food through periodic alarms. The cradle is equipped with a cry detection module and automatically detects the baby crying and starts crawling. This is achieved by using motors and Arduino logic [4]. In order to make sure the area surrounding the baby cradle is dust free dust and smoke sensors are placed. If the excess quantity of dust or any dangerous gas is detected then a buzzer sounds an alarm cautioning the guardians [5-6]. All the harmful pathogenic diseases can be identified well in advance through variations in body parameters of the infant. This enables us to take necessary precautions and cure the disease. The basic and important biological parameters like weight, heart rate, the temperature of the infant, height are measured using electronic sensors that are Arduino compatible [7-10]. If the recorded parameters are more than the normal specification then the Arduino automatically cautions the nearest Red Cross hospital via email and SMS. Even a weekly summary can be made on the growth of the baby and can store in the cloud for future references [11-15]. Keeping in mind the unavailability of Wi-Fi in rural areas, a local Wi-Fi server is established in the rural area and using a GPS module the server is first sent an SMS. The server then sends the statistics to all the nearest Red Cross centers available within the location [16-19]. This communication technology can further be used to analyze the health of the entire living population and collect regular health statics of the area [20].

II. LITERATURE ANALYSIS
An infant initially born is taken proper care in the hospital. But the actual problem lies when the infant is brought home [21-24]. Separate wearable sensors were introduced to monitor the infant body parameters. Since an infant sends most of the time in a cradle, the idea of this smart cradle can be efficient in taking proper care of the infant and reducing the diseases. 1. A paper ‘Health Monitoring and Tracking System for Soldiers Using Internet of Things (IoT)’ uses the same ideology monitoring the health soldiers [25-27]. It used a GPS module and a Wi-Fi module to transmit data and then locate the position of the soldiers. 2. A research-based paper “Smart health monitoring system of the patient using IoT” used ECG and EMG sensors. Using an accelerometer ADXL335 the action of the patient is determined [28-31]. 3. Thirdly “Rocking Motion of the Baby Sleeping on the Mother’s Lap: Modeling and Prototype Automatic Swing Cradle Design” gives an idea about the cradling mechanism that is implemented in this project [32-35]. 4. Finally a research paper “Wearable Sensors Based Pilgrim Tracking and Health Monitoring System” discusses how the basic parameters like blood pressure, heartbeat, and temperature of a patient can be measured accurately [36-40].

III. LITERATURE ANALYSIS
The Figure-1 explains that the sensors like temperature sensor, heart rate sensor and cry detection sensor, smoke sensor give data to the Arduino. The Arduino makes a decision whether an infant’s health is good. In case of abnormal readings, the microcontroller contacts the Red Cross servers through cloud server and also warns the guardians of an infant using IoT technology. A timer periodically reminds of the breastfeeding and food. The cry detection sensors sense the cry of a baby and activate the motors that cradle the baby for temporary relief and also cautions the guardians if the cry is not stopped. Having considered all the above advancements in technology, and taking the present technological developments like IoT, the idea of the smart baby cradle is proposed.

The Figure 2 describes the sequence of operations that are to be performed. After collecting the readings from sensors the Arduino make a decision based on the program. The Arduino is programmed in such a way that if the readings have the crossed the safe range, the health centers and guardians are alerted. The main purpose of this smart baby cradle is to serve the rural infant needs. Keeping in mind the unavailability of

Wi-Fi in rural areas and taking advantage of the SMS (GSM module), the following idea would serve the purpose.

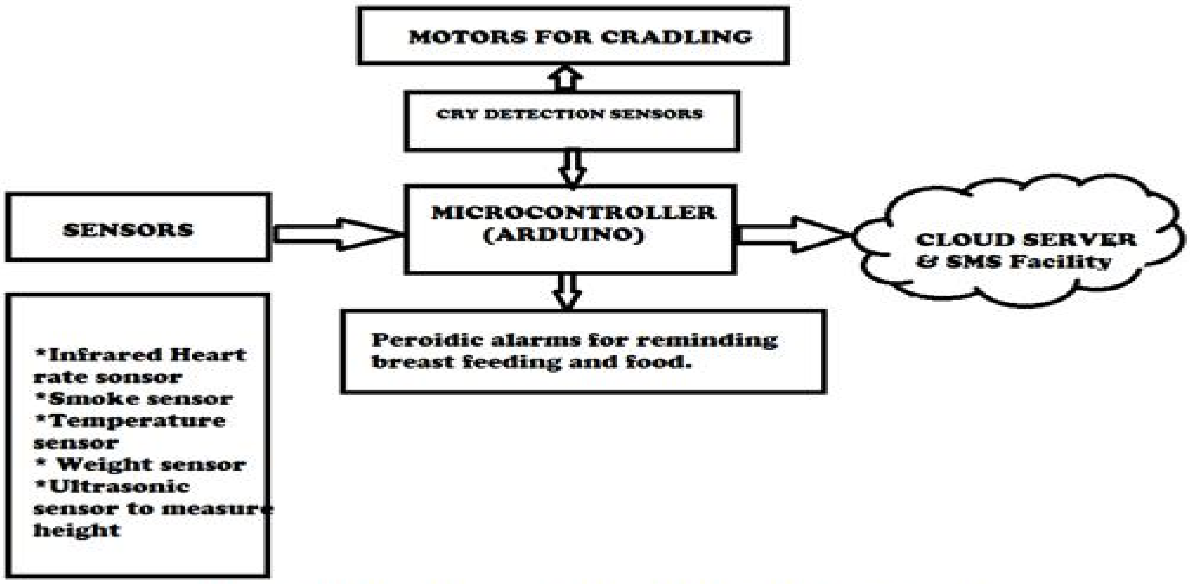

Figure 1: Block diagram for working of Smart Cradle

COMPARISION OF EXISTING METHODOLOGY

S. No.	Paper name	Authors	Year of Publishing	Remarks
1.	Smart Phone Interfaces to Wireless Health Sensors	Hugh O'Brien *et al.* [1]	2010	Usage of wireless sensors and connecting a smartphone.
2.	Diode Laser Activated Indocyanine Green Selectively Kills Bacteria	Tobias K. Boehm *et al.* [2]	2011	A method that helps kill bacteria and make the environment safer for a baby.
3.	HEALTH-PHC - Application design for rural healthcare	Sujit R Shinde *et al.* [3]	2014	Proposes different methods of providing medication wirelessly.
4.	A Sudden Infant Death Prevention System for Babies	Ângelo M. Fonseca *et al.* [4]	2014	A similar approach where sensors are fixed to infant's body.
5.	Detection and Quanti-fication of Pathogenic Bacteria Using Giant Magnetic Resistance Sensor	S.Bharath *et al.* [5]	2015	Helps in identifying pathogenic bacteria using a giant magnetic resistor
6.	Baby Cry Detection in Domestic Environment using Deep Learning	Yizhar Lavner *et al.* [6]	2016	A very useful approach for cry detection of an infant.
7.	Automated Baby Bottle	Georges Freiha *et al.* [7]	2016	A method of feeding cow milk to grown babies.
8.	An unconstrained method for lip detection in color images	E. Skodras *et al.* [8]	2011	
9.	Patient Monitoring System Based on e-health Sensors and Web Services	Rasha TalaHameed *et al.* [9]	2016	A sensible way to send patients statistics through servers.

10.	Sensing Heartbeat and Body Temperature Digitally using Arduino	Salomi S. Thomas *et al.* [16]	2016	A close approach to take the biological readings.
11.	Cry-based Detection of Developmental Disorders in Infants	Amit Oren *et al.* [17]	2016	A complicated approach that uses baby cry to detect disorders.
12.	Health Monitoring and Tracking System For Soldiers Using Internet of Things (IoT)	Niket Patil *et al.* [30]	2017	A similar approach that locates the unhealthy soldiers using GPS module.
13.	Remote Environmental Monitoring Using Internet of Things (IoT)	Shiny Abraham *et al.* [34]	2017	It helps to determine whether the infant is in a safe environment.
14.	Fingertip-based heartbeat monitoring system using embedded systems	Arulananth.T.S *et al.* [36]	2017	A type of sensor that Measures heartbeat.
15.	Design And Implementation Of Low-Cost Web-Based Human Health Monitoring System Using Raspberry Pi 2	Kirankumar C K R *et al.* [38]	2017	Only used for uploading the data statistics of patients

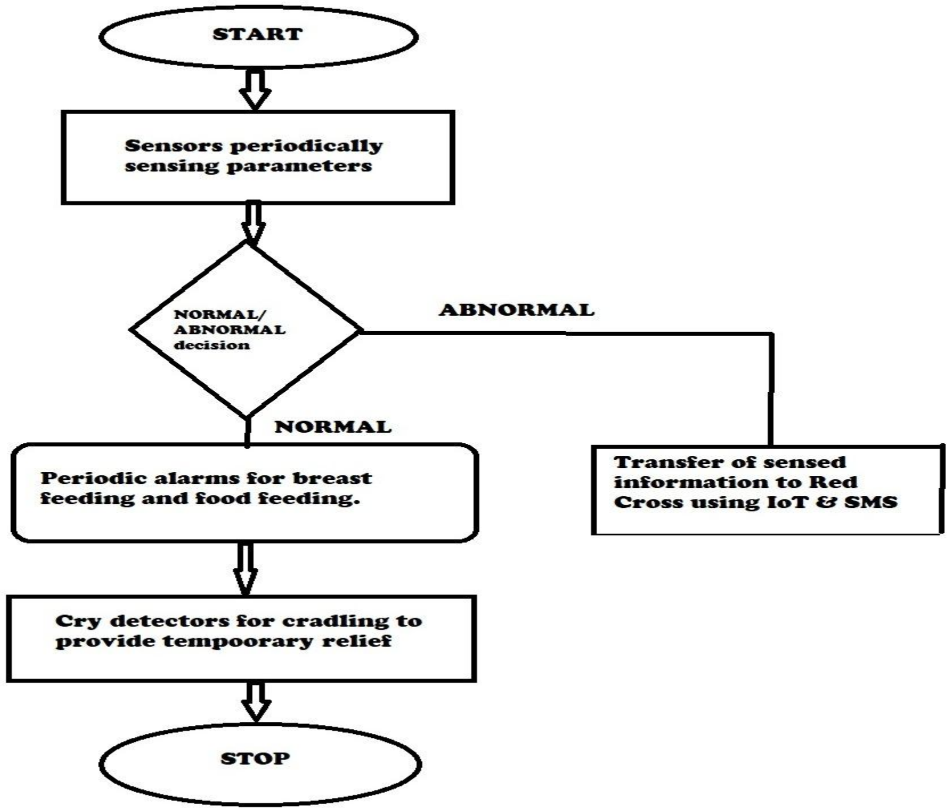

Figure-2: Flow Chart of Smart Cradle System using IOT.

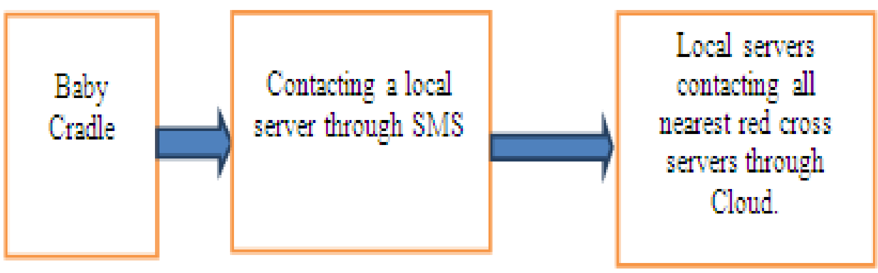

Figure-3: The idea of establishing communication between baby cradles and Servers

IV. RESULT

Few experiments are performed using a gas sensor and the result part was declared.

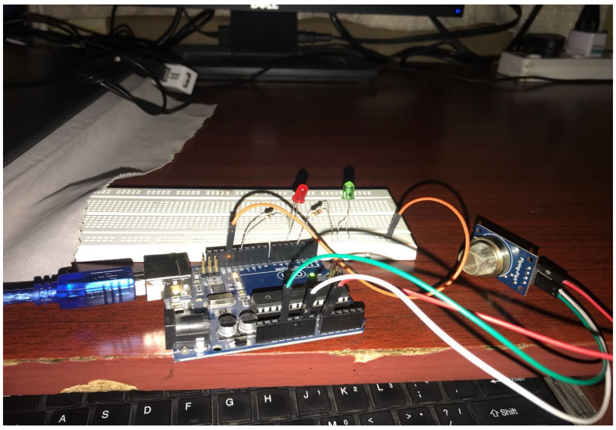

Figure- 4: The interfacing of smoke/gas sensor with the smart baby cradle.

In Figure 4, the gas sensor MQ-2 is connected to the Arduino and the readings of the environment are taken. The threshold value for this gas sensor was 300.If the reading was above 300 the infant is located in an unhealthy environment and if the threshold values are below 300, the surroundings are clean and healthy.

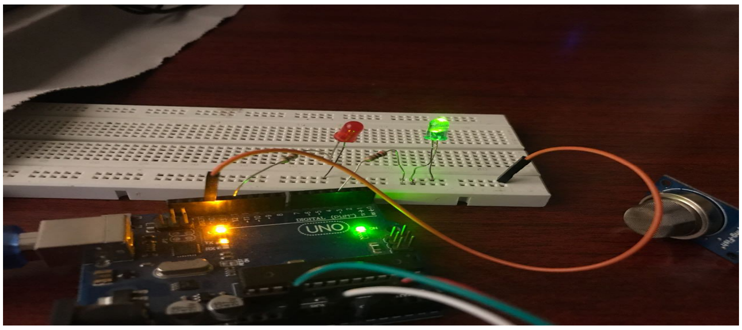

Figure-5: A green LED turns on indicating the baby is in a safer environment.

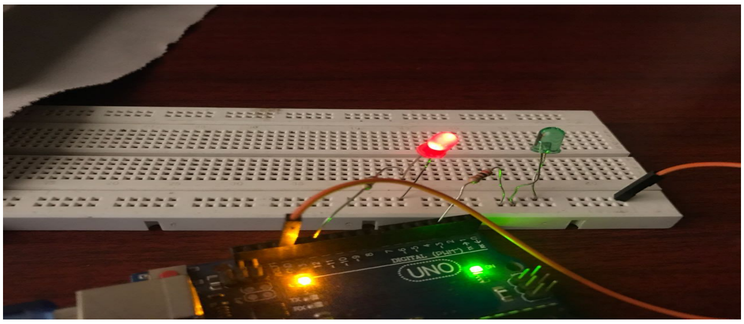

Figure-6: A red LED turns on indicating the baby is in safer environment

Figure-7: The above values are the readings of MQ-2 sensor for an unhealthy environment

The Figure 7 shows the readings of the only smoke sensor, the green led turns on indicating a safe environment and a red led turns on indicating the presence of Dust, smoke or any other dangerous gas.

Figure 8: The above values are the readings of MQ-2 sensor for a healthy environment

V. CONCLUSION

The design of smart baby cradle is the most efficient and low priced method to care proper care of infant especially in rural areas and it helps the guardians who have the least knowledge about infant care. Though using GPS and IoT technology seems a bit complex, considering the long-term goals, this technology pays a lot in long-term achievements in rural health needs. This idea drastically abates infant death rate which is a major drawback in rural India.

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CATEGORIZATION OF MRI BRAIN IMAGES USING GENETIC ALGORITHM

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ABSTRACT

Recognition of Brain variation from the norm could be an essential and significant undertaking in medicinal field. Reverberation Imaging Brain picture recognition technique offers the information of the different irregularities in Brain. Amid this anticipated method, 2 very surprising arrangement techniques are utilized along for the order of attractive reverberation imaging Brain pictures. Those characterization procedures square measure Neural Network and fluffy logic.This helps the specialists in treatment concocting. Inside the past work, inside the field of restorative picture process a few researcher and delicate registering systems have very surprising procedures like absolutely programmed and self-loader. With this anticipated cross breed strategy Genetic algorithmic program is utilized for the improvement. Anticipated strategy comprises of different stages. Learning variety through various doctor's facilities or store destinations and change over unique information pictures into dim scale picture. Dark Level Co-event Matrix strategy is utilized for the extraction of the choices from the dim scale picture. Streamlining procedure Genetic algorithmic program is particularly utilized for lessening the alternatives that square measure separated by GLCM for straightforward grouping and diminishing the meeting time or calculation time. There is a half and half classifier is utilized for order of attractive reverberation imaging cerebrum pictures particularly Neural and Fuzzy classifier.

Keywords: Specificity, classification accuracy, sensitivity, GLCM, Genetic algorithm, Neuro-Fuzzzy classifier.

INTRODUCTION

In the therapeutic field, since it is exceptionally basic for treatment arranging and diagnosing mind variation from the norm, for example, consider anatomical structure, tumor and so on. Henceforth the arrangement of Magnetic Resonance pictures is turning into an imperative and troublesome undertaking. Order of MRI mind pictures can be grouped physically yet this is a testing errand and tedious. Manual grouping has a higher mistake rate due to human blunder and buries onlooker changeability. Along these lines, because of this the manual characterization turns out to be exceedingly poorer. Along these lines, to lessen the heap on the restorative professionals and human spectator, a programmed characterization technique is exceedingly alluring for recognizing cerebrum irregularities. There are distinctive number of techniques are displayed in writing overview. Be that as it may, they are having restricted execution.

In this paper, Feed Forward Back proliferation Neural Network method is utilized for managed characterization of Magnetic Resonance Imaging cerebrum pictures. This is the programmed technique for discovery of cerebrum variations from the norm from MRI mind pictures. There are diverse unsupervised and directed neural system has been utilized for the order of MRI mind pictures. What's more, unique factual systems have been likewise utilized for the division and characterization of mind irregularities. Distinctive directed systems, for example, Artificial Neural Network (ANN), Back Propagation (BP), Learning Vector Quantization (LVQ), Radial Basis Function (RBF) and Support Vector Machine (SVM) are utilized for location of mind tissues or irregularities. Unsupervised strategies are self sorting out guide is utilized for the characterization of MRI mind pictures.

Counterfeit neural systems utilized for picture grouping issues don't ensure high precision other than being substantial calculation. There is need for a vast preparing set to accomplish high precision is additionally disadvantage of fake neural system. On the opposite side, fluffy rationale which guarantees better exactness depends intensely on master information, which can't generally accessible. And furthermore it requires less meeting time, it relies upon experimentation strategy in choosing either the fluffy participation capacities or the fluffy tenets. Every one of these issues are overwhelmed by the approach crossover demonstrate specifically, neuro-fluffy model. This framework expels the stringent prerequisites since it appreciates the advantages of both ANN and the fluffy rationale frameworks. In this proposal, the use of neuro-fluffy framework for MR cerebrum irregularities characterization has been illustrated..

PROPOSED METHODOLOGY

The proposed strategy comprises of four distinct advances, including the information gathering through different doctor's facilities or MRI check research facility, highlight extraction through dim level co-event network, improvement with the assistance of Genetic Algorithm and grouping through Neuron-Fuzzy model. For the mechanized order framework the MRI Brain Images are gathered from healing centers and different

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store locales. The database contains both ordinary cerebrum and irregular mind pictures. As a matter of first importance, unique cerebrum pictures are changed over to dark scale picture. At that point highlights of the MRI mind pictures are removed through (GLCM) dim level co-event framework. There are different highlights are removed from the picture, for example, Auto-relationship, Contrast, Entropy, Correlation and so on. After that Genetic Algorithm advancement strategy is accustomed to diminishing the highlights which helps for the arrangement reason. Consolidated Neuro-Fuzzy classifier is utilized for the characterization of ordinary and unusual MRI mind pictures.

A. Mri image data set

For the classification normal and abnormal MRI brain images database is collected from City Life Care Durg Hospital, Chhattisgarh. Figure 2.2 shows the set of database considered for the classification of normal and abnormal brain images.

B. RGB to gray conversion

RGB to grey conversion process is used to convert a true color image in to a grayscale image. Figure 2.3 shows RGB to grey conversion of MRI brain image.[12]

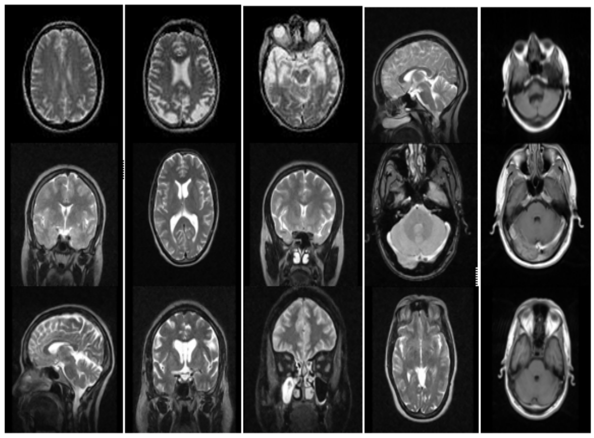

Figure-2.2: Examples of MRI Brain images

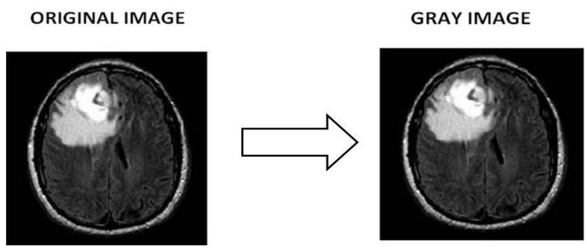

Figure-2.3: RGB to Gray conversion

C. GLCM based feature extraction

Highlight extraction is the procedure in which, every one of the highlights are extricated for exact arrangement of MRI mind pictures. In the wake of extricating the highlights, it gives the properties of the picture characters, which can be utilized for preparing of MRI cerebrum picture database. That acquired prepared highlights are contrasted and the test highlight and named extricated characters. In this paper, highlight extraction process is finished utilizing the Gray Level co-event Matrix (GLCM). There are 22 highlights are extricated in GLCM include extraction technique for MRI mind pictures. The primary motivation behind the component extraction process is to decrease the first dataset picture by measuring guaranteed highlights. The separated highlights goes about as contribution to Neural classifier by considering the portrayal of suitable properties of cerebrum picture into include space.

D. Hereditary calculation

A Genetic Algorithm (GA) is a looking method which is utilized as a part of figuring to locate the genuine or inexact answers for seek issues. This is an Artificial Neural Network Technique. Hereditary calculations are sorted as all inclusive pursuit heuristics strategy. This calculation is a specific class of transformative calculations that utilization distinctive procedures, for example, hybrid, choice process, change process and legacy. GAs is executed as a PC recreation, which advances the issue and gives toward better arrangements.Fig:2.4 show the steps of Genetic Algorithm presenting Generation Cycle.

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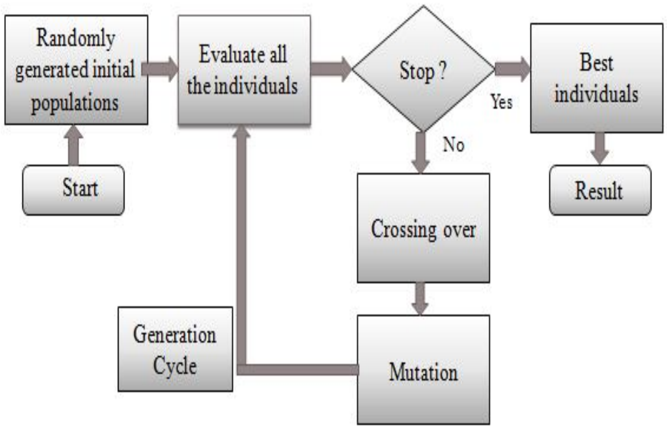

Figure-2.4: Genetic Algorithm presenting Generation Cycle

E. Neuro-fuzzy classifier

The proposed in this paper is the blend of neural classifier and fluffy rationale classifier. It gives the upsides of both neural and Fuzzy classifier and gives the more exact outcome as contrast with individual neural and fluffy rationale classifier. The arrangement of precision of fluffy rationale classifier is smarter to neural classifier. What's more, it is likewise substandard compared to Neuro-fluffy classifier. The neural system classifier gives less precision since it requires substantial measure of preparing informational collection for high exactness which is for all intents and purposes not doable. In this paper, neuro-fluffy classifier is utilized for identification or arrangement of the anomalies or tissues in the MRI cerebrum pictures.

The neural system classifier framework is work with learning abilities. Nourish Forward Back Propagation strategy is utilized as a part of the neural classifier. This is an administered learning based technique in which wanted yield is accessible. In this proposed technique looking at the come about by modifying the weight and get the great outcome. In this proposed technique, lead based fluffy rationale classifier framework is utilized. The two frameworks can enhance the execution of the framework and this neuro-fluffy classifier framework can likewise give a component to conquer the downside of both the individual neural and fluffy classifier. This cross breed classifier gives the benefits of both the classifier system& fluffy classifier. Neural system required substantial preparing sets for accomplishing the high exactness. Notwithstanding, utilizing a neuro-fluffy method this issue can be overcome. Be that as it may, Neuro-Fuzzy classifier is more unpredictable and tedious.

RESULT AND CONCLUSION

he proposed demonstrate is tried over a substantial no of database of MRI cerebrum pictures. In this proposed work many highlights have been extricated from these pictures. In underneath table.1, demonstrates the some imperative extricated highlights and their estimations of these pictures.

In the wake of removing the highlights by GLCM include extraction strategy, we get the diverse component esteems for the irregular and ordinary MRI mind pictures. Beneath some diagram demonstrates the Entropy and Contrast esteems for the MRI mind ordinary and anomalous pictures.

Diagram between execution of the Training, approval and Testing and 23 Epochs appeared in the underneath fig: 3.4

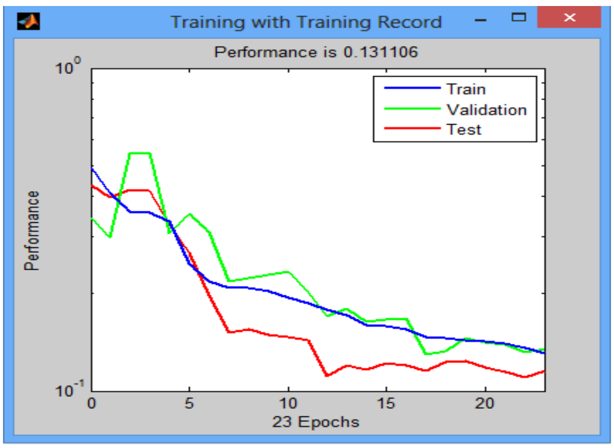

Fig-3.4: Performance graph between Train, Validation & Test

To evaluate the performance parameters of the proposed classification approach such as classification of accuracy, specificity of proposed method and sensitivity are calculated. The performance measures are as follows:-

Accuracy = (TP+TN)/ (TP+TN+FP+FN)*100 %,

Specificity = TN/ (TN+FP) *100%,

Sensitivity = TP/ (TP+FN) *100% where

True Positive (TP): Correctly classified positive cases.
True Negative (TN): Correctly classified negative cases.
False Positive (FP): Incorrectly classified negative cases.
False Negative (FN): Incorrectly classified positive cases.

Here in this practical work, we have used database of 100 images in which 50 images are Abnormal MRI brain images and 50 images are Normal MRI brain images. Here all the parameters are calculated and they are as follows:

Accuracy = 98%,
Specificity = 97.50% and Sensitivity = 98.80%.

All those values are achieved through proposed method. The graph of performance measure is shown in the below figure-3.5:

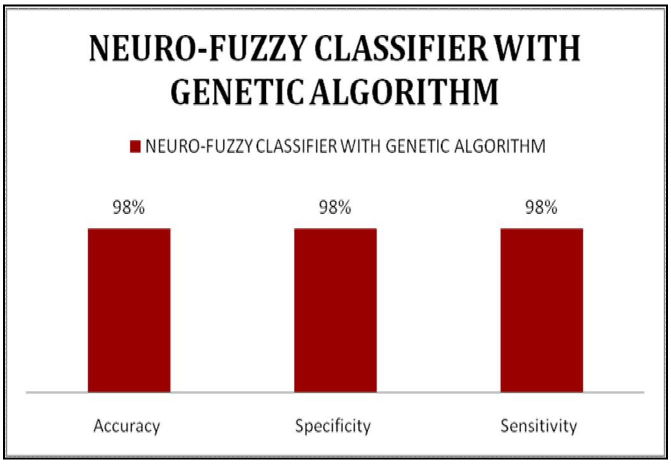

Figure-3.5: Performance Measure of Proposed Classifier

COCLUSION

In this proposed work, we have endeavored to give an answer for the issues related with the consequently identification of MRI cerebrum variations from the norm. The trial comes about demonstrate that the propose work gives the less merging, great exactness, affectability and specificity for the order of MRI cerebrum variations from the norm. This proposed technique Neuro-Fuzzy classifier with Genetic calculation can conquer the downside of the merging time of the half breed neuro-fluffy classifier. It likewise conquers the disadvantages of individual fake neural system classifier and fluffy rationale classifier by coordinating the two methods.

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IOT BASED HOME APPLIANCE SECURITY SYSTEM USING RASPBERRY PI

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ABSTRACT
The increase in Robbery, stealing, and crime in Modern world is concern for security. People stay busy with daily life and there is need for home security to secure their valuables . To avoid this problem there is necessity of smart security systems .In this the image of the person is sent through mail and an SMS alert is sent to mobile and the door can be opened /closed manually through web .In this communication is done through IoT server and Python is the programming language used and OpenCV is the software used for processing of the image This system helps to trace the person if any unexpected situation happens as it sends the image of the person in mail .

Keywords: Home Security, IoT, Raspberry Pi, Raspbian OS ,Python, GPIO ports.

INTRODUCTION
Theft and other crimes has become common in society and has become a problem [1].Many security systems are used till present like password based system, finger prints and pattern recognition system. These systems can be trapped easily once if the password or pattern is traced. For the safety of homes an efficient appliance that consumes lesser power and cost is very essential for remote monitoring [2]. So for more security and safety of the Home face recognition is used. This system depends on detection of the face and its recognition. In this surveillance is made using Face recognisation technology and the automatic door opening mechanisms are introduced [3] OpenCV is the software which applied in this. Internet of Things is the new technology capable of connecting devices and devices would be capable of communicating .[4] .IOT technology transmits information ..Raspberry Pi has the advantage of consuming low power .It has GPIO and USB ports .Using these ports interface sensors, camera surveillance[5] and also that image send to mail. The application includes Automobile, Industrial, Home Monitoring and Remote control. Raspberry Pi 3 is used in this system . it has the advantage of consuming low power

LITERATURE REVIEW
In Modern world today. People stay busy.Security of Homes concern in present days. Use of latest technologies in security is essential and people can stay relaxed . Features, Technologies and Limitations of different Home safety systems are mentioned below.

H.Lwin.et al. [6] has proposed an approach In which there are three phases face recognition, face detection, and automated door access control. In this for Face recognisation Principal Component Analysis is implemented . The commands are given by the Microcontroller to operate the door for the known person and alerts for the unknown person. This systems has the drawbacks that the input images are taken by the web camera continuously till the stop camera' Personal computer is used along with microcontroller. The drawback is if PC does not work it will not work.

M .Chowdhury .et.al [7]proposed the work where if a person comes at the door home owner will be informed through email and twitter. The images is sent through SMS and Email then can check the image and see if it is authorized person . This work has the drawback that if internet connection is not available The user cannot get the alert M .Carikci al.[8] proposed method with high accuracy in which they used Eigen method for recognisation and Euclidean distance method to compare the images and images in the database.

Jogdand.et.al,[9] proposed a work in which they used Viola Jones method for face identification and PCA (Principal Component Analysis) for the comparison of images. The major constrains of this work was not robust and the efficiency is less. Innovation to message the owner Internet arrange and it gives a sound identifies the theif.The first one is implemented by web camera. installed near home that is range. The product imparts to the planned client through alarm. The second utilizes. J. Kartik et al, [10], The camera identifies movement of any intruder before the camera measurements or camera The system we proposed has advantages of low cost, consumes less power, alerts the user through IoT

PROPOSED APPROACH
There are two phases : First phase image capturing, Database creation and second is compare the images with the images stored in database and extracting the features. In Image capturing the camera is interfaced and is must be adjusted properly .fswebcam to take snapshots of the webcam by the wifi camera Luvcview for

adjusting the resolution . The Database is created of authorized person with different expressions .GSM is interfaced to receive user through SMS and mail to operate the door. Motor operates the door automatically .Raspberry Pi and the components like USB camera shown in Fig 1. and is most similar to normal PC . Raspberry Pi helps interacting with different components. It acts like an inexpensive computer and used in research applications. IoT has a great demand now a days .. [11] The Fig.2. Illustrates the connections of Hardware components. Here the 2 USB ports are connected to keyboard and mouse. The Relay and Motor works through GPIO pins . The HDMI port is connected to display.

Raspberry Pi: Raspberry Pi is Linux-based device [12]. It acts like a server and is of low cost.[13] One who well versed with Linux and computing. heat generated is low. Further it is easy to experiment and learn things with Pi. It is cheap

Raspberry Pi 3: open source and changes can be made as of when required and is flexible for different operations. The operating system used is Raspbian OS and programmed using python. Raspberry Pi supports to output devices like Display, video and audio and input devices like keyboard and mouse . powerful processor. The features included in Raspberry Pi 3 as shown in Fig 3 includes 1Gb Ram, 4 USB ports, Wi-Fi wireless connectivity, Camera Serial

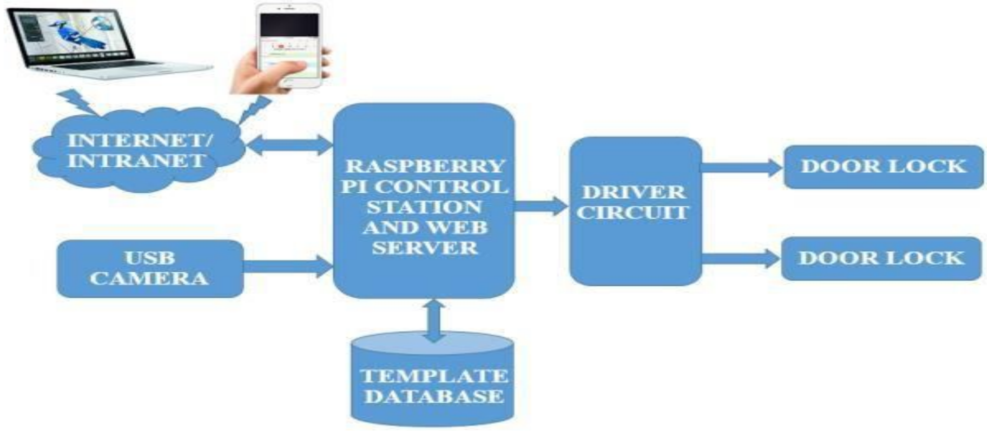

Fig-1: Block diagram of IoT Home Security using Raspberry Pi.

Interface, Display Serial interface, Micro SD Slot, HDMI port, Ethernet port .The various components used in Raspberry Pi is:

i) SD card slot: secured digital card is the storage memory as hard drive is not present .It holds the entire operating system .It must be at least 2GB.

ii) GPIO Port: GPIO Port has pins. It accepts input / output commands for different functionalities. The GPIO pins acts as interface for embedded protocols. It enables to controls the hardware devices like (LED, motors and Relays) and detects the sensors like temperature, light. It uses different protocols.GPIO Microcontroller nteracts with the external world with the usage of pins. [14] helps from simple tasks of blinking an LED to complex tasks such as multiplexing.

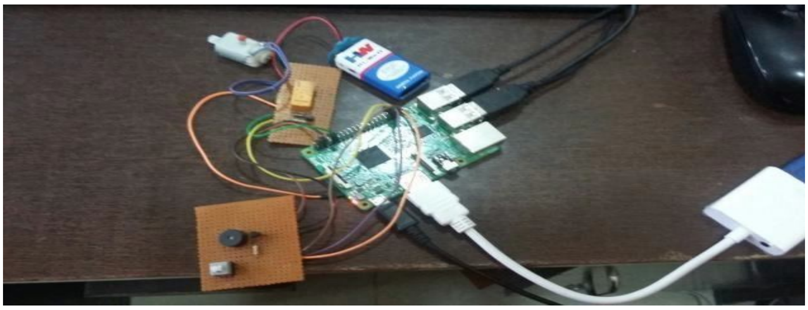

Fig-2: Hardware Implementation using Raspberry Pi

iii) SPI: SPI is the Serial Peripheral interface. It communicates with other computing devices .The Pi's SPI bus is available on Pins19, 21, and23.

iv) I2C: I2C is the Inter - Integrated circuit helps for communication

v) Ethernet Port: The Ethernet port available makes to connect to the web. It helps in software updation .

vi) SOC: It is a microchip in which the all system components are built on single chip .

Fig-3: Raspberry Pi board

Linux: The main difference between is that windows are closed operating system. In closed operating system the software cannot be downloaded and changes cannot be made but Linux allows changes . the different versions which suits users requirement This is called Linux distribution . Linux programming can be written once [15] and can run anywhere .It has good design principles.

It works on devices and machines. The Fig .4. Shows the software implemented.

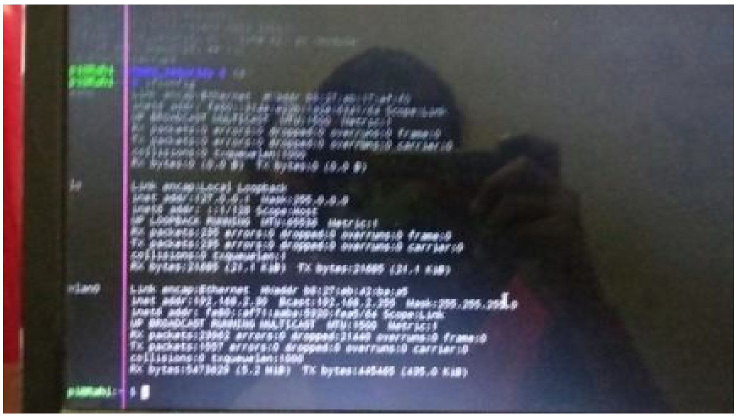

Fig-4: software implementation

Python: Python has the code readability [16] and concise syntax i.e., programming can be written in less code. It helps you use the coding style that is required for your needs. In python you can programming is performed in one platform and run it on different platform support. It has the independence in platform usability.

Raspbian Operating system: It is easy to run Raspbian OS on Raspberry Pi .It comes with 35,000 packages [17] . It is a package of software

RESULT

When the person knocks the switch the face is captured by the web camera as shown in fig 5 and the

Fig-5: Captured Image of unauthorized person

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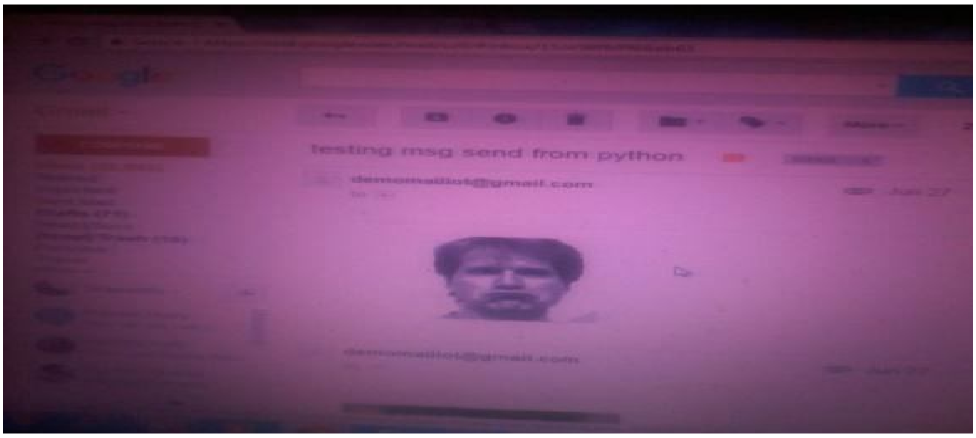

Fig-6: Email sent with snapshot of visitor

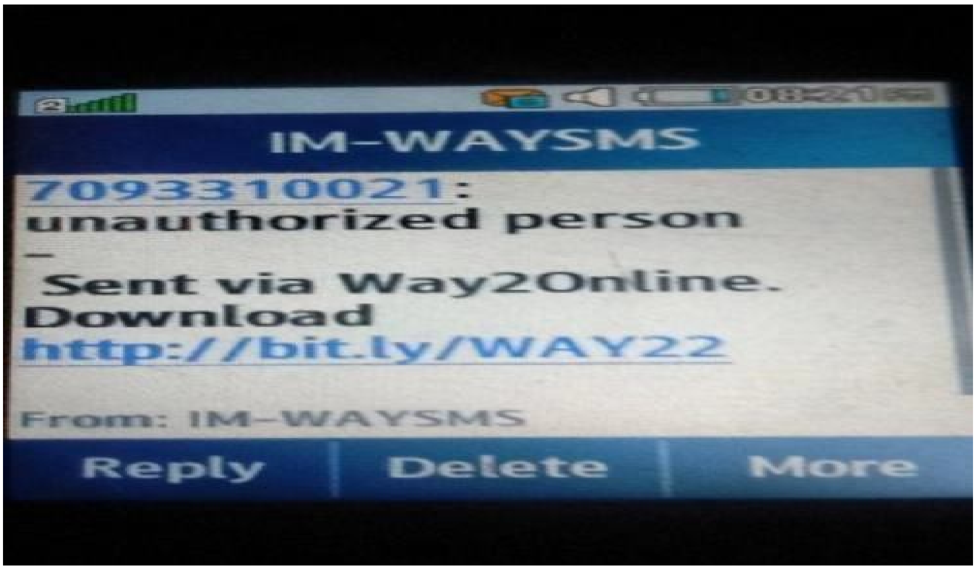

Fig-7: Visitor Alert through Way2sms

images are saved in a database alerts the user as authorized person through mobile number and Email. If not as unauthorized person. The Fig 6 shows the images sent to the user email and the notifies the user through SMS as shown in Fig 7

CONCLUSION

In this method Raspberry Pi is the controller used and IoT server helps to communicate from anywhere. It is cheap, Reliable and flexible. It consumes less power.

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A COMPARATIVE STUDY OF PSYCHO-BEHAVIORAL REFLECTIONS CAUSED BY QUADRATIC TEMPERAMENTS OF TRADITIONAL ISLAMIC-IRANIAN MEDICINE IN NORMAL NURTURE AND DEVELOPMENT WITH COGNITIVE APPROACH AND SCIENCE – A REVIEW RESEARCH

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ABSTRACT

One of the most important topics in the education and development is studying of them in the consequences of individuals' behavior.Also, the most important areas in which educational goals affect or are associated with it; strategies for implementing educational principles, especially strategies derived from the principles of traditional medicine, are derived from religious teachings; that is, of course, as from the scientific point of the view, the most cognitive psychology school is a more accurate justification of the principles of education; the last achievements of traditional medicine derived from Divine religion (Azza – va – Jal) also provide the most accurate and the best educational principles for normal development and excellence of humans.The aim of this study was to review the comparative overview of components of psychological reflections from quadratic temperaments of Traditional Islamic-Iranian Medicine with educational components in a cognitive school-view perspective - using knowledge or science of cognition - in order to develop human excellence and to extract finding the best form of education is based on the combination of the two.The method used in this research is a library analysis; therefore, after collecting information and data from the sources, using the library method, according to the subject and the problem of the present study, after the critique, the data,have been analyzed in order to explain the research problem. The comparison between the principles used in the nature or the temperamentology of Traditional Islamic-Iranian Medicine in describing and explaining the psychological effects of ethical behavior driven on the basis of social norms in the development and the normalization of cognitive view of the point and, science, complete supremacy being and incorporating the combination of both components in the education, development and all-round excellence of man, showed only the application of the principles derived from cognitive psychology and cognitive science. Providing applied and, motivational construction in educational applications and provisions for academic teaching, especially in postgraduate education, has an important role in the development of human skills and components, taking into account the general and consistent principles and considerations related to the requirements of time, so that it is necessary; more effective measures are needed to reach and understand the fundamentals of such ethical education in educational settings.

Keywords: Traditional Islamic-Iranian Medicine, Psychological-behavioral Reflections, Quadratic Temperaments (Humors), Cognitive Approach, Cognitive Psychology, Science of Cognition.

AN INTRODUCTION

One of the important characteristics of dynamic society is its ethical-scientific growth, as a result of the proper education of all its members.The upbringing that leads to the growth and prosperity of the community requires the provision of a preliminary course that is produced and carried out in the context of planned planning to achieve the desired educational goals and how to implement the precise and principled stages of the process.Since the crucial role of education is the provision of the prosperous future of mankind and the growth and subsequent this growth, his achievement to the desirable human perfection is as a result of self-actualization and, reaching to his highest level; it is better and more correct that this education, based on his existential temperament.The role of this thinking and view is so clear that it needs no explanation.

Given the fact that the result of proper education is the achievement of growth and the implementation of this, especially in the youth, has a clear reflection, therefore, the education, guidance and leadership of the young and thoughtful generation of making them in the direction the quest for their thinking can move society towards excellence, and vice versa, the futility and diversion of the above-mentioned generation, can erode the foundations of a long-standing cultural, economic, political and religious civilization.

If a society wants to take a step in the field of education and global growth and wants to have a strong influence on education in the international arena, it should be aware of the basic principles of the use of education that is universally accepted in education, In a specific and definite way - combined with the applied principles of the traditional medicine and cognitive science derived from the science of knowledge or cognition, in order to implement it - which has been carefully examined on the basis of different conditions, and methods of pathology; and to do this; otherwise, there can be no nudge and no entry into this arena will be beneficial to him.

In the present paper, an analytical-explanatory comparison of education and development based on the temporal characteristics of Traditional Islamic-Iranian Medicine and the cognitive perspective, based on the application of cognitive science - as the last complete school providing the basis of education and human elevation –and tried and attempts are made in a realistic and logical view of how such the education leads to growth, taking into account the conditions for its realization, and the results and the valuable fruits of it, such as: intellectual relaxation, cultural and scientific transformation, and productive moral principles, In this way, the proper and principled methods of educational guidance will lead to the growth and the prosperity of the younger generation.

Speaking about the nature of education, so that it leads to self-actualization and practical growth; almost all schools of psychology, especially cognitive psychology, have existed by using cognition science, in order to implement it and its optimal realization in humans, and to In parallel, the discussion of medicine has been raised since the inception of the sperm and its emergence.Whatever medicine is closer to the root, treatment or therapy and healing will be more effective.

DEFINITION OF NURTURE AND DEVELOPMENT

The concept of education at first glance appears to be very simple and clear, but with reflection, scrutiny and precision, the depth of its meaning and complexity will soon emerge. The same complexity of the depth of the meaning of education that led to growth has made it possible to derive definitions from various religious and scientific perspectives. Here are some definitions of education from the perspective of various scholars:

1. Definition of Socrates (399-470/469 BC)

Education is the following: “The awakening of the soul and consciousness of one's self and then the surrounding world, through the recognition of the general concepts of affairs, is made by the intellectual power and by induction.”.

2. Definition of Aristocracy of Ben-Arthon or Plato orPlaton(427-346BC)

Education is: “The discovery of natural talents and the prosperity of them.”.

3. Definition of Aristotle (384-322 BC)

Education: “A set of actions that are performed by the family or the state to create moral and civil virtues in individuals.”.

4. Definition of Abu Nasr Muhammad bin Muhammad al-Furabi or Farabi (339- 260 CE / 878-950 AD)

Education is:“Guiding the individual by the philosopher and the wise, for membership in the utopian Medina, in order to achieve prosperity and perfection in this world and the ultimate perfection in the hereafter.”.

5. Definition of Abu Ali Hussein ibn Abdullah ibn Hassan ibn Ali ibnSina, renowned for Abu Ali Sina and IbnSina and Pour Sinai or BualiSina (370/359- 415/416 AD)

Education includes: “Planning and activity calculated for the development of the child, family health and social planning, for the achievement of man to worldly perfection and Divine Eternal Bliss (Azza-va-Jal).”.

6. Definition of Aby Hamid Muhammad ibn Muhammad al-Ghazali al-Shafai, known as HojatoleslamZayn al-Din al-TusiGhazali or Imam Mohammad al-Ghazali (450-505 AD)

His education voices are: “A kind of self-defense and backwardness through the gradual moderation of powers and desires, by knowledge, austerity and continuity, for gaining access to mankind and Divine Glory (JallaJamaloh).”.

6.1. ANOTHER DEFINITION OF GHAZALI

“The instructor must take away the bad morality from one person and put it in good faith instead of the good ethos, and this is the meaning of education, as it is, the breeder who nurtures the grain, and any plant that has come from the corn, to make it, and so on, Every stone and clod, which is in the midst of the crop, shall be thrown out, and it shall be brought out of the water, and upon the water, and upon the breast; until it is corn, well done.”.

7. RENÉ DESCARTES (1596-1650)

In examining Descartes' educational opinions, though he did not have specific views on this, but since he has been the founder of a new way of thinking and research, it is generally useful to use this method in any field of research and thinking. Therefore, his most important influence in education can be the development of a new method in "how to achieve knowledge".Descartes' method has profound implications for education, because he

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believes that “one cannot obtain credible knowledge without removing all the prejudices.”.He believes in avoiding all extremes, and where it is not possible to obtain absolute results, he has no fear of following the probability and staying loyal to the morality that has been approved by the community.At the same time, the seed sows the sense of independence from external qualities; hence, it prefers to overcome itself over the overcoming of the world; in short, it exhibits a stoical way of thinking, much like Aristotle's attitude towards training.[1]

8. DEFINE OF JEAN CHATEAU

He believes that:“education and training are constant conquest, without prejudice to the ages of the past; the education of education, the conquest of self-existence with the help of politeness and decency, in its broad sense; that having the custom of the person's socialization, communication and deals. Human is trained to use his wisdom, intense, and quasi-animal forces to direct his natural nature to the point of perfection. Therefore, educating is helping a person to reach a free and disciplined personality that is the same moral being.” [2]

Also, some of the old and new philosophers, such as Francis Bacon, the Proponent of the Vicente Church of St. Alban, Comenius, Jean-Jacques Rousseau, Immanuel Kant, John /Johann Heinrich Pestalozzi, John /Johann Friedrich Herbart, the founder of Modified Education, Friedrich Wilhelm August Froebel/Fröbel, Anton Semyonovich Makarenko, John Dewey, Maria Tecla Artemisia Montessori,Jean William Fritz Piaget, Benjamin Samuel Bloom and Michael Adrian Peters, Contemporary University Professor at University of Waikato, New Zealand and Illinois, United States of America , Provided definitions based on their views on education.

WHAT IS NURTURE?

By the notice to the various definitions given in the training, since the human being is not a recording or a passive device against events and, while receiving them, through mental processes, the possibility of acquiring, storing and retrieving information for proper representations in the mind himself, which makes him aware of these events, by manipulating and transforming them to change his understanding. [3] [4]

Since the training or "nurturing" of the potential in humans up to their actual attainment is intended by most, but also by all educators, this development should be based on the function of "its nature" - or according to cognitive psychology, their psychic abilities and capabilities, should be done to achieve the desired result;[5] [6] similarly, in order to enter into potential talents and their recognition, one must recognize the cognitive capacities of the human mental or intellectual activity, so that, based on his mental structures, he can formulate clear rules and ideas, in light of these and the accompanying mental processes and related, inferring and explaining the appearance of the arrival of those potential talents - or their actualization - in the form of their visible responses. [7] [8]In this regard, the difference between "education" and "industry" may not be much different in the direction of human growth and prosperity, since it is both "to construct and constructed"; however, a very delicate difference between the two words this is there:

((Industry, means making. This build means that the object to be made is to be dressed and barbered, and its components, based on human will, are to be communicated, such as: making a ring of the Gold, however, as mentioned earlier, the education: it is to cultivate, that is, to actualize the potential of the living being. Indeed, the difference between the two is in the subject; the same is the orientation identify the person working on them. In the industry, building an object and "educating" is making people and humans more desirable.)). [9]

Accordingly, cognitivism wants to clarify: How does the person change information in the stimulus to the response? What are the stages of processing information? What happens at each stage of this process, and if the problem arises, which stage is there? It seeks to understand the full understanding of behavior, the underlying mechanisms, or the infrastructure of mental processes that link stimuli to responses or the same behavior desired. [10]By studying the mechanisms of the transplanting of stimuli to responses or behaviors, we will find the same important discovery of Edward Chase Tolman, based on the cognitive map and the intent or intention of living in learning the educational process. [11]

An example of the role of fear and habit in education: Since fear and intimidation are a factor in suppressing, inhibiting and preventing some outbursts and the growth of low and low talents, it cannot be regarded as a factor in the growth and development of great talents.Based on this, the trainee must know and understand why and in which intends to be threatened, so that according to the educator's needs, he will draw his cognitive map and go along with the paths; otherwise, he will be confused , worry and, ultimately, mental illness such as frustration or failure, depression and anxiety.

It has previously been said that the principles of education should be transmitted to him in the light of the circumstances of the person being trained, in order to achieve the desired effect.This sentence is: taking into account the individual differences in education.In fact, it is necessary to transfer the effective educational factors, taking into account the desire, the present and the relaxation, to the trainer.

From here on, the understanding of Traditional Islamic-Iranian Medicine in psychological counseling is highly effective and valuable. Therefore, the introduction and application of the relevant principles in this medicine is addressed.

AN INTRODUCTION TO TRADITIONAL ISLAMIC-IRANIAN MEDICINE

The crystallization of the thoughts of the prophets (A.S) and their practices regarding medicine and health, and the use of the laws governing the nature system, the experiences of the intellectuals in this regard, and the use of inspiration and illumination, constitute the mainstay of the Traditional Islamic-Iranian Medicine.This medicine is one of the long-standing and holistic schools and has played a role in preventing and treating various illnesses from ancient times.The school, in general, is divided into two sections: theoretical(basic knowledge for the diagnosis of the general condition of the patient) and, practical (presentation of treatment, for disease).Likewise, this medicine, in addition to the four elements of warmth, coldness, humidity and drought, believes in the fifth pillar, "Spirituality.". "Spirituality" the same thing as the objects of things, the essence of the things of the objects, the spirit of the animals, the moments, the plants, the time and place.This pillar is a factor in the good and bad sense and the effect of the positive and negative characteristics.This "spirituality" also includes education.

The philosophy of the existence of diseases

In general, the philosophy of the presence of diseases in this medicine is based on the following:

1. Non-observance of the laws of nature;
2. And, a note for gratitude for your health.

General features of treatment in Traditional Islamic-Iranian Medicine

1. The process of treatment is universal, simple, pervasive, inexpensive, achievable with minimal technical features, comprehensive, and in agreement with the nature of the creatures.
2. The principles and basis of treatment have a preventive role.
3. And, the treatment does not have short-term and cross-sectional effects; it continues for several generations(genetic and, essence effect).

Diagnostic Tools in Traditional Islamic-Iranian Medicine

1. The general and comprehensive tool is temperaments. The basis of diagnosis is the temperamentology (identification of individual differences).
2. The technical and specialized tool of diagnosis is a pulse.Pulse is a precise tool for understanding the functioning and activities of the organs within the body.
3. And,urine and stool are also other technical means of diagnosing the diseases.

Treatment in Traditional Islamic-Iranian Medicine

To obtain accurate diagnosis and basic treatment, one must determine the patient's inherent and complicated temperament.This is accomplished by understanding the following:

1. Knowledge of nature;
2. Age and gender;
3. 3.Geographic location and location of living;
4. Industrial and educational temperament;
5. Its main food and its temper;
6. Healing time;
7. And, the place of treatment.

Psychological-Behavioral Reflexes in Quaternary Classes

Moderate people

Moderate people are fit and temperate in all their behaviors and practices. Not from extremes, and no, they are inconsistent.People are energetic, willing and good-natured and balance between affairs.

People with bile temperament (humor)
This people are quirky. Sometimes they have an attribute and behavior, and sometimes have different characteristics and behaviors.Their type of attribute and behavior, are dependent on the amount of bile.The behavioral and psychological responses of these people are as follows:

1. They like autumn and winter.
2. They roam in bed and wake up by force; but they do not feel tired.
3. Depending on the amount of bile, they are sometimes sexually active, sometimes inactive.
4. Depending on the amount of bile, they have good spirituality, but they are cross-sectional.
5. Sometimes they are interested in literature and sometimes in mathematics.
6. Sometimes they love and sometimes graduate or free.
7. Sometimes they are low energy and sometimes energetic.
8. Sometimes with will and sometimes loose.
9. Sometimes it's temperate and sometimes quiet and sometimes uneasy and doodles.
10. Sometimes generous and sometimes spicy, sharp and restless.
11. They have the talents of violence, mischief and aggression, so they become angry and annoy others.
12. Regularly, bound to principles, sensitive and prospective.
13. And, sometimes dreamers, sometimes accurate decision making and repartee, talkative and intelligent.

People with sanguine temperament (humor)
These people are extremists in their character and behavior. The behavioral-psychological responses of these individuals are as follows:

1. They are usually sick in the summer. They do not suffer a lot of heat, and not a lot of cold weather.
2. They are hypersomnia and can sleep a lot.
3. Even they can notsleep for a long time.
4. They have a lot of sexual desire, power and, overwhelmed, so they are prone to sexual crises.
5. They have spirituality and goodness.
6. They are love-loving and they are excited in the phase of love.
7. Interested in literature and music, and they're in high school poem and poetry. Nevertheless, they are also interested in nature.
8. Sometimes, with high energy, they finish their work and work very well; however, they may not finish their work at times.
9. Brave and daring in doing things and having the power of risk.
10. Generous, fast, agile and energetic, well-off and good-natured.
11. They have great patience and tolerance; however, they should not abuse their capacity, because they get angry mad at the time of their anger and may exhibit risky behaviors (murder).
12. Listen to people's words well.
13. Usually, chaotic, far-sighted, ambitious and those who are imagination and invention (inventor).
14. And, highly self-confident, diverse and uninterested in repetitive work, kindred, intelligent and strong memory, sharp and in some aspects accurate.

Phlegmatic people
Psychological-Behavioral Reflexes in phlegmatic peoples are as follows
1. In the spring and winter they become bad.
2. Sleep is high and without enough efficiency. At the beginning of the waking, their body is hurting.

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3. Have a very low sexual desire.
4. Tend to rational and mathematical sciences.
5. They need loving, moderate, cautious and sometimes timid.
6. Logical, wise, calculator and business.
7. Quiet, isolated, having slow movements and talent for depression.
8. Delicate, crisp, sensitive, regular, accurate and retrospective.
9. Without risk aversion, compromise, impotent, introverted, negative, and spiteful.
10. And,Forgetting work, slow mind, being uninterested in learning and being comfortable with most things.

Melancholic people

In Traditional Islamic-Iranian Medicine, Melancholic Temperament (Humor) is one of the worst.Also, in the old medical books, it says: "If a physician can satisfy a melancholic person, he has made art.".

Psycho-behavioral reflections in Melancholic People are as follows:

1. Interested in spring and summer.
2. Sleep a little.
3. Have a lot of sexual desire against, a little sexual power.
4. They have little desire for spirituality (even they deal with God).
5. Interested in accounting and technical issues.
6. They are low in energy and keep going in works.
7. Mediocre and cautious.
8. Dull, narrow-minded, obsessed, worried and dumb.
9. Feeling weak, rational, uncomfortable, always thinkable and, without risk power.
10. Revenge and, not fascinated.
11. With lot of thinking and, imaginations, pessimistic, sensitive, worried, disciplined, introverted, controversial, sharp-seeing, accurate, and outrageous. [12]

Mental illness based on various temperaments(humors)

In this section, is presented mental-psychological illnesses are caused by the overcoming of humors.

Mental-psychological illness caused by overcoming bile humor

With excessive bile measure in the body, you may experience the following mental-psychological illnesses:

1. Bile headache, especially in the forehead and, frontal’s area (lobe), with blurred vision and vomiting. Tip: Head is the first place where the symptoms of bile appear.
2. Feeling the needle in the body.
3. Feel the movement of an ant under the skin, or, body piercing (tingling).
4. Rapid breathing movements and extreme anorexia.
5. Impetuous ethic and, anger.
6. At the height of the bile, the illness of schizophrenia and fantasy.
7. Sharpness or, perspicuity.
8. Anxiety and restlessness.
9. Intellectual involvement, intelligent, susceptible to madness(insanity or, psychosis) and personality disorders.Al-AkhawyniBokharisays: "These people are crazy maniacs." [13]
10. When stress, the color of the face is yellow, the lips are dry and the veins are highlighted.
11. Bile allergies are severe and high.

12. And, body itching and infertility are common in high level bile people.

Mental-psychological illness caused by overcoming sanguine humor

With excessive sanguine measure in the body, you may experience the following mental-psychological illnesses:

1. Fantasy and air desires (libido).
2. There is a big boom in their life.
3. Kind and intimated to loving.
4. High intelligence (inventor and explorer), that is: does not accept the current situation.
5. Long and far-fetched will, too, has a positive reaction and a high physical fitness (unlike the bile people).
6. The ability to create and innovate (poet and inventor in various fields), high mystical tendencies, and even in negative fields, such as: big scams.
7. Energetic and balanced sleep (but, if the phlegm or moisture increases in the body, sleep will also increase).
8. Balanced smell and hearing.
9. Sometimes, when it's stressful, it bleeds the nose and eyes, and even the lips are cracked and torn.Also, it gets acne and, tachycardia.
10. When stress, the face of the sanguine people is rosy; however, in bile humor, the color of the face is yellow, the dry lips and the veins are highlighted.
11. In cold-tempered people, pale and dark face, dry lip, dead and soullessness skin, pale face and eyes are pale and dry.
12. And, they have high blood pressure (hypertension / HTN) and triglycerides and high cholesterol.

Note: If we give warmth to these people, it creates a melancholia arising from the sanguine.When eating hot foods and drinking hot tea, their head gets hurt and their anger grows.Also, if this amount of warmth is increased, a constant headache, anger, insomnia, gingival bleeding (even with a toothbrush by finger), excessive and, high redness, high sexual power, and rapid pulse, and realism goes out and constantly falls in love and suffering from this state. Also, he cries even get away from his closest friendship, and wants diversity, and does not hang on a work and business, and he will soon be tired from staying in a single point.Prone to mental illness, to the extent that it may become crazy.Also, clever and imaginative and among the words throws bad slangs.

Mental-psychological illness caused by overcoming phlegm humor

With excessive phlegm measure in the body, you may experience the following mental-psychological illnesses:

1. Almost, incontinence, reduce sexuality and infertility.They're sad. Sadness is the reason for the overwhelming phlegm.
2. They are realistic, and in their minds, the insight is more in depth.
3. They are flexible towards retreat and negativity.
4. They have microscopic view and the smallest movement, affects them.
5. They are interested in delicate works.
6. They react negatively and if they fail to do so, they will be miff or wrath.
7. Their reactions are a dream function.
8. They have slow movements.
9. He does not hesitate to hurt you (that is, in his own interest and in his life, he does anything).
10. There is malingering.
11. Short-sighted (close-up), but realistic.
12. Reporting others.

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13. Thought is discontinuous and low focus.
14. Conclusion is low and marginal.
15. Because they are cowardly in presenting big plans and measures; therefore, they do not make such plans.
16. There is no comprehensive thinking and thought; but they have a depth of thought.
17. Remember the threads word by word.
18. There is no analysis.
19. A cool person is flexible (180 degrees) and a hot guy, is power.
20. If moisture increases in the area of the brain, it causes regional forgetfulness (for example, if the frontal lobe is cold, the anterograde amnesia, and if the parietal lobe is cold, it will give retrograde amnesia).
21. If the brain cools down, it will be forgotten by cold foods, and if it is hot, it will be clever; and if the phlegm grows again (old age), it will cause predominance of forgetfulness. Alzheimer causes if it exceeds the limit.
22. According to the teachings of Traditional Medicine, the brain has two shells or coating, the cold outer shell, negativity and depression, to follow.
23. The coldness of the inner shell reduces intelligence and memory. In the event of coldness, the whole brain is overcome; permanent depression.
24. And, If the phlegm crystallizes, phlegm-induced melancholy causes pessimism to all things and negative sentiments, and the sleep of snow and rain and the color of the dream come to light. Also, the dream of a person frightened (bunch) and night dreams of falls and choking.

Mental-psychological illness caused by overcoming melancholy humor

Explaining isthat: If melancholy arises from the sanguine, the person laughs. If the melancholy matter is melancholy, the person is cowardly and angry and, and if the melancholy matter is phlegm, the person is sad.

With excessive melancholy measure in the body, you may experience the following mental-psychological illnesses:

1. At a time of stress, they spin themselves, repeat a word; they rotate around themselves and behave repetitively. Restless and confused; but they do not shine like phlegm.
2. The main features: selfishness, stinginess, cowardice and attacker.
3. They do not love, but they do not have divorce (the most enduring families are melancholic.).
4. With grief and chronic disease are ongoing.
5. Physical, sexual and intellectual inactivity.
6. Suspicion and lack of familiarity with others.
7. He sees life dark and discourages wearing black dresses.
8. Loves cool things; such as: high water intake for obsessive-compulsive disorder (melancholic obsessive-compulsive).
9. Constantly is on long trips; loves much sleep (morning and evening). Also, there are a lot of laughs and, conversely, a lot ofdo not laugh.
10. Quick decisions, with intense stress (skiing, surfing, riding a motorcycle, car racing or rallying, etc.).
11. Enjoy low, eat a lot of grief, have greed of money and, they are always moaning.
12. The love for them is a matter of doubt (For example, why did you say hello to me?!).
13. Trustworthy and dare not betray.
14. They are not flexible in social relations, and if they are, they are negative.Most retreat. For this reason, dealing with them may be successful.
15. They are very peculiar (they are so drowned in detail that they forget about the universe.).
16. Much to keep up.

17. Sleep is falling and like a rabbit's sleep (sleep is superficial, and fatigue does not resolve; that is, the depth and length of sleep are low.)
18. Dreamer, so that fantasy and reality in his mind is disturbed (imaginary thoughts are real worth.).
19. Those that are sanguine and then melancholy (burned melancholy); they consider themselves God, sometimes the Prophet, and sometimes Imam.
20. It is self-styled and its pattern is negative (the comparative criterion is its own personality; it treats everyone with oneself and likes those who are like themselves; even, it's worse than the model itself. For example: He likescurmudgeon more than his miser.).
21. The unconscious goes.
22. He talks a lot to himself (he speaks with the phone regularly).
23. And, has tic, tremor, Parkinson and sleep and awakening unrest.[14]

THE COMBINATION OF TRADITIONAL ISLAMIC-IRANIAN MEDICINE AND THE APPROACH AND SCIENCE OF COGNITION IN EDUCATION

According to the opinion and belief of most of the scholars of old education, if education is to be a developing state in the condition of being educated, gradually and, little by little, the development of this state and, quality in one's own, in virtue or in spirit - the same habit - or becoming secondary in nature of he, will be the representative of the his queen and pattern - that's why sometimes in the science of ethical education, always talk about the queen of the industry in private, such as: the queen of courage, the queen of generosity, and so on. At that time, the person has grown. According to this class of scholars, “education, the technique of habit forming and much of the education, the making of humans, is from the way of the habit.” [3] [13]However, there is another group of newly created scholars who argue that education is merely the cultivation of the power of reason and moral will, and mankind should not be educated habitually, because when the education in the person is habituated, he dominates and which makes it impossible for him to modify and make the necessary adjustments according to the time requirements of the training process. In fact, according to this group of scholars, "education is only based on reason and will in person, not based on his habit. » Immanuel Kant and Jean-Jacques Rousseau are among the supporters of this group of scholars by stating that "education is a technic of disturbing of habit." Of course, this point should also be noted for these two philosophers, that their belief was that the moral will derived from education should be dominant in humankind. [3]

In the critique of both previous theories, it must be stated that: “Sometimes, it becomes habit to eliminate the value of good and proper work. In fact, habit eliminates the value of the practical effect of education andcan not be a criterion of moral act. In this way, it will prevent the growth of the person's excellence, because by doing one's practice and getting to it, he will not be able to accept innovation in his mind, and will stay at scratch point - where the practical has started!”. [15]

It should also be mentioned that it has a two-way habit: current and passive.

- Current habit: It's a habit that a person has not been influenced by an external factor; rather, he has done something or behavior through repetition and practice - for example, the view of Edward Lee Thorndike of establishing communication links between neurons inside the brain, by practicing repetitive exercises and/or, according to Edward Chase Tolman's view, to create a cognitive map in the mind, it does better by doing the intentions of something that requires self-determination and perseverance. As seen in this recent habit, mankind or affection does not arise; but, will and reason, are involved in the practice of habit. Such things as: arts, techniques, courage, generosity, chastity and cleanliness, fall into this category of habits.

- Passive habit: It's a habit that a person is doing under the influence of an external factor. This habit creates for man, Familiarity and habituation and it captures him - perhaps we account imitation, observational learning, learning and social behavior, and modeling of motivation created by Albert Bandura, under the title of this habit. Habits like smoking and some sexual deviations are among these habits.

Passive habits are bad in every case; but, current habits are not bad for being in habit; of course, it may be bad for some other reasons; but they are not bad for being habit.[16]

As previously mentioned, in education, the goal is to plan for the establishment of an ethical infrastructure in humans. These infrastructures must necessarily have clear objectives and systems, and include all individual-social aspects. If the purpose is society, then these are the ones by which they are supposed to be done.In fact, the design and planning of individual education is considered to be the introduction of a community; on that basis, it is necessary to construct a person; in the sense that the purpose is to build individuals or to follow the community and collective view of point Because, while man is an introduction and a tool for building society, he is also the target of being made.From here, the great significance of culture in human beings is evident.

Since the philosophy of Traditional Islamic-Iranian Medicine is both the originality of the individual and the community's authenticity, the designs presented by this medicine for the creation of the individual, with extraordinary sensitivity and value, are also directed at society.

A brief explain the role of temperaments in nurture

In Traditional Islamic-Iranian Medicine, consideration is given to the characteristics of each temper in the process of education.

Since mood qualifications were describe in prior section; are influenced by the temperament of the educated person; therefore, by describing the application of temperament in the educational process, we develop the subject, so that, with respect to the characteristics of each temperament, we can explain the proper educational behaviors.Each temperament, naturally, has a special educational background.Also, every temperament has a special ability to make them aware of; there is a fit between the types of expectations of the coaches and how they work with the temperament of the trainees, so that individuals or trainees achieve proper developmental excellence.In fact, knowing the physical characteristics of the temperaments are effective in educating them, as well as the educational characteristics, can change the characteristics of each temperament.

In general, the trainer needs to be familiar with various temperaments and talents, so that he can use education in the right direction. [17]

COGNITIVE FACTORS OF EDUCATION

1. Breeding Wisdom, Science and Thought

In science, the discussion of nurture involves the same teaching.Theories, such as: Jean William Fritz Piaget, on the stages of cognitive development, with the organization of biology, philosophy and mathematics, to provide a cognitive evolution from birth to adolescence, as well as Rudolf Carnap, who argued: "Structures Theoretical ones are visible if they are meaningful or significant, and scientific theories can only be verified if they are related to observable facts.", are the same.Similarly, Sir Karl Raimund Popper’s view that "a scientific observation is inevitably influenced by the result of it or what we are looking for. Observations, to some extent, depend on the expectation of the outcome and the route that is expected for this expectation."; It seems that the same way Carnap would be accepted in another language.Thomas Samuel Kuhn, in addition to objective evidence, believed in mental and social aspects.In fact, from the point of view of cognitive psychology, the scientific justification of nurture is justified by the philosophical foundations of behaviorism based on the logical positivist and prominent model, because cognitive psychology in the special sense refers to a scientific discipline that is the title of part of the whole psychology examines the human cognitive processes. [18]

It seems that, from the point of view of cognitive psychology, when it is discussed about wise, science and education for nurturing, it means intellectual growth and independence that can lead to the inference of the principles of nurture in man, to create.The drummer of growing nurture, misconception, and education leads to the lack of knowledge of science or the mind in the individual, not the lack of potential talent in the individual! In fact, education has not been able to cultivate and stimulate that power in person, or to become actual.The point here is that wisdom and science must be interconnected; till learned by means of the intellect freed from the customary habits, be thought out, analyzed and deduced.Also, if a person is constantly busy and does not have the opportunity to organize and deduce from his accumulated findings by way of thinking and thought; in this case, he will not go away and his knowledge and intellect will come to naught!

In cognitive psychology, the discussion of the development of will in the form of a system of information processing is considered.In this approach, the cognitive processes derived from the strengthening of will, arranged in a sequences of responsive behavior, are arranged so that each stage, an important step in the processing of how to understand its education of nurture and its finer processing is taken away - this is where the necessity of the combination of science and wise is very prominent and evident - and governs the sort of sequence and arrangement on the mental operations that are performed in learning a particular cognitive act.The mentioned items, as a cognitive strategy technics, are stored in semantic memory and create a kind of subjective commitment to change in behavior. [19] [20]

2. Worship

This factor, acting through wisdom and thinking, strengthening the love and spiritual interest, and creating the heat of faith in man, acts as one of the leading factors in the growth and prosperity of potential talents.Worship

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and faith in intercourse with one another are interacting, so that faith itself, in turn, is the source of worship and worship, which strengthens faith - that is, the mutual influence of faith and action on one another. Faith, in turn, is the source of the action and action of faith, itself, the source of the strengthening of the same faith. [9]

Also, the nurture forms of worship, such as: the issue of grooming, observance of social rights, self-denial, punctuality, peace with other human beings, and the intention and pillars of it - attention, not habit, but, in the exact form, also - in self-development of individuals are very influential and involved.[3]

If worship is called contemplation and thought and is compared with cognition science, we will see that what is passed on to the individual to understand this important; the process's observations and the result obtained from its transfer, observations of performance in the field of problem solving is named. In fact, the process of transferring worship is carried out by a trained person through a scholarly analysis, according to Alan Newell and Herbert Alexander Simon, a more evolved form of introspection. [21] [22]

3. Kindness (Affection)

What comes out of the effect of kindness (affection) in the transfer of nurture is its interpretation of growth, not the same principle of kindness (affection).Also, there are two types of kindness (affection): emotional affection and rational affection. In order to transfer the principles of nurture to the trainee, one must use the frontier and method of reasonable logic or expediency to the emotional-affection, merely for the trainee energy to be used. This issue, while giving serious attention to the person, will learn the accuracy, goodness, fairness, patience and correct interpretation. [13]

Based on the doctrines of cognitive developmental psychology, the processes derived from the interpretation and explanation of affection, from the source, which are made in the mind; trigger the behavioral evolution of the nurtured person.If the rational principles of upbringing come about with affection, development and maturity; then, while fulfilling nurture goals, the growth resulting from this nurture has reached its full potential; that is, the growth of potential talents and the actual attainment of them.According toStephen Michael Kosslyn, the person comes from the "dry mind" to the "wet mind", of course, provided that the process of nurture principles takes place in a place called the brain - or materials used in the building of the mind - examined to put. In fact, he considers the study of nurture elements, in the form of biological reductions, from the point of view of science of cognition. [23] [24] [25]Given that the purpose of the cognitive neuropsychology is to clarify the cognitive nervous organization in describing and explaining cognitive processes; in order to achieve a general explanation of nurture that leads to growth, the path to analytics of Sigmund Freud takes place, and at the same time, the structures involved in The brain is used to transfer the process, such as hippocampus and amygdala, using positron emission tomography, magnetic resonance imaging, and computerized (axial) tomography, and so on.In this regard, the field is aimed at the discovery of certain neuronal groups that are active during the transfer of cognitive-meaning processes, and with the cognitive architecture derived from connectionism; those cognitive processes imply meaning in the mind and the individual's behavior. That is, of course, whose discussion of subsequent nurture and growth is not an exception to this rule. [26]

4. Strengthening the Sense of Truth

This sense is instinctively in every human being that the probe is the truth. For this reason, he is looking for science; therefore, this sense is one of the instincts which must be strengthened in order to carry out the basic principles of education. Barrier and obstaclesof reinforcement the sense of truth and science, is bias, or harshness; this is self-evident from the rude and impolite nature of the individual. [13]

This sense lies in the philosophy of mind and philosophy of cognition or epistemology in cognitive psychology. The argument of the sense of truth is like an extra material; in this way, the philosophy of the mind arises that this sense, as a cognitive phenomenon, is analyzed and deepened, and then, its constructive mental phenomena - such as: aesthetics - by examining the related scientific foundations, it is compared with the biological aspects and will be considered as a pillar of the components of the principles of nurture.[27]

GROWTH, THE RESULT OF NURTURE, FROM THE POINT OF VIEW OF THE COGNITIVE SCHOOL

“Growth means: the merit and desirability of maintaining and exploiting the facilities and assets that are available to man. ”.

As outlined above, the concept of growth is synonymous with responsibility. When it comes to responsibility, it means that the individual has reached a level of nurture, cognition and development that is capable of executing some of his or her orders and practices in the best way and in order to compensate for certain deficiencies. Issue a ruling. The word (growth) is in contrast to the fool, which, of course, is different from reason. The human being, while being wise, is responsible for the merits. [9]

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How to improve the level of cognition to the basis of full growth or to achieve an actualization is the stage when one understands what he does and eventually thinks. The same subject requires responsibility for the commitment. Also, it should be noted that growth is different from maturity, rigidity or physical maturity, which has its own biological path.

Since the growth resulting from nurture is acquired, and the healthy human being has a mature intellect, it is obliged to obtain it, so that it has the merit of accepting and assuming responsibility.Even in deprivation conditions - from the point of view of psychology, that learning is disturbed and, if these conditions persist, due to frustration - also, the task of the acquisition of growth has been put in place by man - in the Logotherapy and, existential analysis psychology of Viktor Emil Frankl, the problem of meaning for life, In this way, the individual takes on the responsibility for changing his situation and moves towards it, to live normally. This is very similar to Albert Ellis's rational-emotional behavior therapy and client-centered therapy or, person-centered approach of Carl Ransom Rogers.

The characteristics and signs of growth can include the following
Protection of religious, national, and cultural assets; Historic buildings; Maintaining social regulations; Valuations of men; Publications; How to spend money and not to lose capital; How to advertise Religion and science; Thanksgiving; The growth of internal power (emotional force); The development of the power of mind (memory); The development of the power of thought; The strengthening of the will power; The multidimensional growth (individual management, such as: memory management; growth in worship; social management; social, political growth and so on); Evaluation; Predictive Power; Stats / Statistics (Understanding Objects); The Importance of books reading and content; How charity; Right and principled thinking; and, Sensitivity to basic issues. [3]

Since growth is the result of nurture, so the goals and ideology of governing on it should be clear, so as to pave the path that nurture brings to growth. Also, there must always be coordination among the factors of nurture, so that any factor, such as the training chain, can connect to the next and sometimes, after the necessity, become a next chain-of-itself. [9]

However, from the point of view of cognitive psychology and cognitive science, the process of adopting educational principles adheres to the principles of teaching-behavioral-cognitive motivation; [28] [29] In such a way that the nurture components are trained in the form of a relatively objective cognitive structure for the presentation of an operational - or definite purpose - in the form of a schema - that is, of course; among these components as factors In order to be nurtured, there must be a principled-rational relationship or harmony. - in his semantic memory, itssensory characteristics are reduced and processed deeper and more meaningful, and this is where inevitably, in order to explain the construction of these components and establish a rational-logical relationship between them, semantic networks of these operations will take place in mind.This causes the principles of nurture to be internalized and compared by the nurtured individual, in line with their current behavior, and the feedback received from such a match will be that if there is a need for changes in how to understand this schemas or components of the principles of nurture, for the externalizing the behavior, will be made by the individual himself, on the basis of his understanding, and the modifications that will be made on the basis of the semiotics derived from the meaningful selection of the nurture components mentioned in his meaning and event memories will be saved. [30] [31] [32] [33]

It goes without saying that, all of these stages, initially, are through a connective system in mind, superficial or low-depth processing, and then, deployed in a deeper way by processing the chain and processing (distributing) parallel; complete, correct and principled, and transferred to nurtured person’s long-term memory. [34] [35]

CONCLUSIONS

At a glance and, according to the items mentioned and studied in the article, the conclusions are as follows:
According to a research study; regardless of the educational dimension of trainees, six dimensions can be used in the field of traditional-Islamic-Iranian medicine in combination with cognitive psychology and science in the field of nurture:

1. Memory: Bile temperaments (humors) have good memory and there is good memory in the balance;
2. Discipline: Cold and dry temperament (humor) has more regularity than other temperaments (humors);
3. Trainability: Cold and wet, very flexible and warm and dry, are the most self-reliant. Wet temperaments (humors) are sooner and easier to be trained and soon they will lose their nurture; however, dries will be nurtured late, but if they are nurtured; preserved and, retained it.

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4. High energy: High energy is in warm temperaments (humors). Hyperactivity, as a disease, is due to overheating.
5. Focus(Concentration): If it is extreme in warmth; the person does not focus (concentrate); in the warmer temperament (humor), memory and focus (concentration)are good.
6. And, intelligence and learning: warms, because of quick analysis, get better. If the coldness is overcome, the person becomes less intelligent and receives less.

Since one of the problems of the cultural actives, especially those who are in the field of nurture, is the existence of a set of unplanned information and knowledge, which itself has numerous and plenty damages, so that in some cases, the power of decision-making and regulation is removed from their hands; a programmed, comprehensive, efficient, and applied program, in which they create insight and can, in the light of this principle-based and correct insight, map out and plan the related prioritizing received information is very necessary.One of these requirements is the presentation of "new patterns and methods of nurture and culture in the education system", which enables the current and future generations to be healthy, faithful and expert in achieving the desired goals, and from the fruits he has benefited as proud models throughout the world.For this reason, the presentation of a program for the disciplinary practices of knowledge and the creation of a coherent intellectual system is one of the main components of the insight; in the context of the full and comprehensive nurture-moral principles, - though, nurture and ethics are different from one another in terms of performance. - It is very necessary because nurtured people who are not aware of the disciplinary methods of knowledge for creating a coherent and integrated intellectual system are affected by dispersion, conflict and contradiction in the mind and intellect and can not be successful in human language and behavior.

According to what has been said, "Today, the existence of a common scientific-nurture dialogue that promotes the growth, maturity and advancement of the cultural-scientific communities of the societies" is one of the most basic needs of each country.By comparing the nurture and growth of the temperamentology (Humorology) of Traditional Islamic-Iranian Medicine-the same as the scientific-methodological nurture and, development-and cognitive psychology and cognitive science-which is now the dominant view of the scientific community-we conclude that the combination and the integration of the Traditional Medicine with the cognitive sciences in the field of nurture and, education, which is capable of creating a superior intellectual system in the nurture and, education of the country, so that the trained person under this vision has the ability to manage his own society; and speech and behavior of him has not inconsistency and disunity; and in this point he is as a model himself, a cultural-science maker; for the following reasons, it has efficiency, superiority and preference than, use of only cognitive psychology and, cognition science:

1. To have a solid epistemological basis derived from specific, fixed and general content;
2. To have a comprehensive view of all aspects of human existential, including: physical, mental, and psycho-spiritual relation between man and creator, the unseen world, self, others, family, community and environment;
3. Having a fixed basis mechanism and at the same time responding to new and emerging phenomena and influences on the process of nurture and, education, taking into account the requirements of time and place;
4. The acquisition and inclusion of audiences from a wide variety of universe- even, transnational -, so that they are programmed and messed up for different ages and, generations;
5. Explaining priorities, based on the growing nurture and, educational priorities of the community in the direction of moving toward the goal, which is the attainment of self-actualization and the actualization of human potentials;
6. Because of abstract and purely scientific-non-philosophical; practical application in all aspects of life in an effective and useful way;
7. The ability to convert the nurture – educational capacity of the learner to the observable and objective behavior, the ways and means of transferring the accompaniment and motivating the audience to produce the act by the will of the trained person;
8. Insightfulness based on proper duty recognition, in order to meet the goals of nurture and, education, to achieve optimal growth;
9. The ability to provide a rational-reasoning model for nurture – educational components, so that this pattern reflects the logical order of the components in question;

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10. Coherence and fit between the components of the whole of the principles of nurture – education, both theoretical and practical;
11. Avoiding a general point of view, free from ambiguity and clarity of purpose and its frameworks for the audience;
12. And, with certainty, the seal of affirmation of the elders of the field of science and thought, so that this assurance, confirmation of this confirmation and confirmation, as well as this, will confirm this assurance. It should be noted that reassurance is the best way to recognize the supreme system of thought based on the components and principles of nurture – education, and that it is the sooner it reaches the educated goals, which is the same as growth and prosperity.

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FINANCIAL STATEMENT FRAUDS DETECTION AND ITS PREVENTION OF FINANCIAL SECTORS - WITH REFERENCE TO BANKING & INSURANCE COMPANIES

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ABSTRACT
In the present globalised and liberalised business environment of the last few years, we face a drastically increasing volume of frauds, especially in the financial sectors (Banking & Insurance) in India. The Indian financial services sector has witnessed exponential growth in the last decade—a growth that has not been without its pitfalls, as incidents of fraud have also been on the rise. Fraud results in significant losses to the public exchequer, thus adversely affecting service delivery. Financial fraud is big business, contributing to an estimated 20 billion USD in direct losses annually. Industry experts suspect that this figure is actually much higher, as firms cannot accurately identify and measure losses due to fraud. The worst effect of financial frauds is on FDI inflows into India. The time has come for financial services organisations to pursue a more strategic approach to fraud management within. To overcome this challenge, they need strict and focussed steps. There needs to be transparency in Financial Statement at all levels in organisations to reduce frauds. The main purpose of this study is to identify the current fraud trends and how we prevent it's in the present world. It was found that the Fraud prevention tools are automated analysis tools, Data visualisation tools, Behavioural analytics, deep learning, the internal audit function, going to reduce the financial frauds and its prevention of financial sectors of banking and insurance companies. Hence it is suggested that, Key components of an effective anti-fraud programme such as Periodic reviews and transparent management reporting, Staff services across locations awareness and training, Develop policies and procedures to provide guidance to business, Policies to be structured in layers to cover all products.

Keywords: Fraud trends, fraud risk, fraud prevention tools.

1. INTRODUCTION
In today's volatile economic environment, the opportunity and incentive to commit frauds have both increased. Instances of asset misappropriation, money laundering, cybercrime and accounting fraud are only increasing by the day. With changes in technology, frauds have taken the shape and modalities of organised crime, deploying increasingly sophisticated methods of perpetration. As financial transactions become increasingly technology-driven, they seem to have become the weapon of choice when it comes to fraudsters.

In this paper, we share our perspective on the trends in frauds in the financial sector, the changing regulatory landscape and the ways for fraud prevention and control. We hope these insights will help the financial services industry combat fraud and other forms of economic crime.

2. REVIEW OF LITERATURE
An attempt has been made in this study to review the selected research work already undertaken in in the area of this study, to understand the concepts methodology employed and the gaps in the research.

1. Louise Francis, (2010) **"Banking on Robbery: The Role of Fraud in the Financial Crisis"** The evidence indicates that a well-established and well-known permissive attitude towards fraud created a global systemic risk of such significance that a financial crisis of major proportions was all but inevitable. The SEC needs a "chief criminologist," i.e., someone experienced in fraud detection and prosecution. He concluded that Reinstitution of previously abandoned regulations that protected the banking system from risk (i.e., Glass-Steagall Act) and a new commitment to SEC enforcement of already existing antifraud laws are greatly needed. If fraud is not pursued and prosecuted, future financial crises where fraud is a significant factor are likely to occur.

2. Michael S. Raab(1986) wrote an article on **"Detecting and Preventing Financial Statement Fraud: The Roles of the Reporting Company and the Independent Auditor".** He found that companies should be required to institute sufficient internal management controls in addition to the current statutory mandate to implement internal accounting controls. And also found that the sanctions imposed on perpetrators of financial statement fraud should be increased. Barring from corporate office those responsible for fraudulent financial reporting can provide greater levels of deterrence than fines alone, since the effectiveness of fines is limited by the net assets of wrongdoers. Appropriate due process protections should be instituted to minimize the chance of error and thus to prevent innocent managers from becoming too risk averse.

3. OBJECTIVE OF THE STUDY

The overall objective of the study is to find financial statements frauds and its prevention of financial sectors of (1) banking companies (2) insurance companies.

The specific objectives of the study are:

1. To study the overview of frauds in the financial sectors.
2. To study the fraud risks in the financial sectors.
3. To examine the financial fraud and its prevention tools of financial sectors.

4. RESEARCH METHODOLOGY

This study based on Secondary data. This secondary data collected from Journals, Published reports, RBI reports and PWC.

5. DATA ANALYSIS & RESULTS

5.1 Overview of frauds

Frauds in financial institutions and Understanding the types and modus operandi as follows.In 1990–1999 frauds like Hawala transactions, Fake currency, Cheque forgery But 2000–2015, Tax evasion and money laundering, Black money stashed abroad, Cybercrime, Debit/credit card fraud, identity theft, Fake demat accounts, Benami accounts, Use of forged instruments such as stamp papers and shares, Violation of Know Your Customer (KYC) norms. Here discuss the some important frauds.

a) Bribery and corruption

Corruption is one of the biggest challenges faced by the Indian economy. Various surveys and studies conducted by industry bodies like Transparency International have identified corruption as a key risk for Indian corporates. India ranked 85 among the 170 countries included in Transparency International's Corruption Perceptions Index - 2014. This ranking has gone up by 9 points as compared to the country's rank of 94 out of 177 in 2013. Some of the key reasons for high corruption in India are the lack of a strong legal framework and enforcement of anti‾corruption laws, red-tapism and a result-oriented approach.

b) Money laundering

The goal of a large number of criminal acts is to generate a profit for the individual or group that commits the act. Money laundering is the processing of these criminal proceeds to disguise their illegal origin. This process enables the criminal to enjoy profits without jeopardising their source.

c) Cybercrime

According to RBI, in 2012, 8,322 cases of cyber frauds amounting to 527 million INR were reported. Although the number of cases reported decreased from 15,018 in 2010, the total amount involved increased from405 in 2012, implying that the average value per cyber fraud case has increased significantly.

5.2 fraud risks in the financial sectors

5.2.1 Fraud risks: Banking

(i) Fraudulent documentation

Fraudulent documentation involves altering, changing or modifying a document to deceive another person. It can also involve approving incorrect information provided in documents knowingly. Deposit accounts in banks with lax KYC drills/ inoperative accounts are vulnerable to fraudulent documentation.

(ii) Internet banking and related frauds

Around 65% of the total fraud cases reported by banks were technology-related frauds (covering frauds committed through/at an internet banking channel, ATMs and other payment channels like credit/debit/prepaid cards), whereas advance-related fraud accounted for a major proportion (64%) of the total amount involved in fraud.

Some examples

Triangulation/site cloning

Customers enter their card details on fraudulent shopping sites. These details are then misused.

- **Hacking**

  Hackers/fraudsters obtain unauthorised access to the card management platform of banking system. Counterfeit cards are then issued for the purpose of money laundering.

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- **Online fraud**
  Card information is stolen at the time of an online transaction. Fraudsters then use the card information to make online purchases or assume an individual's identity.
- **Lost/stolen card**
  It refers to the use of a card lost by a legitimate account holder for unauthorised/illegal purposes.
- **Debit card skimming**
  A machine or camera is installed at an ATM in order to pick up card information and PIN numbers when customers use their cards.
- **ATM fraud**
  A fraudster acquires a customer's card and/or PIN and withdraws money from the machine.

(iii)Mobile banking: Risks

There are two types of mobile financial services that are currently offered in the Indian market—mobile banking and mobile wallets. Being an easy and convenient mode of transacting, there has been a 55 times rise in value usage of mobile banking and 5.5 times rise in the volume of transactions between FY12 and FY15.

5.2.2 Fraud risks: Insurance companies

Large accumulations of liquid assets make insurance companies attractive for loot schemes. These companies are under great pressure to maximise the returns on investing the reserve funds, making them vulnerable to high-yielding investment schemes.

The insurance industry has witnessed an increase in the number of fraud cases over the last couple of years. A growing number of organisations are realising that frauds are driving up the overall costs of insurers and premiums for policyholders, which may threaten their viability and also have a bearing on their profitability. To keep these risks under check, a detailed framework for insurance fraud monitoring has been laid down with effect from 2013–14 and is applicable to all insurers and reinsurers.

- **Policy holder and claims fraud**
  Policy holder committing fraud against the insurer at the time of purchase and/or execution of an insurance product
- **Internal fraud**
  Employees commit fraud suo moto or in collusion with external parties or amongst themselves against the insurer.
- **Cash defalcation**
  Agent collecting the premium but not remitting the cheque to the insurance company, owing to which the insured has no coverage.
- **Doctor's nexus**
  Doctor being involved with the perpetrators in committing life insurance fraud.

5.3 Fraud prevention tools

Automated analysis tools

Today, the industry is increasingly aware of the need for automated analysis tools that identify and report fraud attempts in a timely manner. Solution providers are providing real-time transaction screening, third-party screening as well as compliance solutions.

Data visualisation tools

These are being used to provide a visual representation of complex data patterns and outliers to translate multidimensional data into meaningful pictures or graphics.

Behavioural analytics

This is helping businesses identify enemies disguised as customers. The data analytics implemented by the institutions to understand customer behaviour, preferences, etc are also helping in the detection of fraudulent activity either in real-time or post mortem.

Deep learning

Internet payment companies providing alternatives to traditional money transfer methods are using deep learning, a new approach to machine learning and artificial intelligence that is good at identifying complex patterns and characteristics of cybercrime and online fraud.

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The internal audit function

This function is being altered to include fraud risk management in its scope. The changed technological landscape requires the old ways of internal auditing to give way to new, technologically equipped audit functions. Annual audit planning may no longer be fully effective and flexible audit plans are the need of the hour, as fraud risk assessments require extensive use of forensic and data analytics solutions.

CONCLUSION AND SUGGESTIONS

This study analysed the difference Fraud prevention tools in the Banking and Insurance. It was found that the Fraud prevention tools are automated analysis tools, Data visualisation tools, Behavioural analytics, deep learning, the internal audit function, going to reduce the financial frauds and its prevention of financial sectors of banking and insurance companies. Hence it is suggested that, Key components of an effective anti-fraud programme such as Periodic reviews and transparent management reporting, Staff services across locations awareness and training, Develop policies and procedures to provide guidance to business, Policies to be structured in layers to cover all products.

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BIO-FUELS: A BLESSING FOR AN ENVIRONMENT

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ABSTRACT

Bio-fuels are energy carriers that store the energy derived from bio mass. Biomass is simply organic matter. In others words, it is dead material that was once living. Kernels of corn, mats of algae, and stalks of sugar cane are all biomass. Before global warming related to burning fossil fuels became a major factor in determining where energy came from, the major concern was that fossil fuels, which are considered limited in supply, would run out over the next century. A fossil fuel is not considered renewable because it takes millions of years to form and humans really can't wait that long.

Bio-fuel, on the other hand, comes from biomass, which can be produced year after year through sustainable farming practices. Bio-fuels may be referred to as renewable energy because they are a form of transformed solar energy. There are three main types of bio-fuel *ethanol,* biodiesel, *and bio-jet fuel. Ethanol is* used *in engines that burn gasoline, like most cars.* Biodiesel *is* used *in engines that burn diesel fuel, like large trucks and tractors. Bio-jet fuel is* used *in planes.*

This paper focuses on bio-fuels, its types, sources, production, uses, future use and career opportunities in bio-fuel industries and the production of bio-fuels to meet the increasing demand of energy all over the world.

Keywords: Bio-fuels, Ethanol, bio-diesel, biomass, global warming, environment.

INTRODUCTION

The word *bio-fuel* is usually *used* to refer liquid fuels, such as ethanol and *biodiesel* that are *used* as replacements for transportation fuels like petroleum, diesel and jet fuel. *Bio-fuels* also include solid fuels like wood pellets and biogas or syngas (synthesis gas or coal gas).

THE PRODUCTION AND USE OF BIO-FUELS

Mainly ethanol based on cereals and sugar crops, and biodiesel based on vegetable oils such as rape seed or canola oil – have grown rapidly over the past few years and are expected to further double in the decade to come.

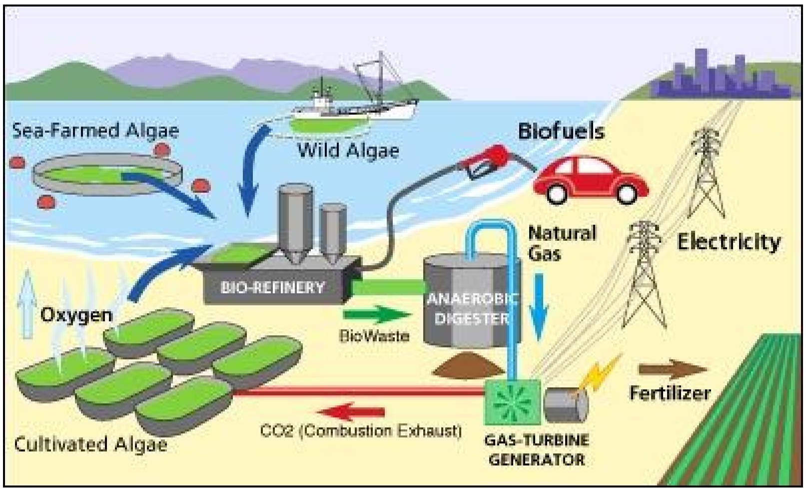
The United States and Brazil remain the largest ethanol producers with 48% and 31% of global ethanol output in 2007, respectively, while the European Union accounts for about 60% of global biodiesel production. A large number of other countries' governments have begun, or are considering promoting bio-fuel production and use. In most countries, bio-fuels remain highly dependent on public support policy. Many different forms of support are provided at various stages of bio-fuel production and use like:-

1. Budgetary support measures, either as tax concessions for bio-fuel producers (refineries), retailers or users, or as direct support to biomass supply, bio-fuel production capacities, output, blending, specific infrastructure or equipment for bio-fuel users.
2. Trade limitations, mainly in the form of import tariffs, protect the less cost efficient domestic bio-fuel industry from competition from lower-cost foreign suppliers and result in higher domestic bio-fuel prices.

SOURCES OF BIO-FUELS

Bio-fuels may be derived from

- Forest, agricultural or fishery products
- Municipal wastes
- Agro- industry
- Food industry and
- Food service by-products and wastes.



THE MUNICIPAL SOLID WASTE AS A RESOURCE OF BIO-FUELS

There is a global challenge to fulfill the increasing energy demand. Municipal Solid Waste (MSW) can be a resource if we can efficiently convert it into renewable energy. MSW can be converted into Bio gas & Bio fertilizer by an environmental friendly, cost effective & safe technology called Anaerobic Digestion. Bio gas is a combustible gas which can be used widely both for domestic & industrial purpose. Bio fertilizer is a bio organic soil enriched which contains high level of nutrients.

MAIN DIFFERENCE BETWEEN FOSSIL FUEL AND BIO-FUEL

Gasoline and diesel are actually ancient bio-fuels. But they are known as fossil fuels because they are made from decomposed plants and animals that have been buried in the ground for millions of years. Bio-fuels are similar, except that they're made from plants grown today.

Discoveries of huge petroleum deposits kept gasoline and diesel cheap for decades, and bio-fuels were largely forgotten. However, with the recent rise in oil prices, along with growing concern about global warming caused by carbon dioxide emissions, bio-fuels have been regaining popularity.

The table below compares various bio-fuels with their fossil fuel counterparts.

Bio-fuel	Fossil Fuel	Differences
Ethanol	Gasoline/Ethane	Ethanol has about half the energy per mass of gasoline, which means it takes twice as much ethanol to get the same energy. Ethanol burns cleaner than gasoline, however, producing less carbon monoxide. However, ethanol produces more ozone than gasoline and contributes substantially to smog. Engines must be modified to run on ethanol.
Biodiesel	Diesel	Has only slightly less energy than regular diesel. It is more corrosive to engine parts than standard diesel, which means engines have to be designed to take biodiesel. It burns cleaner than diesel, producing less particulate and fewer sulfur compounds.
Methanol	Methane	Methanol has about one third to one half as much energy as methane. Methanol is a liquid and easy to transport whereas methane is a gas that must be compressed for transportation.
Bio-butanol	Gasoline/Butane	Bio-butanol has slightly less energy than gasoline, but can run in any car that uses gasoline without the need for modification to engine components.

TYPES OF BIO-FUELS

They may be

- Solid, such as fuel-wood, charcoal and wood pellets;
- Liquid, such as ethanol, biodiesel and hdyrolysis oils; or
- Gaseous, such as biogas.

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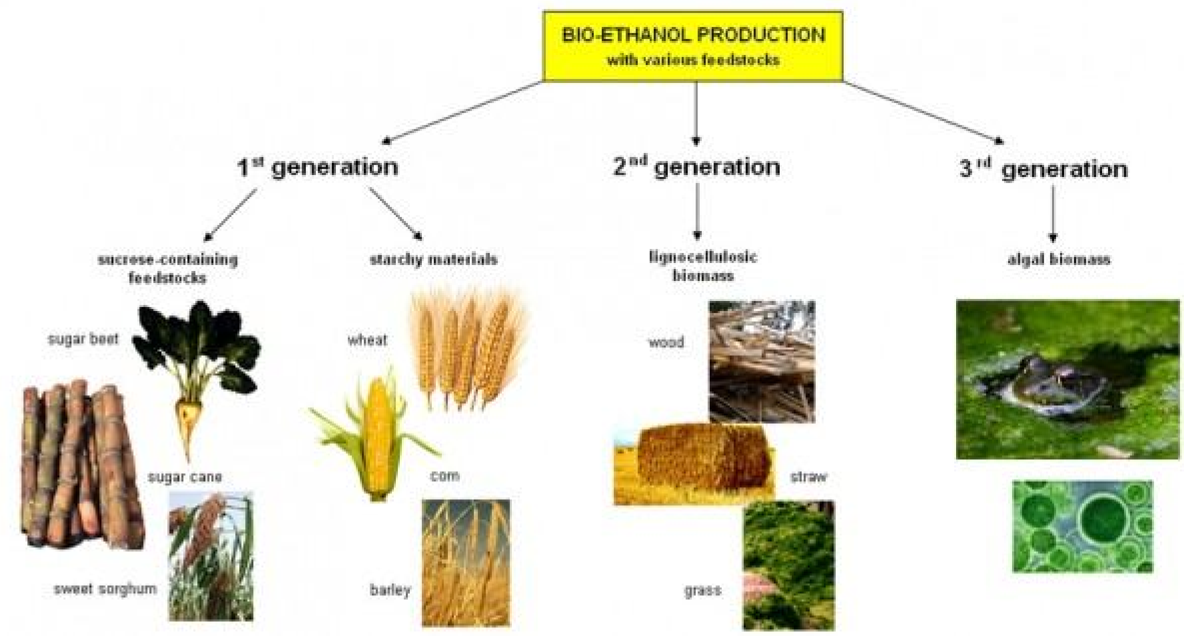
A basic distinction is also made between primary (unprocessed) and secondary (processed) bio-fuels

1. **Primary bio-fuels**, such as fire-wood, wood chips and pellets, are those where the organic material is used essentially in its natural form (as harvested). Such fuels are directly combusted, usually to supply cooking fuel, heating or electricity production needs in small- and large- scale industrial applications.
2. **Secondary bio-fuels** in the form of solids (e.g. charcoal), liquids (e.g. ethanol, bio-diesel and bio-oil), or gases (e.g. biogas, synthesis gas and hydrogen) can be used for a wider range of applications, including transport and high-temperature industrial processes.



WOULD BIO-FUELS CONTRIBUTE TO GLOBAL WARMING?

It is true that bio-fuels produce carbon dioxide, which is a powerful greenhouse gas and the one most often responsible for global warming. However, it is also true that growing plants consumes carbon dioxide. Thus, the equation becomes a simple balancing act. If the plants we grow utilize the same amount of carbon dioxide that we produce, then we will have a net increase of zero and no global warming.

Research has shown that energy must be invested into producing crops and converting them into bio-fuels before any energy is obtained. A 2005 study from Cornell University found that producing ethanol from corn used almost 30% more energy than it produced.

In other words, we can’t produce a perpetual motion machine using bio-fuels because we lose the energy we spend in creating them in the first place.

The other problem that we run into with bio-fuels is that carbon dioxide is not the only greenhouse gas we have to worry about. Other chemicals, like nitrous oxide, are also greenhouse gases and growing plants using fertilizer produces a lot of nitrous oxide. Basically, fertilizer contains nitrogen, which plants need to grow. However, most plants cannot convert molecular nitrogen into the elemental nitrogen they need. For this process, plants rely on bacteria. As it turns out, bacteria not only produce nitrogen that plants can use, they also produce nitrogen products like nitrous oxide, and probably more than was previously thought. The net result is that we may be balancing the CO_2 equation by using bio-fuels, but we are unbalancing the N_2O part of the equation and still causing global warming.

The main liquid bio-fuels:- are ethanol and biodiesel. Both can be produced from a wide range of different feed stocks. The most important producers are Brazil and the United States of America for ethanol and the EU for biodiesel.

- Current technologies for liquid bio-fuels rely on agricultural commodities as feedstock. Ethanol is based on sugar or starchy crops, with sugar cane in Brazil and maize in the United States of America being the most significant in terms of volume. Bio-diesel is produced using a range of different oil crops.
- Large-scale production of bio-fuels implies large land requirements for feedstock production. Liquid bio-fuels can therefore be expected to displace fossil fuels for transport to only a very limited extent.

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- Even though liquid bio-fuels supply only a small share of global energy needs, they still have the potential to have a significant effect on global agriculture and agricultural markets because of the volume of feed stocks and the relative land areas needed for their production.

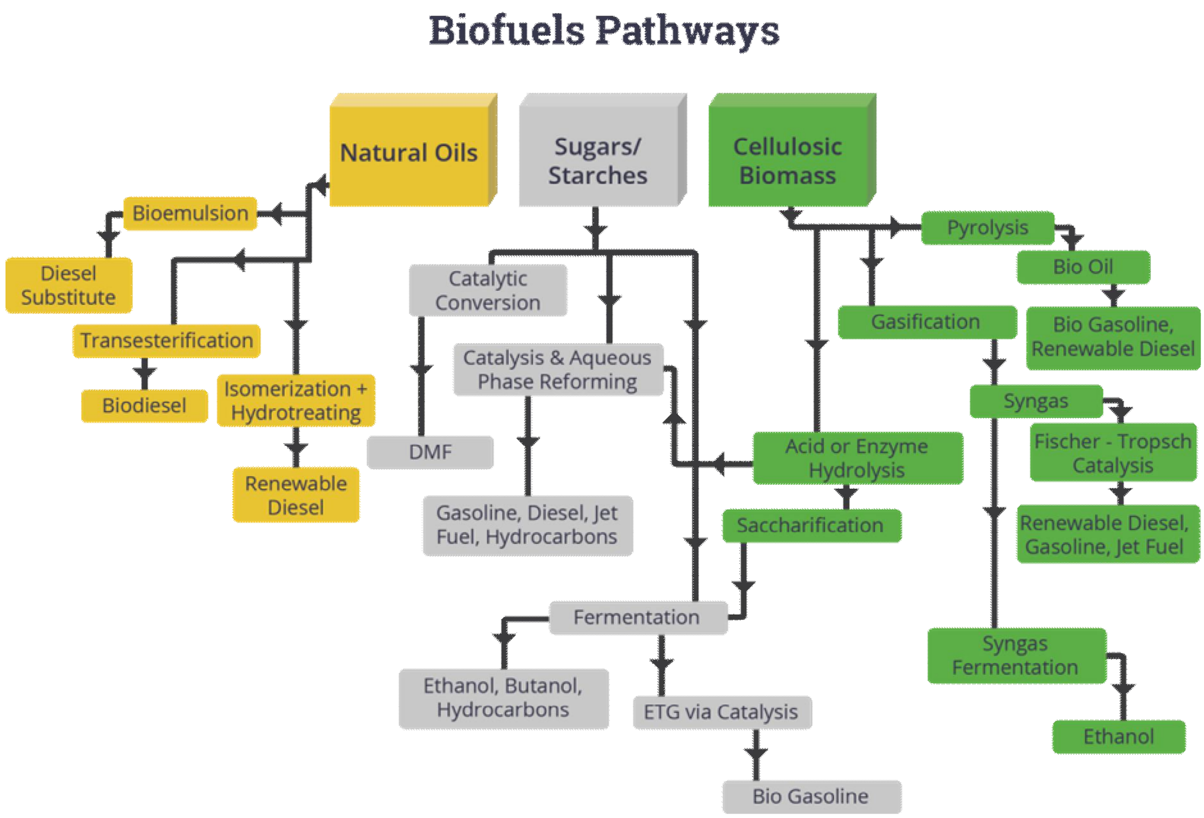
INCREASING DEMANDS OF BIO-FUELS ACROSS THE GLOBE

Demand for bio-fuels is growing on a global scale.

- Moderate projections estimate a 17 percent increase in production between 2013 and 2019, while more optimistic studies predict 31 percent growth.
- While ethanol and biodiesel will continue to meet most demand, second-generation bio-fuels will play a greater role in meeting this increased future demand.
- Compound annual growth for these bio-fuels is projected at 49 percent through 2020, when the market will equal $23.9 billion. Bio-fuels could account for 27 percent of all transportation fuels by 2050.

MAKING OF BIO-FUEL

Bio-fuels can be produced from many different sources through various manufacturing processes. Bio-fuels can be produced from natural oils, starches and sugars, or cellulosic biomass. Production of Bio-fuel can be explained below:



CAREER OPPORTUNITIES IN THE BIO-FUELS INDUSTRY

Jobs in the bio-fuel industry encompass a wide range of professions, and expansion of the bio-fuel industry in any state could lead to significant job growth across multiple professions, including:

- Bio-agriculture farmer
- Agricultural researcher
- Aquaculture specialist
- Chemical plant operator
- Maintenance technician
- Laboratory manager
- Power plant manager
- Quality, safety, and environmental manager

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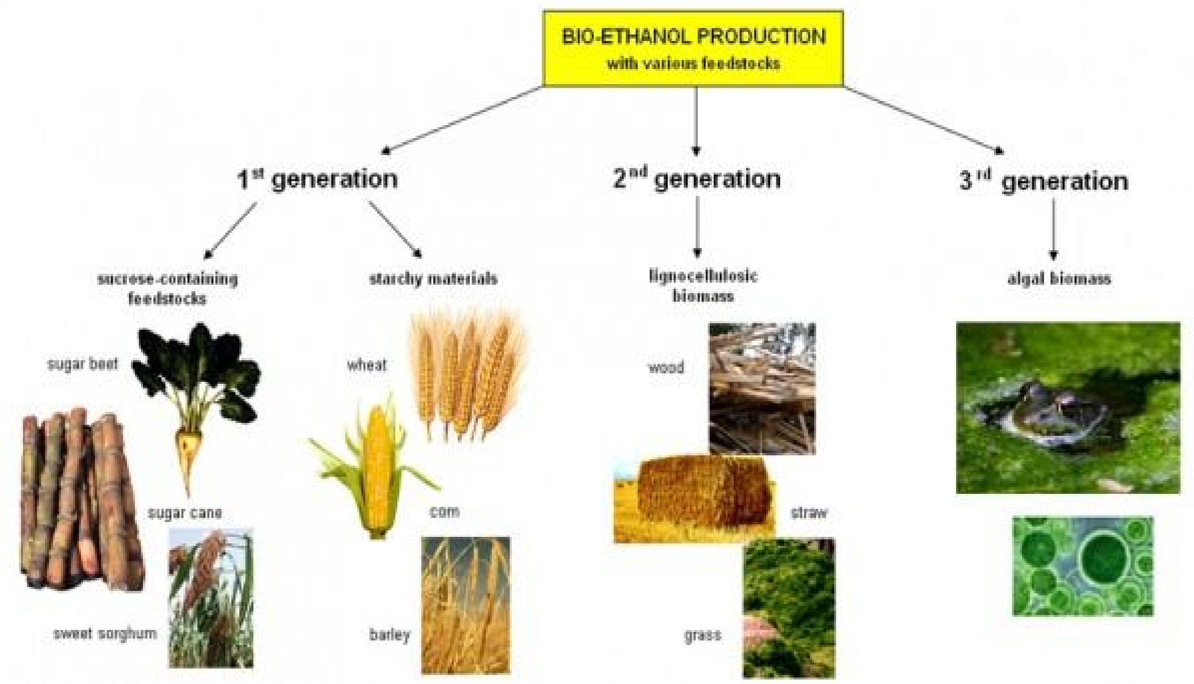
THE PROSPECT OF BIO-FUEL

A decade ago, subsidies for bio-fuel growth and development in many countries (especially the U.S.) were high. However, better understanding of global warming, increased awareness of the fragility of the food supply, and a general trend toward "greener" alternatives have all led to a decline in the popularity of bio-fuels. In 2011, The U.S. Senate voted 73 to 27 to end tax credits and trade protections for corn-based ethanol production. As the second largest producer of ethanol, this is a substantial move that reflects the changing pressures on our energy needs and shifted focus to environmentally friendly energy sources.

CONCLUSION

We will explore bio-fuels in more deepness. In support of now, We should think about that there is no magic bullet when it comes to meet our energy needs. For this, good energy policies should include being sharp-eyed, being patient, avoids knee-jerk reactions or spontaneous actions, and most important relying on good science to direct our decisions. And be careful in each step, so that we can success in bio-fuels production and get healthy environment for our future generation.



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SIGNIFICANCE OF "HERRMANN BRAIN DOMINANCE INSTRUMENT" (HBDI) FOR ORGANIZATIONAL DEVELOPMENT

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ABSTRACT
Thinking preferences have an impact on virtually everything one can do, including communication, how an individual likes to learn, make decisions, solve problems, communicate and manage others. Awareness of one's thinking style preferences will give an individual a new perspective of oneself and the people whom an individual deals every day.

HBDI teaches individuals and teams how to communicate with those who think the same as individual and those who think differently. Once an individual understands his or her thinking style preferences, the door is open to improved team work, leadership, customer relationships, creativity, problem solving and other aspects of personal and interpersonal development.

The HBDI is a tool for organizational development, leadership development, personal growth and innovation. This tool can help organizations to improve individual and team effectiveness, productivity and communication; it also helps to increase creativity and performance. This paper focuses on Ned Herrmann brain dominance theory on Ned Herrmann test, the Herrmann brain dominance instrument, the whole brain business, Herrmann brain dominance instrument ,four quadrants of the brain, HBDI profile ,whole brain thinking.

Keywords: Brain Dominance, creativity, development, psychometric, assessment.

INTRODUCTION
The Herrmann Brain Dominance Instrument is a psychometric assessment that shows in which areas one can prefer to think, and in which areas individuals prefer not to think. HBDI is a system to measure and describe thinking preferences in people, developed by William "Ned" Hermann. Deeply curious about brain hemispheres, Hermann research ways of measuring whether a person has a preference for right-brain or left-brain thinking. It is not just a measurement or a personality test. It empowers participants to understand individual diversity, and enhances a group's thinking, learning and communicating abilities. It will help individuals look into their own success makeup to understand what's stopping them from becoming more effective, productive and socially adept.

Ned Herrmann developed a four-quadrant model of cognitive preferences and a questionnaire called the Herrmann Brain Dominance Instrument (HBDI).The Herrmann Brain Dominance Instrument is based on the idea that one part of the brain is dominant over the others. Herrmann created his HBDI based on his Whole Brain Model Theory. He created his model to illustrate that each person's brain basically has four quadrants when it comes to the process of thinking and learning.

EVALUATION OF HERRMANN BRAIN DOMINANCE INSTRUMENT
HBDI evaluates individual and people's preferences to use certain areas of the brain more than others, we have to keep in mind that our unique thinking style governs the way we interpret information, make decisions, solve problems and communicate with others.

HBDI identifies and measures the strength of preference for each of the four distinct thinking styles. These correspond to the cerebral hemisphere and the limbic system of the brain. HBDI measures not only a person's preference for right-brained or left-brained thinking, but also for rational, practical, cognitive thinking. It identifies the gap individual and people have in emotional, analytical, structural and strategic thinking.

Once we understand ours and our team's thinking preferences we can proactively work solutions around creativity, innovation, communication, conflict resolution, learning styles and work environment.

HBDI helps to transform any organization. It will shift mindsets, inspire people to think in a new way, improve collaboration, improve culture, motivate people to higher levels of performance, generate energy, engagement, enthusiasm and commitment.

Whole brain technology provides a powerful model for
- Understanding yourself and others
- Taking the emotional charge out of differences

- Communicating more effectively
- Making solid decisions increasing team capacity and company success

THE FOUR DIFFERENT MODES

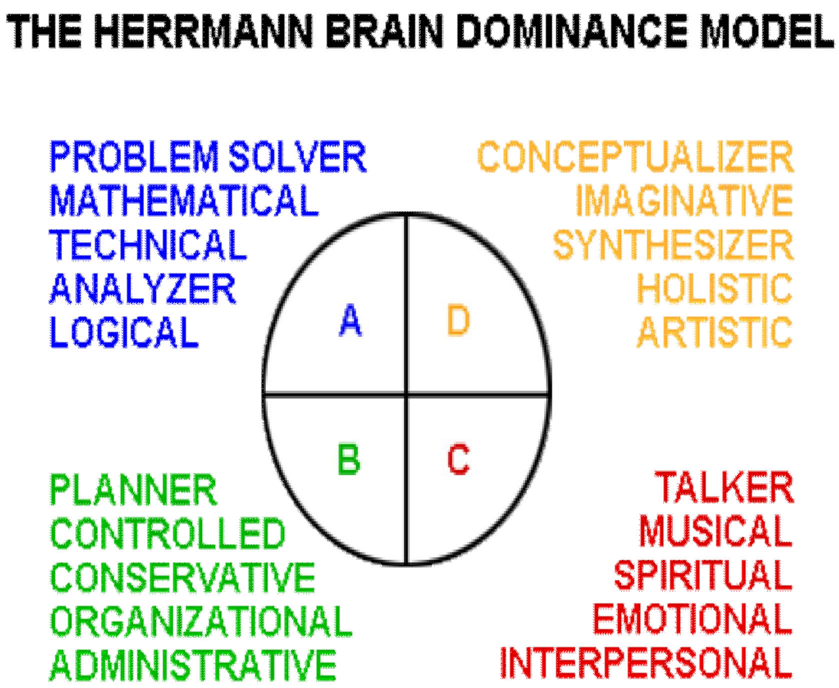
Thinking preferences are measured not only by the four quadrants, but also by four modes combining the mental processes of 2adjoiningquadrants; Left (A+B), Right(C+D), Upper (A+D) and Lower (B+C)

I. **The Upper Mode**, combining quadrants A and D, is more cognitive and intellectual, preferring thinking in abstract, conceptual mode. Compare to the Lower mode.

II. **The Left Mode,** combining the A and B quadrants prefers concise, efficient processes with realistic, disciplined and orderly approaches. Compare to the Right mode.

III. **The Right Mode**, combining the C and D quadrants, includes key mental processes such as intuitive and perceptive thinking, as well as idealistic, expressive and approaches. Compare to the Left mode.

IV. **The Lower Mode,** combining the B and C quadrants is grounded and emotional in nature. This mode often prefers visceral, 'gut' and concrete approaches. Compare to the Upper mode.



PERSONALITY TYPES

Teaching Individuals are dominant in one of these four areas, which is evident by their personality type.

i. Quadrant A: Theorists (analytical)

ii. Quadrant B: Organizers (sequential)

iii. Quadrant C: Humanitarians (interpersonal)

iv. Quadrant D: Innovators (imaginative)

Each quadrant has certain characteristics

i. Quadrant A-Blue:-Logical, technical and financial. In a single word "Fact", or as a profession-Engineer.

ii. Quadrant B-Green:-Organized, detailed, and structured. In a single word "Form", or as a profession-Project Manager.

iii. Quadrant C-Red:-Emotional, sensory, people. In a single word "Feeling" or as a profession-Teacher/Nurse.

iv. Quadrant D-Yellow:-Risk taker, intuitive and the big picture. In a single word "Future" or as a profession-Entrepreneur.

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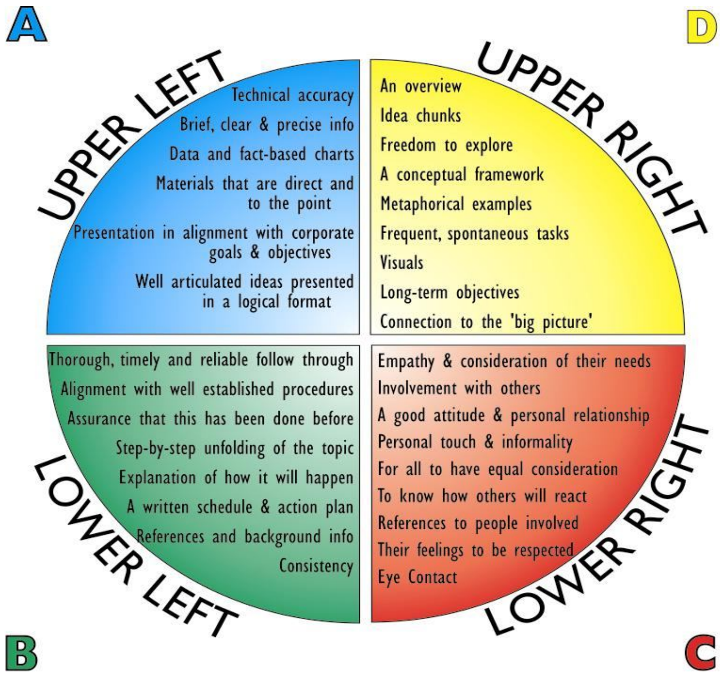

FACTS AND FINDINGS

HBDI is the worldwide standard for measuring thinking preferences and brain dominance. It is not just a measurement or a personality test. It empowers participants to understand individual diversity and enhances group's thinking, learning and communicating abilities. It is also used by world class companies' like-IBM, Coca-Cola, Kraft, Goldman Sachs. The 120 question survey measures preferences rather than skills. Understanding our own behavior is the key to developing ourselves and understanding others. The HBDI assessment tool is not only for business leaders, managers or executives it is also beneficial for ambitious individuals who need to figure out how to shatter limiting beliefs, erase lifelong patterns and achieve peak performance in business, career and life more consistently. Once we understand ourselves and our team's thinking preferences, we can proactively work solutions around creativity, innovation, communication, conflict resolution, learning style and work environment.

Some of the dramatic results Herrmann international clients attribute to Whole Brain Thinking include:

a) 21% increase after tax profits.

b) 13%increase in customers.

c) 50% reduction in attrition.

d) 66% reduction in calls to supervisors.

e) Elimination of costs associated with product breakage.

f) 66% improvement in team effectiveness.

g) 25% reduction in cost.

Focused on Following studies

- Ned Herrmann brain dominance theory
- Ned Herrmann test
- The Herrmann brain dominance instrument
- The whole brain business
- Herrmann brain dominance instrument
- Four quadrants of the brain
- HBDI profile
- Whole brain thinking

CONCLUSION

The HBDI find the points at which your brilliance meets what you are passionate about these can help to identify the unique talents that will help you to both find your element and put you in the zone. The HBDI to become aware of thinking preferences in order to use them better in his/her personal and professional life.

The theory suggests that strengthening your weaker quadrants will improve your overall creative potential. The HBDI is built on Whole Brain Thinking, a holistic and complete model for making all kinds of decisions. The HBDI helps organizations in different ways like:

- Increase leadership effectiveness.
- Increase innovation.
- Fully engage talent
- Improve productivity
- Improve productivity, communication, team work and efficiency

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INNOVATIVE, COST EFFECTIVE, GREEN COMMUNICATION TECHNOLOGY AND LATEST ADVANCEMENT IN ADAPTATION OF 5G

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1. INTRODUCTION

As on evident, Since 1980s, telecom industry has introduced a new generation or G of networks almost after every ten years. Each generation is accompanied by about order of magnitude times improvement in speed and enablement of new applications as compared to the previous generation of networks. This decade will see the introduction of 5G networks and will lead to introduction new application or improvements of existing applications. Though specifications are not fully finalized a draft has been released by ITU (International Telecommunication Union). The proposed speed would be in 20 Gbits/sec as compared to 100 mbits/sec for 4G networks.

However, speed is only one part of the proposed specifications of 5G networks. They would be accompanied by limits on user experienced speeds, so per-user download speed of 100Mbps and upload speed of 50Mbps rather than just the theoretical maximum, lower latency at 4 ms, support for higher device densities at 1 million connected devices per square kilometer, better spectral efficiency at 30bits/Hz downlink and 15 bits/Hz uplink, lower battery consumption and improvement in coverage. All this will improve users' experience including downloading an entire movie in seconds, little latency in gaming, multiple services e.g. knowing weather and location even when talking etc. It will provide a near anytime to anything connectivity making world look like a real Wi Fi zone.

2.0 LITERATURE REVIEW AND EXTENSIVE STUDY

5th G: 5th G, The network will support speed necessary to give employees a fully equipped virtual office almost anywhere is available. Many industrial environments will move from wired to wireless connections, reducing costs and increasing flexibility. Various plants and factories will do away with their own communication networks as 5G would provide suitable bandwidths and low latency. The one key benefit of 5G would be enablement of new technologies. So driverless cars which are data heavy and need to co mmunicate to thousands of cars in vicinity will benefit and could be rolled out on massive scale. Controls systems of drones will improve. Business users in teleconference will be able to get simultaneous language translation. Data intensive technologies e.g Virtual Reality and Augmented Reality will come closer to reality.

5th G will change the face the IoT (Internet of Things) which will connect more than 20 billion devices by 2020 as per Gartner. People will be able to control appliances, temperature, light etc. at home while sitting remotely. They would become aware of package delivery or a stranger standing on the door even when away. Industrial safety will improve as dangerous activities e.g. mining, oil drilling etc. could be remotely controlled. Various devices in the factories would be remote controlled using sensors reducing the need of manpower on the floor. Smart grids which collect data from numerous sources will become more common. Machines to machine communication between many small devices in offices and factories will be enabled and will help improve warehouse management, logistic services, supply chain management, traffic control, fleet management, telemedicine using wearable sensors etc

There are multiple potential use cases that are waiting for 5G rollout. These will have profound effect on the way we live and work. But the like the past once the benefits of 5G become common, demand for the next generation of networks will grow.

LI-FI. (light Fidelity)
Beyond the 5th G technology and the beyond the limitations of 5th G technology a new innovative technology is in its emerging mode i.e. LIFI means Light Fidelity. It is an emerging similar technology to WI-FI. LIFI stands for the internet radiations/services through VLC. It is clean , green, energy efficient and innovative technology. It provide the illuminisation ans the data transmission simultaneously.

LI-FI- Illuminisation + Data Transfer
At the forefront of this connectivity phenomenon popularly known as the 'Internet of Things', is an optical communication technology that's taking the world by storm. Light Fidelity or Li-Fi, is an exciting breakthrough in 5G visual light communication systems and the future of wireless Internet access. With Li-Fi, information hitches a ride along a spectrum of visible light. Light-emitting diode (LED) bulbs, transmit data when they are switched on and off so rapidly in nanoseconds, that the human eye cannot see it.

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TAPPING THE UNUTILIZED SPECTRUM

This data is registered by special equipment, making it possible to provide wireless Internet connectivity at a current experimental speed up to 10 Gbps, which is estimated to be 250 times faster than 'superfast' broadband. The vast availability of LED light bulbs will drive the future ubiquity of connectivity even in places where Wi-Fi fails-on an airplane and in submarines. Picture below shows how the VLC spectrum may be used for the data communication and reception purpose.

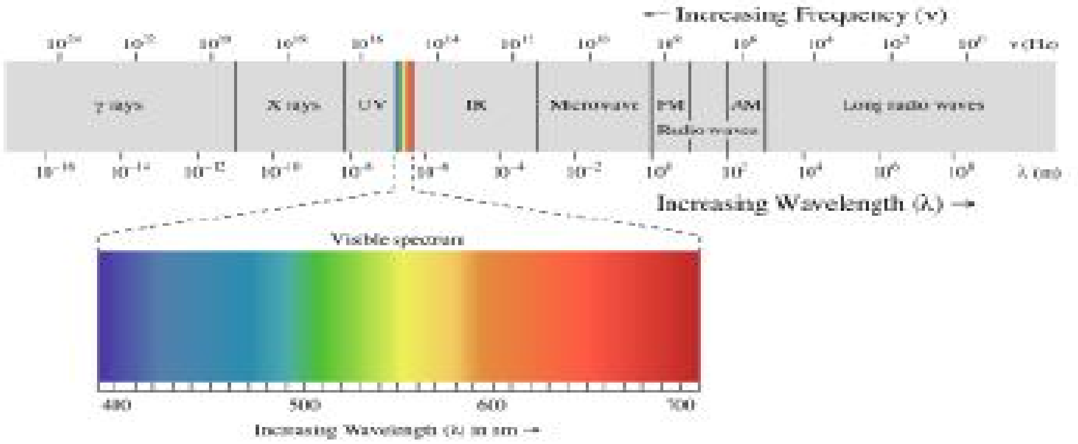

Figure-1: showing VLC spectrum

Another most outstanding advantage of Li-Fi is zero electromagnetic interference, allowing connectivity even in areas where Wi-Fi isn't accepted - hospitals and nuclear plants among others. In addition, Li-Fi offers better data defense as light waves can't pass through walls, making it impossible to hack any internal systems in high-security buildings. As radio waves used by Wi-Fi get more congested and the demand for faster and more efficient wireless communication escalates, the future is bright for Li-Fi as a reliable, affordable and more secure solution.

Harald Haas from the University of Edinburgh, who first demonstrated Li-Fi to the world, envisioned turning light bulbs into super-speed broadband wireless Internet systems. As Li-Fi becomes more commercialized, it will usher in an era of incredible business opportunities, such as allowing telecom service providers to reach out to a wider customer base. We can look forward to broader accessibility with Li-Fi Cloud. Smart phones will soon be able to download traffic information from traffic lights or a program guide from a television. This is the tip of the iceberg. In the future, shops will transmit advertisements to your phone as you pass by and bus schedule changes will be transmitted to a screen at the stop. Smarter home appliances that talk machine-to-machine (M2M) are already being extensively researched, where LED lights on electronics function as Li-Fi access points. In fact, the Li-Fi industry is set to become a $6 billion industry by 2018.How else do you think that Li-Fi will revolutionize the way we connect with man and machines? Leave your comments in the section below.

COMPARATIVE STUDY OF THE VLC AND RF

PROPERTY	VLC	RF	
Bandwidth	Unlimited 400nm-700nm	Regulatory, BW limited	
EMI	NO	High	
Line of sight	YES	No	
Standard	Beginning	Matured	
Hazard	No	Yes	
Mobile to mobile	Visibility(security)	Yes	No
Power consumption	Relatively low	Medium	
Distance	Short	Medium	
Infrared to mobile	Visibility(security)	Yes	No
Infrared	Led illumination	Access point	
Mobility	Limited	Yes	
Coverage	Narrow	Wide	

Table-1: Comparison between Li Fi and RF

3.0 METHODOLOGY OF LI-FI.

The working of Li-Fi is as simple as may be. It is similar to Wi-Fi means Wireless Fidelity ,i.e. Flow of data with the illuninisation/ light and can be demonstrated as under:

3.1 How Does LI-FI Works

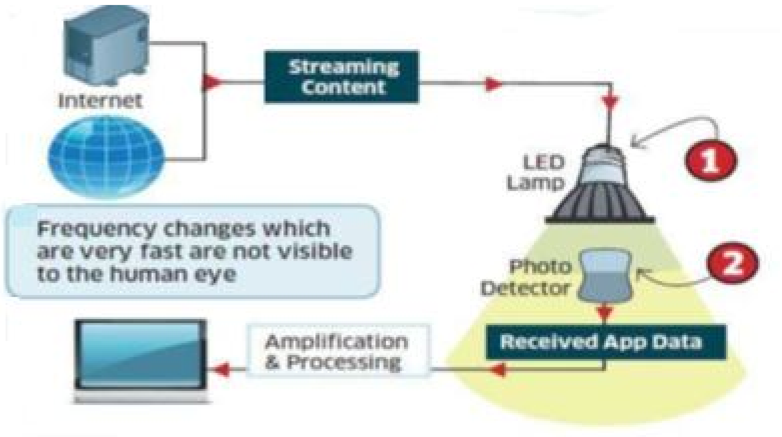

Figure-2: Showing the working LI-FI

Wi-Fi currently offers high data rates. The IEEE 802.11.n in most implementations provides up to 150Mbit/s although practically, very less speed is received

Technology	Connection	Security	Reach	Impact	Cost	Bandwidth Expansion
Wi-Fi	Wireless- EMF	Good	Excellent	unknown	Good	Limited
Hardwired	Cables	Excellent	Fair	None	Good	Limited
Li-Fi	Wireless- Light	Excellent	Excellent	None	Low	Exceptional

Table-2: Comparison of technologies used for connecting to the end user

4.0 APPLICATIONS OF LI FI

Main Important applications of LI FI has been mentioned as.

4.1 Security

In contrast to radio frequency waves used by Wi-Fi, lights cannot penetrate through walls and doors. In a meeting or living room condition, with some prevention on transparent materials, like curtains on window, the access of a Li-Fi channel is constrained in that room.

4.2 Underwater Application

Most remotely underwater operated vehicles (ROVs) use cables to transmit command, but the length of cables then limits the area ROVs can detect. However, as light wave could travel through water, Li-Fi could be implemented on vehicles to receive and send back signals.

4.3. Hospital

Many treatments now involve multiple individuals, Li-Fi system could be a better system to transmit communication about the information of patients. Besides providing a higher speed, light waves also have little effect on medical instruments and human bodies.

4.4 Vehicles

Vehicles could commute with one another via front and back lights to increase road safety. Also, street lamps and traffic signals could also provide information about current road situations.

4.5 Miscellaneous fields

- Can be used in the places where it is difficult to lay the optical fiber like hospitals. In operation theatre VLC can be used for modern medical instruments.
- In traffic signals VLC can be used which will communicate with the LED lights of the cars and accident numbers can be decreased. Thousand and millions of street lamps can be transferred through VLC to transfer data.
- In aircraft VLC can be used for data transmission.

- It can be used in petroleum or chemical plants where other transmission or frequencies could be hazardously-Fi revolution
- The fastest speed previously reported was 3Gbit/s, achieved earlier this year by the Heinrich Hertz Institute in Germany. Chinese researchers also claimed this month to have produced a 150Mbp/s connection, but some experts were doubtful without seeing further proof.

5.0 CONCLUSION

The revolutionary technology lifi may lead the revolution in the communication engineering. The wireless data transfer using LED / LASER enabled sources were done successfully. While transferring an image, the modulation schemes were performed which increased the performance of the received image. The software used MATLAB is enabled with binary switching and ON- OFF keying and it is found to be useful to get a desired result. Amplitude keying is found to be effective if noise cancellation can be done effectively. When tried to retain the data at the receiver using LEDs, it is found that, the distance between source and receiver can be only in the order of centimeters while if we use LASERs it can be extended up to few meters. The distance is an important parameter and it limits the scope of Light Fidelity.

As there should be line of sight condition between transmitter and receiver the work can’t be deployed in every circumstance like wireless fidelity is used. The problem of LOS may be solved by using BTS as in such situation. The security is high when we use light fidelity enabled communication because no one can penetrate or hack the information transmitting in the form of light.

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ROLE OF COMMUNICATION SKILLS IN PERSONALITY DEVELOPMENT

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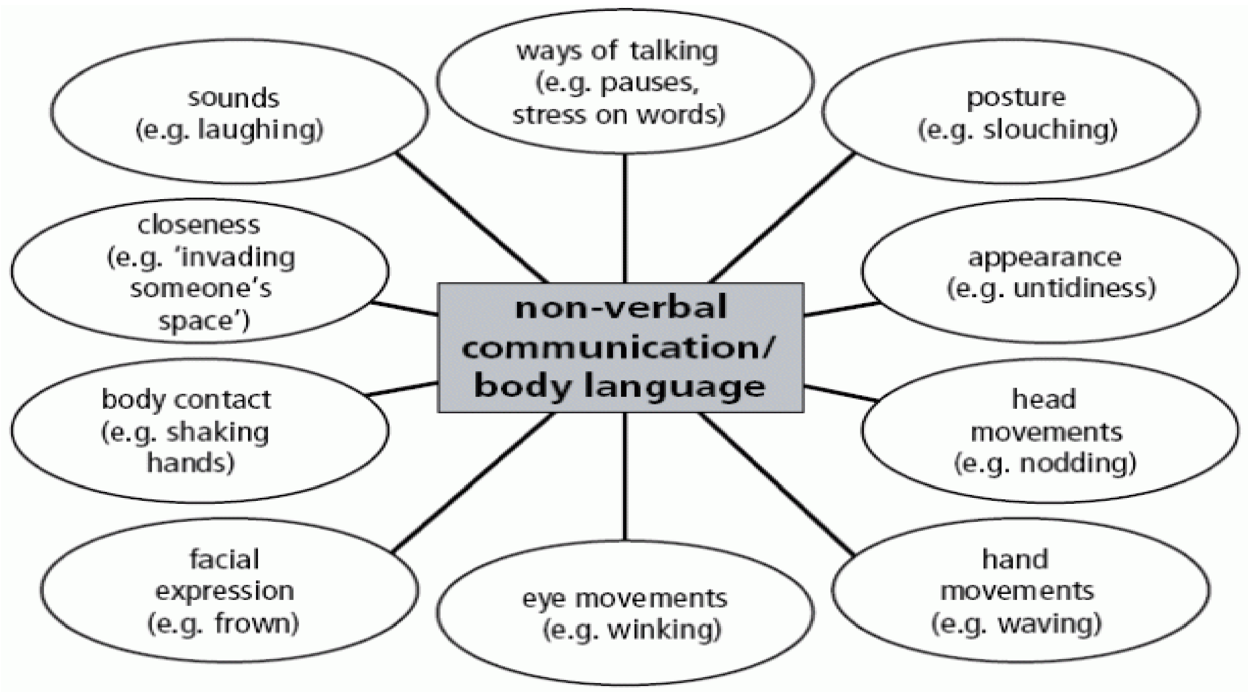
ABSTRACT

Communication skills are an important part of human interaction. Developing effective communication skills can help any individual from the business world to interpersonal relationships. An effective communication skill allows anyone to better understanding of people, situations and where differences need to be resolved, or problem solving is necessary. On the other hand personality refers to an individual's characteristics style, behavior, attitude or how one can represent oneself in front of others. Communication skills play a crucial role in honing one's personality. It helps individuals to express themselves in the most convincing way. So personality means a dynamic concept of describing the growth and development of a person's whole psychological system. People are interacting to outsiders and his interior attitude or state of mind and personality of an individual is always reflecting. So communication skills are a medium that anyone's personality is reflected. It can be said that individuals having excellent communication skills have better relationships , good social status and better opportunities of development and success . This paper needs to probe the need and impact of communication skills in the upliftment of an individual's personality.

Keywords: Communication skills, Personality development, Soft skills, Attitude, Confidence.

INTRODUCTION

Personality development enhances and grooms the outer and inner self of a person in order to bring positive change in a person. Each individual has a distinct personality that can be developed and refined by promoting one's confidence , improving communication and speaking abilities, learning fine etiquettes and manners, adding style and grace to the way one looks , talks and walks and filling oneself to positivity, liveliness and peace. We see that having adequate communication skills are power of an individual. It helps in building harmonious relationships with the people around. It is an art of the winners, successful personalities. It is the biggest property of human beings. Communication skills include verbal and non verbal communication: body language, posture and gesture of an individual.



COMMUNICATION SKILLS

Being able to communicate effectively is the most important of all life skills. Communication is simply the act of transferring information from one place to another. In other words we can say that it is the ability to convey or share ideas, feelings effectively or being able to express your ideas and views clearly, confidently and concisely in speech, tailoring your content and style to the audience and promoting free flowing information.

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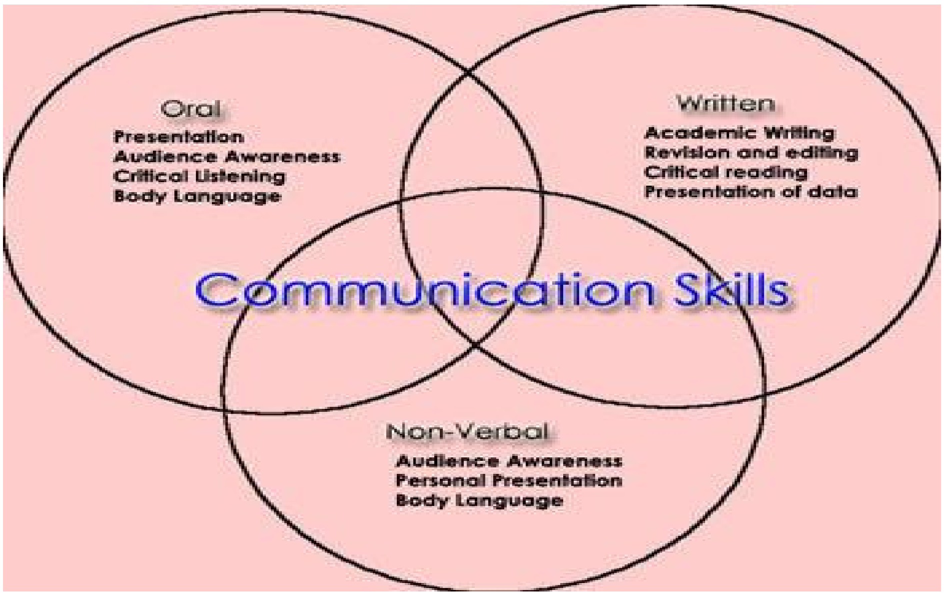
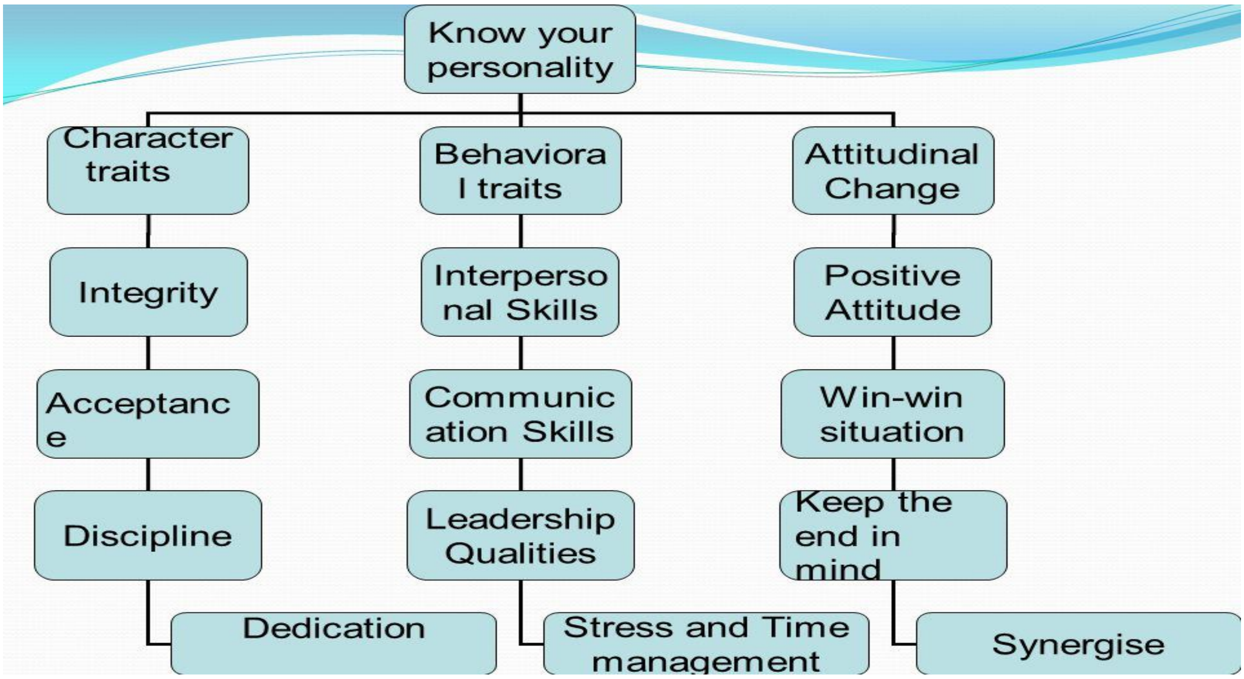


PERSONALITY DEVELOPMENT

Personality development means how to develop your personality or it is developing the personality cult so as to create a strong and positive impression about self. And the most important aspect of personality is to maintain it and prove it in a long run. In practical sense it is an amalgamation of your behavior, attitude and communication skills. An individual's personality is the sum total of decisions they have made throughout their life and the memory of experiences to which these decisions led. There are natural, genetic and some environmental factors that contribute a lot for the development of our personality. In short we can say that "personality is the only thing that colors our values, beliefs and expectations".



SOFT SKILLS

Soft skills are called people skills. It is combination of social skills, communication skills, character traits, attitude, career attributes, social intelligence and emotional intelligence quotients among others that enable people to navigate their environment, work well with others , perform well and achieve their goals with complementing hard skills. In other words soft skills are desirable qualities for certain forms of employment that do not depend on acquired knowledge. It include common sense, the ability to deal with people , and a positive flexible attitude.

ATTITUDE

Attitudes are evaluations people make about objects, ideas, events, or about other people. Attitude can be positive or negative.

COMPONENTS OF ATTITUDE

Three components of attitude is ABC

i. A for affective (emotional reaction)

ii. B for behavioral (behavioral reaction)

iii. C for cognitive (mental reaction)

RELATIONSHIP BETWEEN COMMUNICATION SKILL AND PERSONALITY DEVELOPMENT

Communication is a deliberate or unintentional transfer of knowledge. It is a dynamic process that a person interacts internally or with the external world. Every second of life people are communicating either verbally or nonverbally. It has been assumed that facial language contributes 55%of total communication, 38% of paralinguistic and 7% of spoken language. Now effectiveness of language must not be concentrated only to spoken language only. The accent and beauty you provide in your words and the complementary physical gestures and postures play a great role. So, all the extent and behavior of our communication determines our personality. Personality is the sum of total of ways in which an individual reacts to and with others. In the words of Gordon Allport "personality as the dynamic organization with in the individual of those psychophysical systems that determine his unique adjustment to his environment." Every time people are interacting to outsiders and his interior attitude or state of mind is continuously reflecting. So communication is a medium that anyone's personality is reflected".

Communication really matters for personality development. Anyone who can express his inner feelings and emotions, address real output of what remains inside his brain can develop by himself to get appreciation and motivation from others. Unless people develop or sharpen an effective way of communicating to outsiders or give an excellent exposure there are always lag in their personality development. One's attitude, behavior and personality can be noticed and evaluated by the communication skills one possesses. No one would take us seriously if we do not master the art of expressing ourselves clearly and in most convincing manner.

People with great communication skills tend to have a better and impressive personality than those who have problems in communicating as interacting with others is not a challenge for them. Individuals having effective communication skills can easily converse with other people around be it their colleagues, peers, family and so on.

People get attracted towards those personalities who have efficient communication skills. In any profession communication skills plays a prominent role in marketing, teaching, business world or in the profession of doctors. Good doctors communicate effectively with patients- they identify patient's problems more accurately, and patients are more satisfied with the care they receive.

THE ROLE OF COMMUNICATION SKILLS IN PERSONALITY DEVELOPMENT

- Better communicators have better marriages.
- Highly skilled communicators make more money.
- Good communicators have higher self-esteem.
- They build a successful family unit.
- Effective communication skills aid in development of leadership skills.
- Helps people to become more critical about media.
- The communicating ability to speak gives you the tools to participate in society.
- It brings better opportunities of job and career growth.

CONCLUSION

So it can be concluded that there is a strong relationship between personality development and communication skills. Without adequate communication skills personality cannot be enhanced. The real beauty of an individual personality lies in his effective communication skills. That is why it is necessary to improve our communication skill for the enhancement of personality. Our thoughts, our ideas and our capabilities all reflect in our communication skills.

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RECENT TRENDS IN SOLAR POWER GENERATION

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ABSTRACT
Solar energy is enjoying a polar role in compensating the power as there's short fall during this energy owing to a lot of demand and decline trends of typical supply of energies exhaustion of fuels like coal, petroleum, natural gases Associate in Nursing constant of environmental and environmental condition changes to cope up this electrical phenomenon installation is being exhausted an electrical system to compensate and enhance the energy. Associate in Nursing electrical phenomenon installation in a very electrical system is created from the assembly of assorted electrical phenomenon units that uses solar power to supply the electricity in a cheaper approach from sun power. until currently the utilization and scope of solar power is proscribed and has not reached up to lots the potency of the system is additionally low owing to that the output isn't sufficient as compared to input as in some put in case of solar array it's been ascertained that potency isn't more that twenty seventh. To form it versatile and a lot of helpful for the lots newer trends and innovations can facilitate. These have mentioned during this paper.

Keywords: Solar panels, Efficiency, Nomad, renewable energy resources, distributed generation

I. INTRODUCTION

Now-a-days distributed generation (DG) isn't a replacement construct. While not this rectification of energy crises isn't doable [1]. In most of the countries the power demand is over the power generated. On the opposite hand there's a significant decline within the accessibility of natural resources, fuels, coal and gases etc. The generation of hydro powerhouse additionally varies owing to variation in flow of water from geographical region. Once the capability of hydro powerhouse decreases the facility shortage arises. The alternative energy plant is also put in in such a fashion that these may go in unison for instance once draught is a lot of showering of sun is a lot of. During this approach shortage of power are going to be stipendiary by the energy ruled by the alternative energy plant. Furthermore this installation is to be exhausted such the simplest way that solar array can cowl the rivers or reservoir reducing the evaporation that enhancing the capability of dam. On the opposite hand the solar array covering this space can generate power which is able to the enhance the facility generation of the system. Furthermore by mistreatment some newer technologies this power generated are also integrated with the facility grid to reinforce the capability of grid.

The development and uses of solar power at massive scale isn't solely affordable methodology of energy resources utilization within the future however additionally effective frame to up energy resource crises economically. There’s completely different star resource in numerous space, seasons, and weather then on as a result of such a big amount of influencing factors [2].As this of quite renewable energy is obtainable in abundance in nature. The analysis and application of solar power are going to be accustomed influence energy [3] – [4].The benefits of renewable energy sources area unit huge as they're free from gas emissions from few typical energy Resources which have impact on the world warming.If this generation of solar power expedited strictly will meet the foremost of the energy demand of the globe. Use of Renewable energy can prove as cure-all for resolution the environmental condition and environmental issues as each sector of society is keen to unravel these issues on the health ground issues. Currently, renewable energy sources nstal fifteen p.c to twenty p.c of the world’s total energy demand [5]. The solar power is taken into account because the most promising and vital renewable. it's envisaged that solar power plants would meet all human desires and would eventually replace the standard power plants [6].

II. VARIETIES OF DISTRIBUTED GENERATION

There are a unit differing kinds of distributed generation per the constructional and technical points of see shown in Figure (1) [1].

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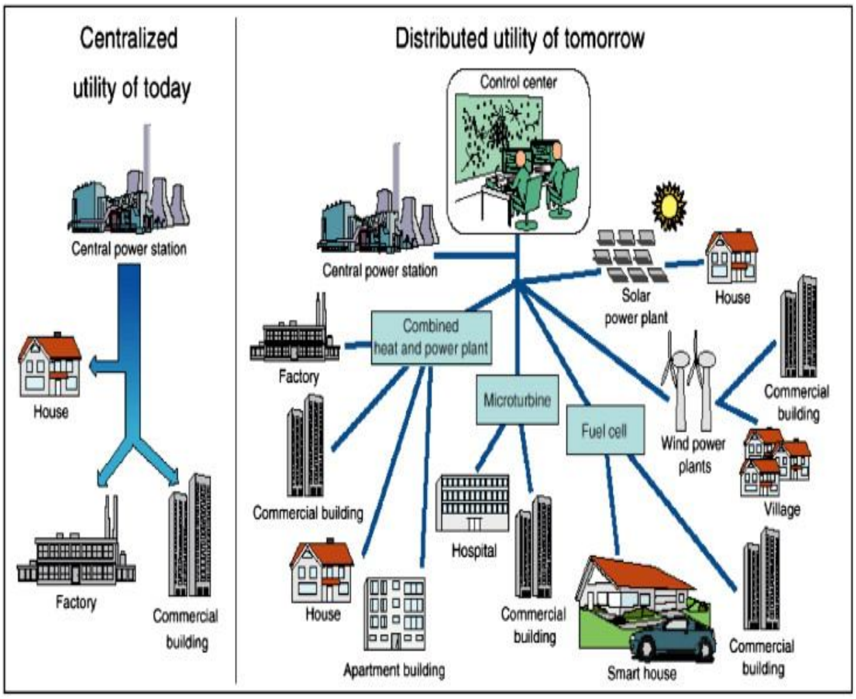


Figure-1: one varieties of Distributed Generation

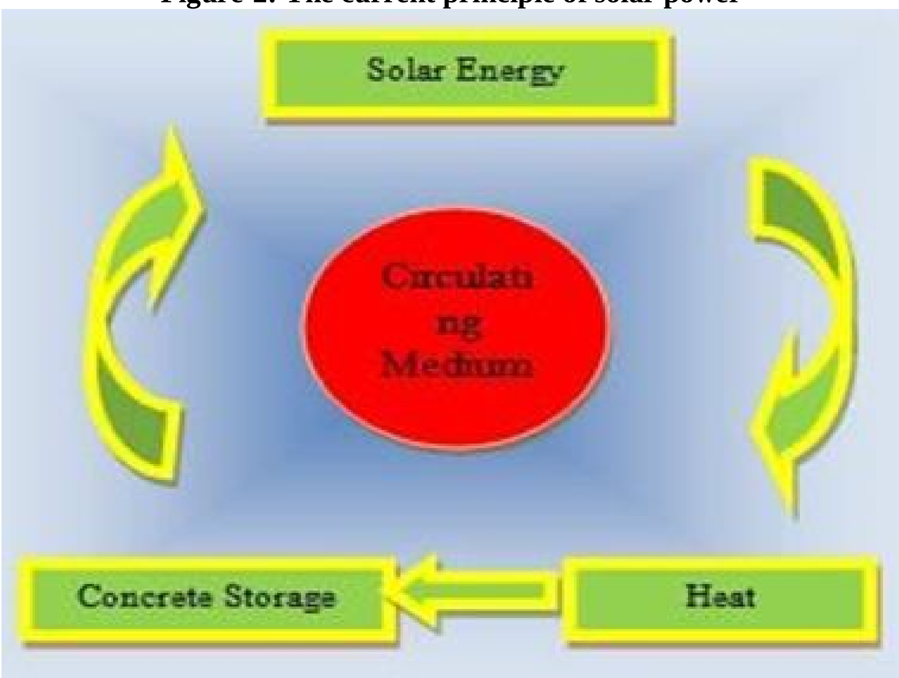
III. THE PRINCIPLE OF ENERGY STORAGE

The circulation medium was heated by synchronous pursuit and non-tracking solar furnace and injected into the warmth money changer that was set in concrete pile with the assistance of circulation pump.When heat exchanging between the warmth money changer and concrete pile, circulation medium was pumped-up to synchronous pursuit solar furnace, thus fashioned circulations. And then, the solar power that was gathered by synchronous pursuit and non-tracking solar furnace was hold on perpetually within the underground concrete energy storage pile [7]. The current principle is shown in Figure (2). The star nstal area unit accustomed generates steam that drives the steam turbines plus generator as per figure (3).

IV. SOLAR POWER POLICIES OF INDIA

The Government of Asian nation has accrued its specialize in developing alternative resources of energies particularly solar power beneath the policies associated with energy development. The solar power is obtainable in abundance and virtually freed from price because it is obtainable from nature. Owing to fast economic growth Asian nation is one amongst the

Figure-2: The current principle of solar power



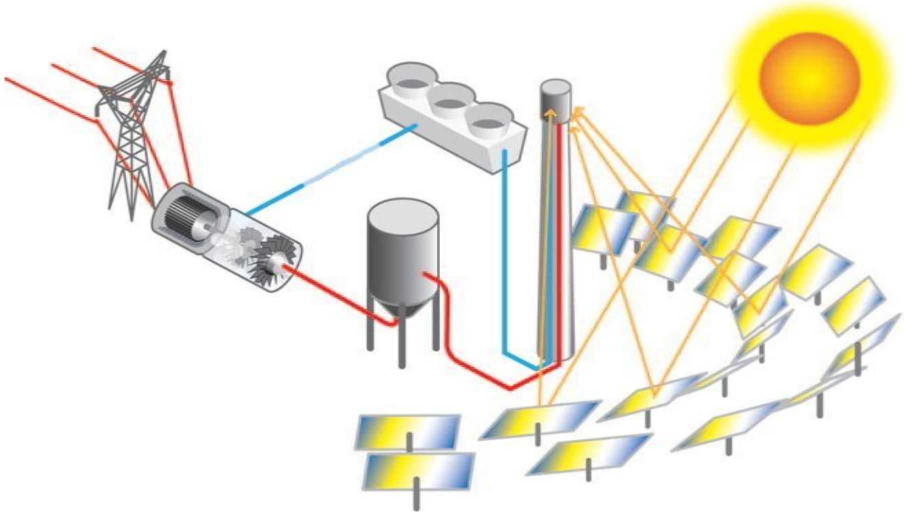


Figure-3: Systems of Power generations from solar power

Most growing markets and expected to be second largest energy contributor in energy market within the world by 2035.Owing to restricted domestic fossil fuels reserve, the Asian nation has sturdy going to expand the renewable energy sources for power sector.

1. To produce the electricity to all or any the areas enclosed the agricultural areas as mandated in section six of electricity act. Each the Central and authorities can put together installed to realize this objective at the earliest. Rural Electrification are going to be in serious trouble securing electricity access to the whole home in rural sector. Most of this demand are going to be consummated by use of renewable energy sources.
2. Reliable rural electrification would be done either through typical or non typical strategies of electricity whichever is a lot of appropriate and economical. Non typical sources of energy particularly star are used even wherever Grid property exists [8].
3. Explicit attention is to run to Dalit Bastis, social group areas and different weaker sections of the society the opposite newer resources.
4. Rural Electricity Corporation of Asian nation (REC) is that the nodal agency at central govt. Level to implement these programs of electrification in rural areas. The REC can nstal all the goals got wind of by the National Common Minimum Programmed making certain timely implementation [9].
5. Responsibility of operation and maintenance recovery may well be discharged through applicable arrangement with Panchayats, native Authorities, BDO, and organization etc [10].
6. This nice task of Rural Electrification needs cooperative efforts of all agencies like Govt. Of India, authorities and community education cell in rural areas.
7. The Electricity act 2003 has provision of restructuring the electricity business that unbundled the vertically integrated electricity provide in every state. currently generation, transmission and distribution firms are fashioned by the regulative Commission of state electricity board. Regulative Commission will specify the minimum share of electricity that every distribution utility should get from renewable energy sources [11].

V. NEWER STRATEGIES WHICH IS ABLE TO ENHANCE THE UTILIZATION OF STAR ENERGIES

Day by day new trends and innovations area unit being developed throughout the globe in R&D centers, automobile sectors and domestic use in establishments, hostels to cut back the energy wastage and to come up with the facility by star devices. Several of them area unit explained given below:

1. Star cells of upper potency are developed having conversion potency over thirty seventh as compared to the previous star cells having potency of twenty seven which handcrafted of 2 materials. Tata power goes to put in the star panels having thirty fifth potency [12]. In These cells 3 exposure absorption layers area unit stacked along. This has been developed by stacking metallic element, metallic element and chemical compound because the bottom layers. These cells have capability of gripping the sunshine from varied wavelengths obtainable in daylight and convert into power. Through optimum method the active space has been accrued. This breakthrough in technology has been done by new energy and industrial technology development organization.

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1. The conversion potency of star panels/plates is accrued by newer devices of cleansing these panels. The device makes use of machine-driven "dry-sweep'' to push mud and dirt removed from the surface of those devices.

   In south Arabian language the device is thought as that is extremely rugged and have low maintenance price. The device is battery-powered by the atomic number 3 particle batteries. These batteries area unit charged by the array itself and have high potency. The device has moving components. it's terribly fascinating that this act sort of a robotic arm and automatic work with planning. The device will jump the obstacle between the panels [13].

2. Throughout the globe analysis and development is completed to acquire a lot of and a lot of energy from varied devices and technologies. Beneath this idea Japan developed that is thought as a electric cell cloth capable of harnessing the energy from daylight whereas you're moving by sporting this fabric created cloth. This cloth is created from wafer skinny star cells plain-woven in a very trendy approach. The electricity generated is going to be capable to charge the mobile and different moveable electronic gadgets. The thread used is going to be stronger and that will increase the life or sturdiness of the material textile. An equivalent plan is embedded/used within the blind manufacturers and bound style of curtain will generate power, once sun reason these. Varied firms developing this kind of cloth in association with electric cell maker. This can facilitate the lads to recharge these tiny gadgets whereas in sun [14].

3. A replacement trend of solar array roofs have are available that most of the buildings the roof is roofed with solar array. In some advanced countries like china the roof of the GHB. Of the homes is created of solar array by mistreatment aluminum or sturdy alloy to support the load of panels. In remote space wherever grid provide isn't viable these panels generate power for themselves and provide electricity to the neighbors additionally World Health Organization cannot afford the value of installation. This can facilitate near lots and community in this region wherever distribution of power isn't possible by different ways that & transmission might not be doable owing to serious expenditure.

4. In some countries in geographical region some amateur of solar power generate power this technique for sufficient for his or her demand and surplus generated power is provided to the grid empowering the national grid. The solar array ought to be put in on the vehicles wherever it's doable so charging of batteries and different devices within the vehicle is also finished the assistance of solar power. Whenever the star rays fall on the panel this can improve the electrical potency of the vehicles. This kind of experimentation and uses area unit already being exhausted Japan and in different advanced countries wherever conversion technologies from star to electrical area unit being employed of times and sufficiently. In Asian nation additionally star panels are put in railroad line railway service.

5. As we tend to area unit tuned in to that power demand is increasing and viewing the environmental condition issues it's desired that renewable energy sources particularly star is also integrated to the utility grid. By mistreatment higher flexibility in integration through power natural philosophy. Harmonics is reduced and also the reactive power is balanced.

6. In lately most of the facility industries switchover aspect by aspect beginning producing of the star inverters of high capability. These are also used to urge nascent power if not continues at remote locations wherever there's no grid provide.

7. CSP systems technology is employed for power generation within the system massive, flat; daylight mirrors called heliostats receive sun lightweight at the highest of the tower. A fluid for warmth transfer is employed to generation the steam that is employed for production of power .In some countries the capability of those plant as high as up to two hundred MW. This power tower area unit very fashionable in lately as a result of star to electrical conversion potency is high [15].

VI. DISTRIBUTED SOLAR POWER GENERATION

In [16] the authors has explained the utilization of Distributed star electrical phenomenon (PV) systems is manufacturing electricity onsite, thus reducing the necessity to make up new line and additionally avoiding line losses. Distributed generation additionally supply important edges to the customers whereas providing resiliency to an electrical grid that's supported the standard and centralized model. These systems area unit utilized in applications starting from tiny business to residential and for industrial use. Though this market remains primarily driven by government incentives, distributed star PV can continue its steady march in future. owing to reduced market activity in Italia and European country, international distributed star electrical phenomenon market contractile slightly in 2012, However, growth within the us, China, Japan, and different countries continued , driven by star PV module worth reductions, the expansion of third-party finance models, and feed-in tariffs. Navigant analysis forecasts that, from 2013 to 2018, 220 GW of distributed star PV are going to be put in worldwide, representing $540.3 billion in revenue.

VII. CONCLUSION

Due to decline aviability of natural's fuels and viewing environmental changes causes owing to typical methodology of generation, the utilization of solar power is changing into well-liked and urgency of the day. This can produce healthy surroundings for the human beings that area unit tormented by the assorted hazards owing to pollution from the installed contents. Furthermore the facility generation owing to hydro powerhouse isn't additionally regular owing to irregular flow of water from the geographical region. thus it's complete that alternative energy plant is also installed in such the simplest way thus these may go in unison with hydro and different strategies of generation to reinforce the clean and inexperienced energy.

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EMERGING TRENDS AND INNOVATIONS OF RESEARCH IN TEACHER EDUCATION: A STUDYOF INDIA

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ABSTRACT

Research Methodologies adopted are mainly descriptive surveys, experimental studies, developmental studies, as well as relational studies. Action research is also conducted by teacher educators to improve classroom practices. Descriptive surveys are used to procure data in teacher education or describe the characteristics of teacher education. Experimental studies are conducted mainly to study the effect of intervention strategies or training programmes. Relational studies try to study relationships between the input and process, process and output, or input, process and output. Developmental studies put forth the historical developments in teacher education in order to explain the status of teacher education at a particular time or changes over a period in one or more sub systems of teacher education. This gives a systemic view of the temporal dimensions of teacher education.

Keywords: Emerging Trends, Innovations, research, and Teacher Education

INTRODUCTION

Educational research is that which develops new knowledge, which is then applied to the improvement of educational practice. Same is true for Teacher Education. The contributions of research to educational knowledge are easy to demonstrate through reviews of related literature. However, it is difficult to determine whether the accumulation of research findings has made an impact on the practice of education. Even when research knowledge attracts the attention of policy makers in education, they generally consider it just one source of information to use it in shaping a particular policy, or use it to justify a unpopular decision, or cut funds, or may dismiss the research findings which are contradictory to their beliefs.

Problems of Teacher Education It is universally acknowledged that education is an effective means for social reconstruction and to a great extent it offers solutions to the problems a society is faced with. These problems may be economic, social, cultural, political, moral, ecological and educational. Since the teachers play a major role in education of children, their own education becomes a matter of vital concern. Various problems in the way of teacher education are following:

- Selection problem
- Short Duration of Teacher Training Programs
- Incompetency of Pupil Teachers
- Teacher Education Program have narrow and
- rigid curriculum
- Superficial Practice teaching
- Problem of supervision of teaching
- Deficient in content of the Teaching Subject’s
- Knowledge
- Methods of Teaching are lacking in innovation
- Segregation of Teacher Education Department
- Poor Academic Background of Student-Teachers
- Deficient in facilities for pupil-teacher
- Lack of Regulations in Demand and Supply
- Lack of facilities for Professional Development
- Insufficient financial grants
- Narrow Scope of Teacher Education
- Lack of Culture-Specific Pedagogy

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Teacher education must, therefore, create necessary awareness among teachers about their new roles and responsibilities. Education of teachers needs to strengthen and stress upon the main attributes of a profession, such as, the systematic theory, rigorous training over a specified duration, authority, community sanction, ethical code and culture, generating knowledge through research and specialization. It is acknowledged that formal professional training on continuous basis is necessary for becoming a good teacher as it caters to the development of one's personality and sharpening of communication skills and commitment to a code of conduct. Emerging Trends and Innovations Innovation is usually understood as the introduction of something new and useful, like introducing new methods, techniques, or practices or new or altered products and services. Schools or teacher education institutions can carry out innovations or experimentation on any aspect of their work related to teaching-learning, training or management of schools in order to improve efficiency of the institution to overcome problems and difficulties, they face in day to day functioning. The present structure of teacher education is supported by a network of national, provincial and district level resource institutions working together to enhance the quality and effectiveness of teacher preparation programs at the pre-service level and also through in- service programs for serving teachers throughout the country. Teacher education is now becoming more ye to the emerging demands from the school system. Because the changing educational needs of the student and advancement in technology has widen the area of responsibilities of the teacher. Now teacher has to perform various role like encouraging, Supporting and facilitating in teaching-learning situations which enables learners (students) to discover their talents, to realize their physical and intellectual potentialities to the fullest, to develop character and desirable social and human values to function as responsible citizens.

WHY SHOULD TEACHER (EDUCATORS) RESEARCH?

High quality teaching is a widely acknowledged and the most important school-level factor influencing student achievement. This in turn focuses our attention on the importance of TE - TE from initial training and induction for beginning teachers, to on-going professional development and in-service education.

PROBLEMS OF RESEARCH IN TEACHER EDUCATION

There has not been much headway in research since the researchers face a number of problems. More research is needed in the area of teacher education and there needs to be qualitative improvement too. Problems of research are both intrinsic and extrinsic to the researcher.

Following are some of the glaring problems of research in teacher education.

Lack of Qualified Personnel: Researchers lack the minimum abilities, skills, Acquiring these is a deliberate process. It is important that besides acquiring the qualifications researchers gain knowledge of the theory of teacher education, skills of scientific inquiry, ability to analyze and interpret data and make rational judgments.

Lack of Motivation: This happens when researcher has no qualification and no inclination to do research. The system fails to encourage them and utilize their abilities. There are no proper incentives to do research.

Lack of Resources and Facilities: Many a times there is lack of several adjunct conditions influencing undertaking of research.For example unavailability of expert advice for proper planning, or statistical procedures for analyzing the data, or proper reporting of findings. Lack of material facilities such as hardware, stationary can also cause hindrances.

Problems of Finance: There is less research done due to lack of finance. Fund agencies such as UGC, NCERT and ICSSR at times fail to provide funds.

Arbitrariness: Arbitrariness in research means lack of meaningful relation among studies. Any research should be based on previous research for its assumptions, hypotheses and theoretical background. Only then will there be hierarchical growth in the discipline. Therefore it is important to establish proper linkage among studies to develop a coherent understanding of the phenomenon after a certain number of studies. This avoids duplication in research and enhances the possibility that all aspects and variables involved are attended to properly. Prediction becomes difficult and it becomes difficult to establish as to the direction in which research in teacher education is going. Instead of paradigmatic set of hypotheses getting tested, individual hypotheses are tested. As a result the growth of knowledge is slow or zero. Thus it is important to have long term plans for research.

Lack of Consensus: There are as many views and priorities in education as there are researchers involved in it. Concurrence of views in a point of time will help researchers to work within common theoretical purpose.

Lack of Coverage: Lack of attention to some of the areas of teacher education or differential attention form researchers to some areas of research comes in the way of covering a large number of areas needing attention. At some period of time certain areas come into prominence. As a result many researches get done in the area, while other areas get receded. For example there are many studies on test construction or on teacher behaviour, or only on micro-teaching. What is required is thematic research for balanced and uniform progress.

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EDUCATORS REQUIRE RESEARCH TO COPE WITH THE CHANGE

As I alluded in the beginning, Society is changing fast. Teacher education and its practitioners are going to change. May be education is following the societal changes, and hence, education is changing somewhat in content of education, design of education. Unfortunately, TE change even less. We have to change fast. That is why I say Go ahead or chase, or cherish or perish.

RESEARCH AS A REQUIREMENT OF DEMOCRATIZING EDUCATION

We have to do research as the nation wants us to do so. There is democratic angle to the research in education. As public personnel we are duty bound to serve the nation to meet the constitutional requirements. Our Education is centralized. Our education is Rigid and our education is scripted. It is often scripted by persons and professionals who are much distant from the field and practice of education in schools and colleges. Who will solve problems of quality and those emerging out of daily practice? Individual teachers need to tackle the problem in classroom. Because, problems will be solved only where they exist. Individual teachers doing research to solve their practical problems are a requirement of democratizing the education system of this nation. Who suffers most from low quality teaching? It is deprived children-Who shall the low quality of education and schooling affect most? Teaching and Teachers matter most especially for deprived students.

RESEARCH IMPROVES EFFICIENCY

Research informs us on how to set environments. Research informs us on specific instructional practices. The quality of understanding among our teachers and teacher educators of the concepts strategies and practices that were tried to improve the learning systems is very little. This though it seems an over-statement, is an unhappy reality. Why did the models of teaching fail? Why did the blooms‟ taxonomy fail? Because we don't know them, we have not studied them enough to adopt them, adapt them and evolve them.

RESEARCH NEEDED ON IMMEDIATE PROBLEMS

Teacher educators are most reflexively focusing their attention on secondary schooling. Who will inform primary sector. What are the special problems of teaching learning Malayalam? Who will research and find solutions to these problems other than teachers and teacher educators in Kerala? Don't we have our on issues of teaching Malayalam than we have specific problems of our own on the teaching of ESL? Then, why we research more on teaching ESL than we research teaching of Malayalam. Is Secondary education more important than primary education for human development? What is our immediate goal? Then why we have more research on secondary education than primary? Problems abound in schools. We must research because we have problem aplenty in our schools. CCE, FA and the like are in place. How shall we evaluate co scholastic areas? - Personality, punctuality, industriousness, courtesy. For that matter how shall we judge a project, seminar, drawing, handwriting?

RESEARCH NEEDED ON WHAT WE TAKE FOR GRANTED IN TE

Why should we have separate methods of teaching Hindi, Sanskrit, and Arabic and Urdu, or English? Why methodology of teaching these languages is considered specialization? Are there differences in methods and techniques employed in teaching these languages? Or do they differ only in content, vocabulary and a little in grammar; in content teaching; don't we have far big difference between methodology of teaching geography and methodology of teaching history, than the differences between methodology of teaching physical sciences and that of social sciences? How much of teaching practice we need to have? At what interval? Does teaching practice add to students teaching competence? To what extent? Yes, we will say that it is policy. Should research and education not inform policy? Did we show the way for the policy? If teachers and teacher educators and other educational practitioners don‟t convey the policy makers on important issues in education, who else will do? If every teacher and teacher educator of us feel that I am not responsible, who else are responsible?

RESEARCH IN EDUCATION IS REFLECTIVE LEARNING FROM TEACHING

We have to research because we are not really learning. The other day one of my students came to my cabin and raised a simple question. Sir, will you please tell me some recent books (he meant original works) that discourse on educational philosophy in India? I was perplexed. Sure he did simplify the question, Sir at least tell me some Malayalam books which reflects on education. Then, haven't we lakes of educational practitioners? Why is it that at least some of them sit down and pen what they have learned from decades of educational career? Is it that they did not have any experience to share? Or is it that we have not learned anything from experience? Is it that we haven't time to reflect on and integrate the simple principles.

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IMPORTANCE OF RESEARCH IN TEACHER EDUCATION

Teacher education is an important field for research since the quality of teacher education has been regularly questioned. At the same time as teacher quality is increasing being identified as crucial to educational outcomes and pupil gains. Consequently teacher education researcher need to work together in order to

- Share emerging research findings.
- Develop innovative research methodologies within teacher education.
- Disseminate innovative pedagogical methods within teacher education.
- Find new publishing outlets within an overcrowded academic field.
- Support colleagues in institutions with under developed research profiles.
- Develop important emerging themes to give teacher education research a distinctive positive.

CONCLUSION

Examination of case studies and literature from around the world lead to four broad success factors for successful implementation of new approaches to initial teacher education.

1. **A clear vision of effective teaching** that informs the entire program, provides a basis for prioritization and resource allocation, and ensures all those involved in supporting preserves teachers present a coherent message.
2. **Integrating theory and practice** so that professional experience in schools is central to the program, and graduates leave with a full toolkit of effective teaching strategies and the capacity to continually review and improve their approaches.
3. **Highly skilled and well supported supervising teachers** who are accomplished adult educators as well as expert teachers, equipped to play the pivotal role they are assigned in these programs.
4. **Sustainable, scalable partnerships** that bring the resources and capabilities of all parties to the table, and engage systems to ensure the benefits of successful approaches are spread widely.

The current policy focus on initial teacher education presents a major opportunity to significantly improve this critical component of a high quality education system. Examination of existing effective practices can provide a strong foundation for further reform. Since the teacher is the pivot of the entire educational system and is the main catalytic agent for introducing desirable changes in the teaching learning process, all attempts need be made for motivating teachers to become innovative and creative. It goes without saying that a self motivated and really industrious teacher can utilize his own resources to keep himself abreast of new knowledge and skills. It has been recognized that teacher education program should be structured and modified in a way that enables them to respond dynamically to the new problems and challenges in the field of education, then only teacher can help in national development.

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AN APPRAISAL OF THE FINANCIAL PERFORMANCE OF THE KRISHNA DISTRICT CO-OPERATIVE CENTRAL BANK – A CAMEL ANALYSIS

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ABSTRACT

The main objective of the study is to examine the financial performance of Krishna district central cooperative bank. This study only on secondary data, this is collected from Krishna District Central Co-operative bank, Machilipatnam from 2010-2011 to 2014-2015. For this reason, CAMEL Rating Analysis approach has been conducted and it is found that 2010-2011, 2014-2015 years Banks are in strong financial position on their composite rating system. They are basically not good sound in every respect i.e., sound in capital adequacy, asset quality, management quality, earning capacity and liquidity conditions. The Capital to Risk Weighted Assets Ratio of the study growth rate of risk weighted assets of KDCCB had got declined considerably during the given period from 2010-2011 i.e., 6.88% and 2014-2015 is 6.52%. This decline in the value of risk weighted assets indicates that the KDCCB has not solvency position. And also found that NPAs to Net Advances Ratio is 4.24% in 2010-11, 0.76% in 2014-15, which appreciably declined to below 0.76% by 2014-15.

Profit per Employee of the KDCCB increased from 2010-2011 to 2014-2015 i.e., 1.89 Lakhs, 2.24 Lakhs. It means this bank profitability position is good.

Finally, it is concluded that the financial position of the KDCCB is satisfactory.

Keywords: KDCCB, CAMEL Rating

I .INTRODUCTION

Banking sector plays vital for economic growth and industrialization via channelling funds, providing a proficient financial system, sociable investor's treatment, and optimal utilization of resources. The Banking sector in any economy is performing the huge role in these regards. Banking sector plays a significant role in providing funds to farmers, industries and contributing towards economic and financial growth and stability. To measure the performance, the researcher selected randomly and chooses CAMEL Rating Analysis system. CAMEL stands for:

Alphabet	Stands for
C	Judgment of Capital Adequacy
A	Judgment of Asset Quality
M	Judgment of Efficiency and Quality of Mgt
E	Judgment of the Volume and Level of Earnings
L	Judgment of Strength and Level of Liquidity

Piyu (1992)[1] examine that the "Currently, financial ratios are often used to measuring the overall financial soundness of a bank and the quality of its management. Bank regulators, for example, use financial ratios to help evaluate a bank's performance as part of the CAMEL system". The evaluation factors are as follows:

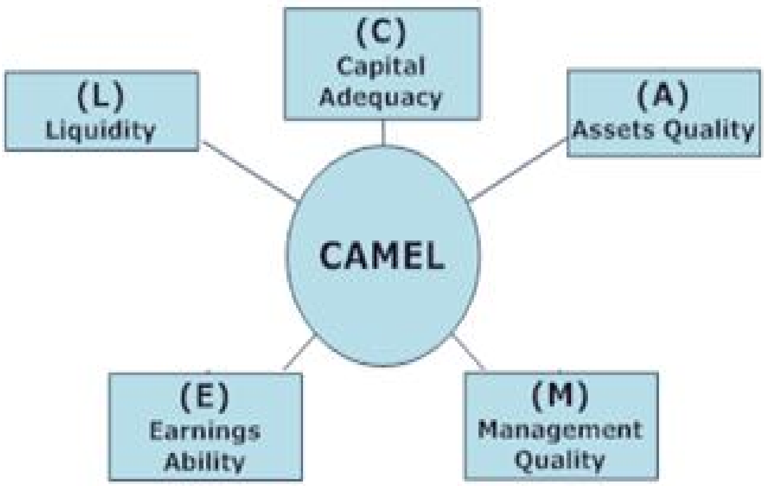

Figure-1: Meaning of CAMEL, Source: Piyu, 1992

COMPONENTS OF CAMEL RATING SYSTEM

Capital Adequacy

The term capital adequacy is an important factor to help the bank in understanding the shock attractive capability during risk. In this study, capital adequacy is measured by using the equity to total assets ratio (Vong & Chan, 2009) [2]. That means capital adequacy enables a bank to meet any financial unpredicted, condition due to financial risk, credit risk, market risk, interest rate risk. Capital adequacy saves the interest of depositors of a bank.

Asset Quality Ratios

The dimension of asset quality is an important factor to help the bank grasp the risk on the exposure of the debtors. In this paper, this parameter is measured by the provision for loan loss reserve to total asset ratio (Merchant, 2012) [3]. This ratio assures to cover the bad and doubtful loans of the bank. This parameter will benefit the bank in understanding a number of funds that have been reserved by the banks in the event of bad investments.

Management Quality

Management quality shows the management soundness of a bank. The management acts as the protection to operate the bank in a smooth and decent manner and is called excellence management or skilful management, whenever it controls its cost and increases productivity, ultimately receive higher profits. Here, this parameter is measured by the total cost to total income ratio.

Earnings Quality

Another important parameter to measure the financial performance of an organization is Earing. It mainly calculates the profitability and productivity of the bank, describes the growth and sustainability of future earnings capacity. In the same way, bank depends on its earning to execute, the activities like funding dividends, maintaining adequate capital levels, giving chance for investment in the bank to grow, strategies for engaging in new activities and maintaining the competitive outlook. Here two ratios are used to determining the profitability of banks i.e., return on asset and return on equity.

Liquidity Performance

Liquidity ratio in a bank evaluates the ability to pay its current obligations (Hazzi & Kilani, 2013)[4]. For having sound banking operations it needs to have liquidity solvency. If any bank faces a liquidity crisis, the bank can't meet up its short-term obligations. Liquidity crisis seems to be a curse to the image of banks. So it is a prime concern to banks. Cash and investments are the most liquid assets of a bank. An adequate liquidity position means a situation, where the institution can obtain sufficient funds, either by rising liabilities or by converting its assets quickly at a reasonable cost. Here liquidity performance is measured by net investment to total asset ratio. This ratio can be defined as the amounts of assets have been engaged in investment.

2. NEED FOR THE STUDY

In this day and age of uncertainty, individuals have become conscious about their sparring and interest in the most secure way. They are likewise in look for an establishment from where if there should arise an occurrence of need they can get simple and shabby credit, which is close to their home and where they can be dealt with as a relative. The co-operative banking part is the special case where individuals can discover every one of these qualities and get great profit for their venture also. Co-operative banks assume an essential part in giving banking services to a common man in their general vicinity of co-operation. A little contributor or a little borrower feels comfortable in managing the neighbourhood staff of co –operative bank than to the staff of nationalized banks and private area banks. Because of specific changes in the banking division and new economic strategies, the co-operative parts experienced an emergency. In the meantime, the disappointment of some great Schedule Banks and Urban Banks has additionally pulled in the consideration of the general population and brought up the issue of security of their assets. So need to the find genuine financial steadiness of the CBs and guarantee investors about the operational and in addition financial productivity of the CBs has been felt. A particular element of the CBs as compared to different banks have spurred the specialist to embrace inquire about on the financial position of the CBs. Actually that no examination has been undertaken in connection to financial parts of Co-operative Banks which are working in Krishna District Cooperative Bank, Krishna District, Andhra Pradesh. Along these lines, the specialist has undertaken the exploration concentrate entitled, An Appraisal of the financial execution of area cooperative national banks in Andhra Pradesh (a contextual investigation of Krishna region cooperative national bank)

3. REVIEW OF LITERATURE

Dr. Gurcharan Singh and Sukhmani (2011)[5] they studied on "An Analytical Study of Productivity and Profitability of District Central Cooperative Banks in Punjab "focused on evaluating the performance of cooperative banks in the state of Punjab. Six District Central Cooperation Bank (DCCBs) from the state of Punjab has been selected for the study. Their productivity and profitability have been studied for a period of nine years (1999-2000). It is found that profitability in all selected DCCBs of Punjab had shown a negative trend whereas the productivity improved significantly over the period of study.

Barr et al. (2002)[6] viewed that "CAMEL rating has become a concise and indispensable tool for examiners and regulators". This rating ensures a bank's healthy condition by reviewing different aspects of a bank based on a variety of information sources such as a financial statement, funding sources, macroeconomic data, budget and cash flow. **Said & Saucier (2003)**[7] examined the liquidity, solvency, and efficiency of Japanese Banks using CAMEL rating methodology, for a representative sample of Japanese banks for the period 1993-1999, they evaluated capital adequacy, assets and management quality, earnings ability and liquidity position.

Verma (2003)[8] had studied the performance of the public sector banks based on CAMEL Model to judge its financial and operational conditions. However, the study composite ratings are based on careful evaluation of an institution's operational, financial and compliance performance.

Gupta & Siabal (2007)[9] used CAMEL Model for evaluating banking sector in India. The study concluded that Indian banks are strongly considered to have the quality of assets and capital adequacy.

Najjar (2008)[10] analysed the Bank of Palestine and Jordan Ahli Bank. The main objectives of this study were to investigate into the performance of Jordan Ahli Bank and Palestine, and used the CAMEL analysis to ensure equitable distribution to shareholders depends on fundamental analysis.

4. OBJECTIVES OF THE STUDY

- To examine the trends in the financial status, growth and overall performance of KDCCBs in Andhra Pradesh.
- To appraise the financial performance of Krishna district co-operative bank (KDCCB) with the selected indicators.

4. RESEARCH METHODOLOGY

This study purely on secondary data.This data was collected from Krishna district central co-operative bank, machilipatnam from 2011-2015. In this study appropriate statistical and CAMEL analysis for measure the financial performance of KDCCB.

4.1 Study Period

The period of the study pertaining to three years i.e., 2010-2011 to 2014to 2015) has been selected for evaluating the financial performance of KDCCB Machilipatnam.

4.2 Data Analysis Tools

To measure the financial performance of KDCCB, CAMEL analysis is used, which is a standard analysis for measuring the performance of financial institutions and the latest tool nowadays. CAMEL test consists of Capital Adequacy, Asset Quality, Management Quality, Earning Ability and Liquidity. To achieve the desired results, the researcher would like to utilize six ratios that define their respective parameters of CAMEL. These are mentioned in the following:

CAMEL Parameters	Ratios
Capital Adequacy	Capital to Risk Weighted Assets Ratio
Asset Quality	Non Performing Assets (NPAs) to Net Advances
Management Quality	Profit per Employee
Earning Performance	Return on Assets Ratio
Liquidity	Cash to Total Assets Ratio

Source: Merchant, (2012)[11]

5. DATA ANALYSIS & RESULTS

5.1 Capital Adequacy Ratios

Capital adequacy has emerged as one of the major indicators of the financial health of a banking entity. It is measured as a ratio of bank's own capital (new equity, retained earnings, etc.) to it risk-weighted assets (loans, investments in stock markets, guarantees, etc). Well adherence to capital adequacy regime does play a vital role in minimizing the cascading effects of banking and financial sector crises.

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5.1.1 Capital to Risk Weighted Assets Ratio (CRAR) of the KDCCB

Capital adequacy is an indicator of the financial health of the banking system. It explains the relation between net capital funds and risk weighted assets. If the ratio is high, it is good for the organization. In table 5.2 the ratio is calculated and examined for the data pertaining to the KDCCB for the study period. It is calculated by using following formula.

CRAR= (Net Capital Funds/Risk Weighted Assets) ×100

Net Capital Funds= (Paid up Capital+ Reserves+ Profit& Loss A/C (Cr)) - (Accumulated Losses +Short Fall in Provisions)

Risk Weighted Assets=Current Assets+ Investments+ Loans and Advances.

As is shown in the table 5.1, the growth rate of net capital funds of the KDCCB had achieved steady increase during the years 2010-11 to 2014-15. It had increased by 8.59% in 2010-11 and further by 7.79 % in 2014-15, which is not a progressive sign. The growth rate of risk weighted assets of KDCCB had got declined considerably during the given period. This decline in the value of risk weighted assets indicates that the KDCCB has got good solvency position.

As per the prudential norms, the banks being operated in India are required to achieve 9% CRAR. The table shows that the KDCCB has well not exceeded the stipulated level. Similarly, the CRAR was6.68 % in 2010-11 which had gone up and touched 6.52% mark in 2014-15. All this explains the weakness of KDCCB in terms of sound capital base and its adequacy.

Table-5.1: CRAR Position of the GDCCB
(in Lakhs)

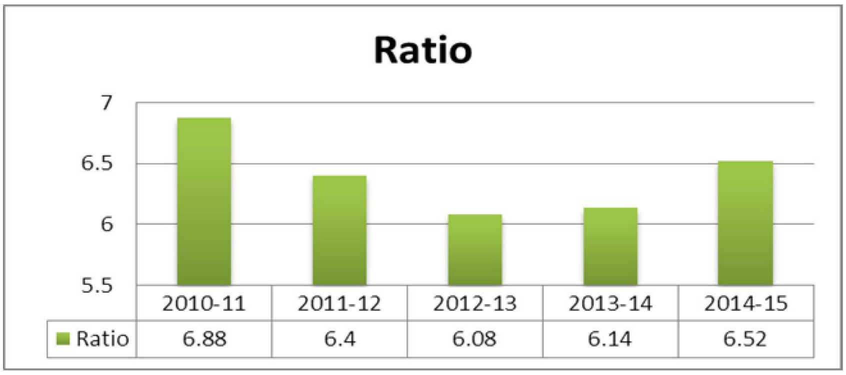
Sl. No	Year	Net Capital Funds	Risk Weighted Assets	Ratio (in %)
1	2010-11	8,765	1,27,329	6.88
2	2011-12	9,518 (8.59)	1,48,741 (16.82)	6.40
3	2012-13	10,326 (8.49)	1,69,738 (14.12)	6.08
4	2013-14	12,249 (10.62)	1,99,428 (17.49)	6.14
5	2014-15	13,203 (7.79)	2,02,633 (1.61)	6.52

Source: Audit Reports of the KDCCB

Note: Due to non-availability of previous data, the value of capital Adequacy ratios of the years 2010-11 and 2014-15 are given in the table.

Note: Figures in brackets show the Annual Growth Rates

Chart-5.1: CRAR Position of the KDCCB



5.2 Asset Quality Ratios

Asset quality signifies the degree of financial strength of and risks in a bank's assets, mainly loans and investments. The maintenance of asset quality is a fundamental feature of banking. A broad evaluation of asset quality is one of the most important components in assessing the current situation and future viability of a bank.

Under CAMEL Model of analysis, the asset quality ratios command significant recognition. Some of the important Asset Quality ratios are adopted for analyzing the data of the KDCCB.

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5.2.1 Non-Performing Assets (NPAs) to Net Advances Ratio of the K DCCB
Net Non-Performing assets to Net Advances ratio measures the position of non-Performing assets out of total advances sanctioned. If this ratio is high, it is not good for the organization. It is measured by using following formula.

Net Non-Performing Assets to Net Advances Ratio= (Net NPAs/Net Advances) ×100. Net Advances=Gross Advances- Provisions

The data presented in the table 5.2 shows that KDCCB suffered a large level of net NPAs in 2013-13 when compared to that recorded in 2010-11and 2014-15. As regards to the net advances, it had experienced declining trend. The net NPAs to net advances ratio indicates fluctuating trend. It was 4.24% in 2010-11, 0.76% in 2014-15, which appreciably declined to below 0.76% by 2014-15.

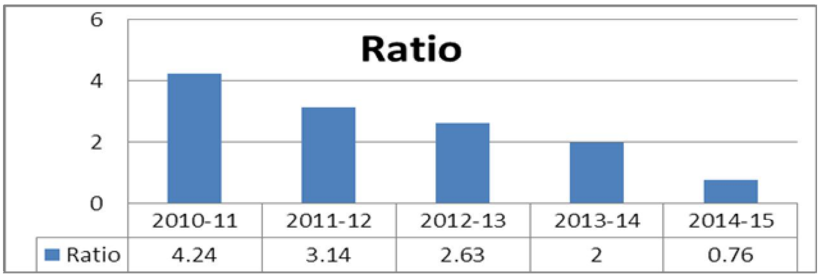
Table-5.2: NPAs to Net Advances Ratio of the KDCCB
(in Lakhs)

Sl. No	Year	Net NPAs	Net Advances	Ratio (%)
1	2010-11	3,331	78,593	4.24
2	2011-12	3,807 (14.29)	1,21,121 (54.11)	3.14
3	2012-13	3,807 (Nil)	1,44,902 (19.63)	2.63
4	2013-14	2,406 ((36.80)	1,20,403 (20.35)	2.00
5	2014-15	794 (7.67)	1,04,435 (13.26)	0.76

Source: Audit Reports of the KDCCB

Note: Figures in brackets show the Annual Growth Rates

Chart-5.2: NPAs to Net Advances Ratio of the KDCCB



5.3 Management Quality Ratios
Management efficiency is another vital component of the CAMEL model that ensures the survival and growth of a bank. It is the management which sets vision and goals for the organization and ensures that it achieves them. In the process of achieving their goals, management takes certain crucial decisions depending on its risk perception. Hence, analysts and investors use this parameter to evaluate management efficiency as to assign premium to better managed banks and discount to poorly managed ones.

While the other factors of CAMEL model can be quantified fairly easily from current financial statements, management quality is a somewhat elusive and subjective measure, yet one that is crucial to institutional success. As management quality is inextricably tied to a bank's success or failure, it is important to develop and improve methods of grading management efficacy. Besides this, the banking sector reforms also reinforce the need to improve productivity of the banks through appropriate measures which aim at reducing the operating cost and improving the profitability of the banks.

5.3.1 Profit per Employee of the KDCCB
Net profit per employee is the amount of profit earned per an employee. The range of profit determines the quality of management. Higher the quality of management, higher the profits per employee.

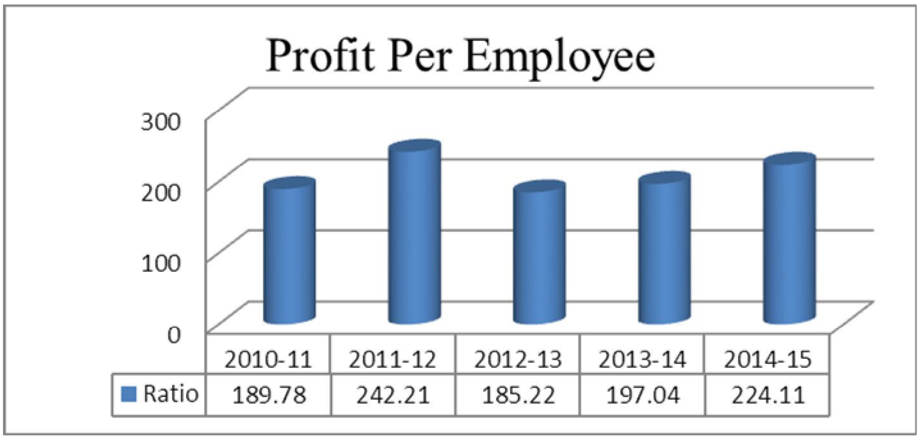
It calculated by the following this formula
Profit per Employee of KDCCB= (Net Profit/No. of Employees)

The profit per employee had experienced fluctuations, as it was 1.89 lakhs in 2010-11, 2.42 lakhs in 2011-12 and 2.24 lakhs in 2014-15. The number of employees was reduced by -10.95% in 2010-11 and -9.87% in 2014-15.

Table-5.3: Profit per Employee of the GDCCB

Sl. No.	Year	Net profit	No of Employees	Profit Per Employee
1	2010-11	520	274	1.89
2	2011-12	591 (13.650	244 (-10.95)	2.42
3	2012-13	702 (18.78)	379 (55.32)	1.85
4	2013-14	798 (13.68)	405 (6.86)	1.97
5	2014-15	818 (2.13)	365 (-9.87)	2.24

Chart-5.3



5.4 Earnings Ratios

Earnings quality reflects quality of a bank's profitability and its ability to earn consistently.The most important parameter that is reviewed during inspection to assess the earning performance of the bank that is Return on Assets Ratio.

5.4.1 Return on Assets Ratio of the KDCCB

The earning capacity of a banking company is also measured by using return on assets ratio. The return on assets may also be called profit to assets ratio. It is the ratio between net profit and total assets. Higher the ratio, greater is the performance.

This ratio is calculated by the following this formula

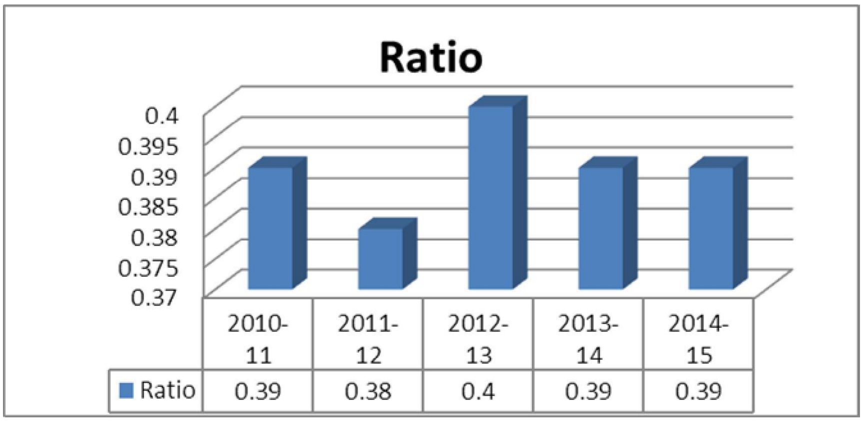
Return on Assets Ratio = (Net Profit/Total Assets) ×100

It is shown in the table 5.4 that the profit earned to total assets ratio of KDCCB has been in constant. It was recorded as 0.39% in 2010-11, which had same in 2014-15 .Though there is no considerable increase in the value of total assets.

Table-5.4: Return on Assets Ratio of the KDCCB

Sl. No.	Year	Net Profit	Total Assets	Ratio (in %)
1	2010-11	520	1,32,048	0.39
2	2011-12	591 (13.65)	1,54,328 (16.87)	0.38
3	2012-13	702 (18.78)	1,74,536 (13.09)	0.40
4	2013-14	798 (13.68)	2,06,207 (18.15)	0.39
5	2014-15	818 (2.13)	2,09,534 (1.61)	0.39

Chart-5.4



5.5 Liquidity Ratios

For a bank, liquidity is a crucial aspect which represents its ability to meet its financial obligations. It is utmost important for a bank to maintain correct level of liquidity, which will otherwise lead to declined earnings. A high liquidity ratio indicates that the bank is more affluent. However, a bank needs to take care in hedging liquidity risk to ensure its own liquidity under all rational conditions. It is possible only when the percentage of funds ploughed in the investments with high returns is large.

5.5.1 Cash to Total Assets Ratio of the KDCCB

Cash is an important asset of a banking company, which reflects the liquidity position. If a bank has adequate cash balance its liquidity position will be more. At the same time the bank should not maintain too much of cash balance which involves opportunity cost. It will be obtained by dividing cash by total assets. If the ratio is higher it indicates liquidity position of bank is high and if the ratio is low it indicates lower liquidity position of a bank.

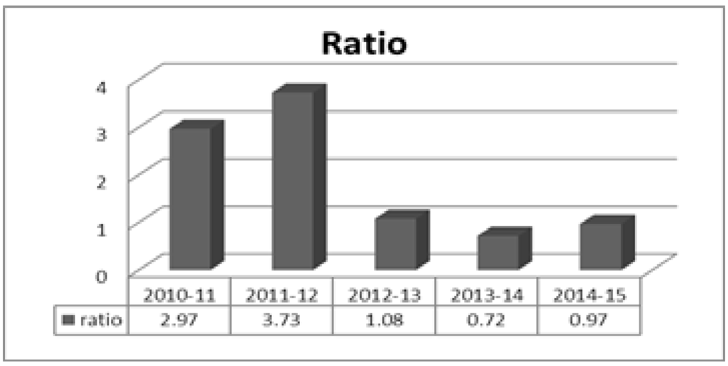
This ratio is calculated by the following this formula
Cash to Total Assets Ratio = (Cash/Total Assets) ×100

The cash balance with KDCCB has increased during the given period. It was recorded as 46.90% in 2011-12 and further increased to 61.84% by 2014-15. Regarding total assets, its value has fluctuation. The ratio of cash to total assets has marked with declining trend. It was 2.97% in 2010-11, decreased to 0.97% in 2014-15 and further slightly to 3.73% in 2011-12.

Table-5.5: Cash to Total Assets Ratio of the KDCCB

Sl. No	Year	Cash	Total Assets	Ratio (in %)
1.	2010-11	3,923	1,32,048	2.97
2.	2011-12	5,763 (46.90)	1,54,328 (16.87)	3.73
3.	2012-13	1,893 (-67.15)	1,74,536 (13.09)	1.08
4.	2013-14	1,486 (21.50)	2,06,207 (18.15)	0.72
5.	2014-15	2,045 (61.84)	2,09,534 (1.61)	0.97

Table-5.5



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6. CONCLUSIONS

According to the parameters indicated by NABARD, in the case of the KDCCB, the sum of the Bad& Doubtful Debts and Accumulated Losses has been below the 50 percent mark of the owned funds. It is evident from the analysis that the financial position of the KDCCB is better. As per the prudential norms, the banks being operated in India are required to achieve 9% CRAR. It shows that the KDCCB has not exceeded the stipulated level. Similarly, the CRAR was 6.88% in 2011-12 which has gone down to 6.52% mark in 2014-15. All this explains the weakness of KDCCB in terms of unsound capital base and its adequacy. This decline in the value of risk weighted assets indicates that the KDCCB has not solvency position. And also found that NPAs to Net Advances Ratio is 4.24% in 2010-11, 0.76% in 2014-15, which appreciably declined to below 0.76% by 2014-15.

Profit per Employee of the KDCCB increased from 2010-2011 to 2014-2015 i.e., 1.89 Lakhs, 2.24 Lakhs. It means this bank profitability position is good. Finally, it is concluded that the financial position of the KDCCB is satisfactory.

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A STUDY ON THE BEHAVIOUR OF RURAL CONSUMERS TOWARDS FMCG PRODUCTS

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ABSTRACT
Over the years there has been a great change with regard to income and lifestyle of Indian rural population. Yet there is a significant difference between the purchase behavior of rural and urban consumers. Marketing strategies always gave rise to core competencies and helped taking advantage of the increasing competition. While developing the strategies, the marketers need to treat the rural consumer differently from their urban counterparts because they are economically, socially and psycho-graphically different from each other. To satiate huge base of rural consumers a proportionately large investment is needed which is a risky venture. So, whatever strategies FMCG (Fast Moving Consumer Goods) companies follow must mutually benefit people at the bottom of the pyramid as well as them. This paper is an attempt to study marketing strategy adopted by FMCG companies in the rural markets. Consumer characteristics like repeat- purchase- recommendation and loyalty are also being studied herewith. The study has focused on consumer behavior related to consumables, 4P's (product, price, place, promotion) and 4 A's (acceptability, affordability, availability and awareness).The researchers have used structured questionnaire technique and surveyed on the population in the rural areas of Andhra Pradesh.

Keywords: Rural markets, FMCGs, Marketing strategy, Haat

RURAL INDIA- A GREENER PASTURE

What is needed is a better approach to help the poor, an approach that involves partnering with them to innovate and achieve sustainable win-win scenarios where the poor are actively engaged and, at the same time, the companies providing products and services to them are profitable".

C.K. Prahalad

Liberalization of an Economy has its own pros and cons. The decision to liberalize the Indian Economy at the beginning of the 1990s had far-reaching consequences. On the marketing front, there was the arrival of many well-known MNCs, which are household brands in the international market today. A relevant example is of Hindustan Unilevers, the largest FMCG Company generating half of its annual income from rural market. The rural India comprises almost 75 percent of the population living in 6.4 lakh villages, speaking 33 languages, 1652 dialects and has diverse sub-cultures and diverse requirements. More than 80 percent of the rural consumers depend upon agriculture and allied activities for their livelihood. The rural market has been growing steadily since the 1980s and is now bigger than the urban market for both fast moving consumer goods (53 percent share of the total market) and consumer durables (59 percent). An analysis of the National Samples Survey (NSS) data reveals that 75 percent of the expenditure on manufactured goods is accounted by rural India. Technological developments are taking place in rural areas at a rapid rate as is in the urban areas. The disposable income in rural India has increased manifold in the last five years than the urban area. Higher rural income means, the need for larger markets and at the same time they are exposed to large number of products so their brand awareness is magnified. In the starting of FMCG companies' penetration into rural areas, it was considered that rural marketing is just synonyms to the farmers, those who rub their heels on fields day long and come back to homes with exhausted feet, just look food in the light of deeya (primitive light source) and lanterns and slept, and the story ends here. But, this is a misconception. Their life styles, their thinking, their choices and their selections have now turned to a new statistical height. In the initial years, the focus was on the easily accessible, well-developed urban market. Soon there was a proliferation of brands and intense competition, resulting in the near saturation of the urban market. This forced companies to look for greener pastures, that is, new markets. All eyes turned to the world's most promising potential market of 742 million rural consumers, who had yet to taste the fruits of modernity, a promise that seemed ready to be fulfilled because of the explosion of the buying capacity in the rural sector.

Fuelled by good growth registered in the 1990s as a result of thirteen consecutive good monsoons, a 600 percent increase in the five-year plan outlay for rural development programmmes, from the Eighth to Tenth plan; a 230 percent increase in the flow of institutional credit for agriculture between 1997-98 and 2004- 05 and 41 million Kisan Credit Cards(KCC) issued and cumulative credit amounting to Rs. 97,700 crore sanctioned since the inception of the scheme in 1998, has all helped the growth of the rural economy and contributed to the increasing rural prosperity.

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Agricultural revolution has resulted in the rapid rise of rural incomes. According to the NCAER, Indian Market Demographics Report 1998, the consuming class households (annual income between Rs. 45,001 and Rs. 2,15,000) in rural India equals the number in urban India. It is well known that for the same level of income, the disposable surplus in rural areas is much higher because food, shelter, primary education and health are virtually free, whereas in urban India 60-

70% of the income is spent on these necessities. Keeping all these changes in mind, Marketers must be proactive to withstand the changes in rural environment.

Strategy must be different from state to state. A farmer in rural Punjab is more progressive than that of farmer of Bihar or Odisha. The variation that is coming in the sector of Rural Marketing Areas now has turned the astonished eyes of the astonished FMCG Company toward the rural areas.

Rural Markets: The census of India defines rural as any habitation where the population density is less than 400 per square kilometer, and where at least 75 percent of male working population is engaged in agriculture, and where there is no municipality or board. The same is defined by Reserve Bank of India (RBI) as any location with population up to 10,000 will be considered as rural and 10,000 to 100,000 as semi-urban. Since ancient times, Indian villages had the concept of village markets popularly known as the village “Haats”. The “Haats” are basically a gathering of the local buyers and sellers. The barter system is still continuing in a number of places even today though the degree is varying over a period of time.

Rural Marketing: Rural marketing is a two-way marketing process that includes the flow of goods and services from rural to urban areas and the flow of goods and services from urban to rural areas, as well as flow of goods and services within rural areas.

Fast Moving Consumer Goods (FMCGs): FMCGs or consumables comprise all non-durable goods like toiletries, cosmetics, foods and beverages, footwear etc. These products are consumed quickly and purchased frequently. These products have a quick turnover and relatively low cost. FMCG products are those that get replaced within a year. The major players in the FMCG category in rural markets are HLL, Dabur, Marico, Colgate-Palmolive, ITC, Nirma, CavinKare, Godrej, Procter & Gamble etc.

FMCG market: According to NCAER survey, the rural market accounted for 53 percent of total consumption in the country during 1998-99. The estimated size of the FMCG rural market was around Rs. 484 billion in 1998-99 at current prices. Another estimate by Francis Kanoi in 2002 puts the rural market size at Rs. 650 billion. The rural market has grown consistently in 1990s (except for decline between 1997-98 and 1998-99 due to low growth in agriculture and allied activities). After 1995-96 there was a boom in the rural markets, which was mainly because of awareness and aspirations to consume. (Kashyap and Rout, 2007).

Table: 1-Market Size of FMCG at 1995-96 Price (Amount in Billion)

Year	Urban	Rural	Total
1992-93	220.4	319.9	540.3
1998-99	317.3	415.5	732.8
Source: NCAER			

LITERATURE REVIEW

“If we stop thinking of the poor as victims or as a burden and start recognizing them as resilient and creative entrepreneurs and value-conscious consumers, a whole new world of opportunity can open up”. This looks a very simple proposition made by C. K. Prahalad in his book “The Fortune at the bottom of Pyramid”.

But it has a great impact on many MNCs to go rural. Improving the lives of the billions of people at the bottom of the economic pyramid is a noble endeavour; it can also be a lucrative one. According to the census of India, villages with clear surveyed boundaries not having a municipality, corporation or board, with density of population engaged in agriculture and allied activities would qualify as rural. According to this definition, there are 6.4 lakh villages in the country. Of these, only 0.5% villages have a population above 10,000 and 2% between 5000 and 10000. Around 50% of the villages have population between 200 and 1000 and another 18 percent villages have population less than 200. There are several myths regarding rural consumers. It is also incorrect to assume that the poor are too concerned with fulfilling their basic needs to waste money on nonessential goods. In fact, the poor often do buy luxury items. Adi Godrej, Chairman of the Godrej group that is in portfolio of businesses from real estate and personal care to agri-foods, has no hesitation proclaiming-“It is a myth that rural consumers are not brand and quality conscious”.

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An average Indian spends 40 percent of his income on grocery and 8 percent on personal care products. The large share of FMCG in total individual spending along with the large population base is another factor that makes India one of the largest FMCG markets.

The Indian rural market with its vast size and demand base offers a huge opportunity that MNCs cannot afford to ignore. With 128 million households, the rural population is nearly three times the urban (Bala Krishna & Siddarth, 2004). The importance of the rural market for some FMCG and durable marketers is underlined by the fact that the rural market accounts for close to 70% of toilet soap users and 38% of all two-wheeler purchased.

In his article, Suvi Dogra (2008) writes that winds of change are blowing across the FMCG market. Evidence suggests that for the first time, the rural market has grown faster than the urban market in key product categories in April-May 2008.

The FMCG sector in India is the fourth largest in the economy, with a market size of over Rs 110,000 crore (around $22 billion) and is estimated to grow over Rs 185,000 crore (around $37 billion) by 2014. A recent study by the Rural Marketing Association of India (RMAI) confirms that rural income levels are on the rise, driven largely by continuous growth in agriculture for four continuous years. Encouraged by growth in sales from rural India, FMCG companies are devising ways to tap this segment.

“Though rural markets are growing from a smaller base, the numbers can be stark in some categories. Mass products like soaps, hair oil and biscuits have good sales, and almost all companies are now relooking their strategy,” explains Anand Shah, analyst with Angel Broking.

For Marico, 25 percent of its sales come from rural India. Milind Sarwate, head of human resources and strategy, says: “We have been making products primarily for urban India. Moreover, rural India has given the industry much to cheer about. So, going forward, we would focus on increasing our reach in rural areas. The fixed cost of reaching in rural India is higher. To justify that, we need to have a larger reach.”

Emami, on the other hand, prefers to promote products through channel-level incentives in smaller towns, including wall paintings, door-to-door activities, in shop promotions, activities in rural markets, fairs and festivals, kheti mela, mobile traders or shops on wheels, and video vans. Aditya Agarwal, Director, Emami Group, said,“While FMCG companies are seeing a volume growth of just 6-7 per cent in metros, the growth in rural markets is over 20 per cent. So, we have also initiated a new level of distribution to increase penetration in the rural areas. We have introduced new super-stockist networks for rural coverage, with a special focus on West Bengal, Andhra Pradesh, Uttar Pradesh and Maharashtra. The van operations model has also been introduced to make the products reach remote villages.”

Godrej Consumer Products (GCP) has seen rural sales grow by 40 per cent in 2010-11, double of that in urban areas. H K Press, Vice-Chairman, said: “Currently, rural sales make up around 38 per cent of its turnover. We intend increasing it to 50 per cent within a year. We have project ‘Dharti’ for rural India and we cover close to 17,000 villages. We intend covering 50,000 villages soon. This also means that the 4,000 sub-stockists we have in rural areas in India would be more than doubled, creating more employment opportunities.”

Dabur India’s Vice Chairman Amit Burman said, “Sales in rural India continue to grow at a fast pace. Rural and semi-urban India account for almost 50 per cent of our domestic sales. New product introductions have always been key to Dabur’s growth strategy. In fact, in the previous year when a majority of consumer products companies were slowing down on new product introductions, Dabur was on an innovation overdrive. In 2008-09, new product introductions accounted for nearly 20 per cent of our sales growth, and we expect this contribution to grow to 30 per cent in the current fiscal.”

Hindustan Unilever (HUL) and ITC, too, have robust rural initiatives such as Project Shakti and e-choupals, respectively. “HUL has the highest sales mix coming from rural India. Its key category, soaps and detergents, is facing intense competitive pressure in rural markets”, states a Reliance Equities report.

As a marketing strategy, the basic objective of sales promotions is to create an immediate need by adding an extra incentive to buy the product. These incentives have been divided into monetary (price off, Rupees off, coupons, etc.) and non monetary promotions (gifts, premium, sweepstakes, samples). It is general belief that the monetary promotions enjoy a higher patronage than non monetary promotions (France, 1997).

In the planning of sales promotions, price has become a very important market place cue. The pervasive influence of price is a result of the fact that at a minimum, it represents that the consumers will have to sacrifice in order to engage in a given purchase transaction. Negatively speaking, higher prices affect purchase probabilities, i.e. consumers would like to abstain from purchasing products that are high priced (Lichtenstein et al, 1993). Price perceptions have always had an impact on how consumers evaluated products. Price in a positive role has a positive relationship with quality and in its negative role has had a negative relationship on purchase probabilities. Price perceptions have been studied from several dimensions such as Value consciousness; coupon prone sale proneness etc., and these have been clubbed under price in a negative role as they influence purchases where none exists (Liechtenstein et al, 1993).

STATEMENT OF THE PROBLEM

Due to increased competition, locally as well as internationally, organizations need a distinguishing element that will keep consumers identifying and buying their Product. With competition increasing annually, the traditional sources of competitive advantage no longer provide long term security for a company, product or marketer. In other words, leadership in price and quality is not enough to ensure the success of a product anymore. While general tendencies like price sensitivities are well known, we know little about how consumers actually respond to different brands and strategies adopted by FMCG companies. Without this crucial information it is problematic to guide executives to effectively leverage their marketing efforts within the confines of ethical business to rural populace. In addition, it is possible, and even likely, that cross for the extent to which the FMCG marketing mix can be standard contexts. The strategic approaches to FMCG marketing are also likely to vary among different industries, customer groups, and significant considerations for Multinational enterprises. The relevance and the usefulness of marketing theory in today's business being questioned. The skepticism has led to the increased emphasis on how to translate the marketing has a potential to understand the driving forces behind their current and future customer's decision making process when they is goal of the study to find the factors which influence the purchase decision of FMCGs and so to help the marketers in fine tuning their strategies.

OBJECTIVES

1. To analyze the rural market potential for FMCGs.
2. To analyse the behaviour of rural consumers for FMCGs.
3. To find out important influencing factors of rural consumers for purchasing FMCGs.

RESEARCH METHODOLOGY

The present research work is exploratory in nature. It is based on primary data as well as secondary data. The secondary data journals, research papers, magazine, internet etc., try to answer the first objective of the research. The primary data was collected questionnaire and survey was conducted in one of the rural districts of Andhra Pradesh which gives answer to rest of the discussion and observation were made by researchers wherever deemed necessary.

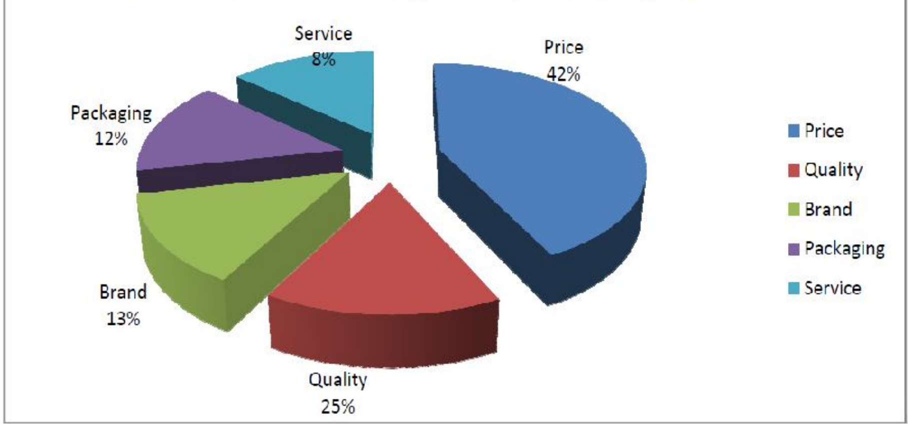
SAMPLE

Respondents for the present study are the villagers, and more specifically the family heads. The data collected by using a structured questionnaire. The area of research covers six villages Dondapadu, Rayapudi, Parimi, Ananthavaram, Sakhamuru and Thulluru in Guntur District of Andhra Pradesh. The sample size is 300 which include 50 respondents from each village.

Data has been collected on the basis of random sampling; data is analyzed with the help of M.S.Excel and presented through bar charts and pie charts.

RESULTS AND DISCUSSION

Figure-1: Which factor do you consider the most while purchasing FMCGs?



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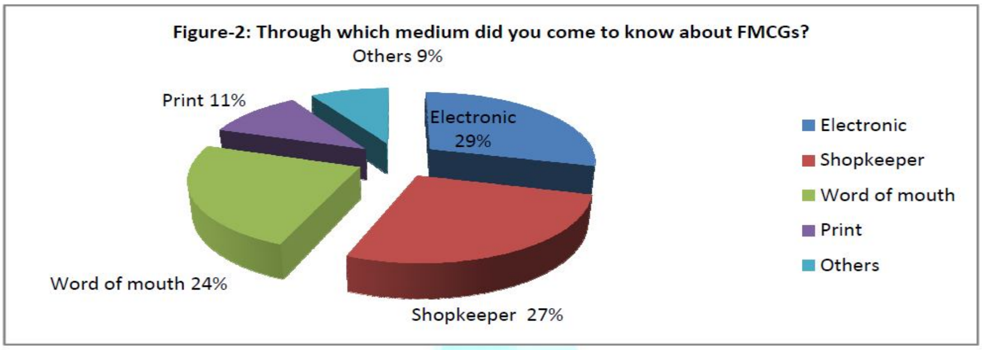
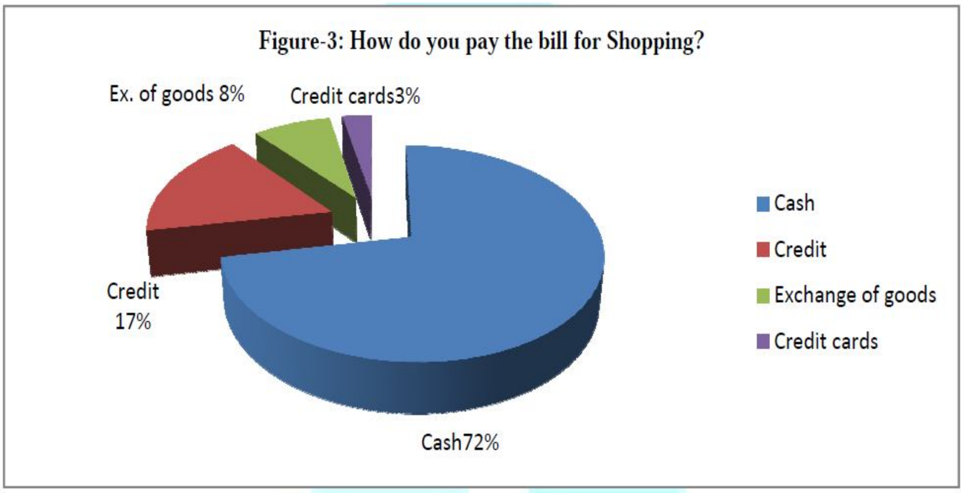
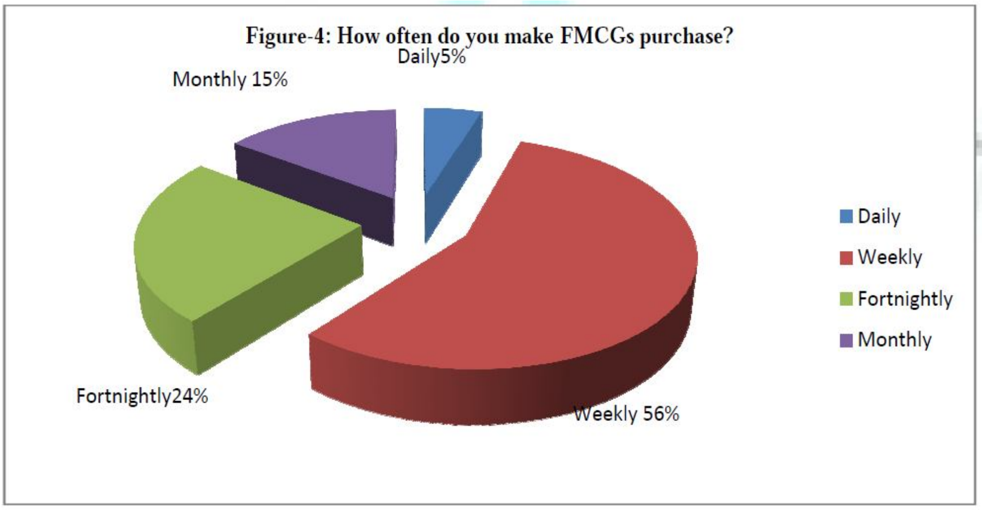
The above pie chart is the explanation about factors which are considered by a consumer before purchasing a product. On the that maximum people are price sensitive. 45% people are concerned about the price. Secondly, they are more concerned towards quality i.e. 25% people are concerned about quality. This signifies that it is a misconception to say that rural people are not quality conscious. Then, consider brand while purchasing the product. This smaller percentage indicates that they are not aware of all brands in a pro and brand, 12 percent rural people are affected by packaging. Rural area to provide better services.



The above pie chart shows the opinion of rural people about medium of information about FMCG products. The researchers got electronic media, more specifically Television. Radio users are falling in number. Shopkeepers are a very rich source of info constitute 27%. Next, word of mouth is another major medium of awareness and through this also they know about FMCG products. Other factors include neighbors, friends, relatives who are also a source of information for rural people.

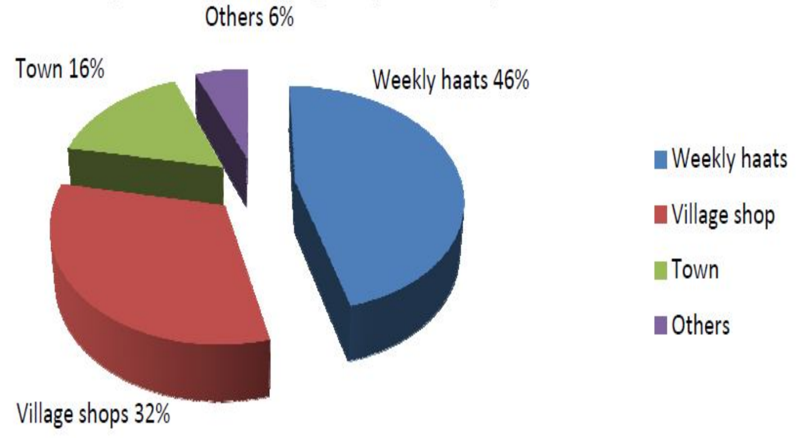


The above pie chart gives the result of how they paid the bill while shopping in rural areas. Mostly people purchase the FMCG product that72 percent respondents pay bill through cash and rest 17 percent respondents purchase the product on income. The Barter system could be seen in 8 percent of people in rural areas. Some of them use credit card too, especially the number is very less.



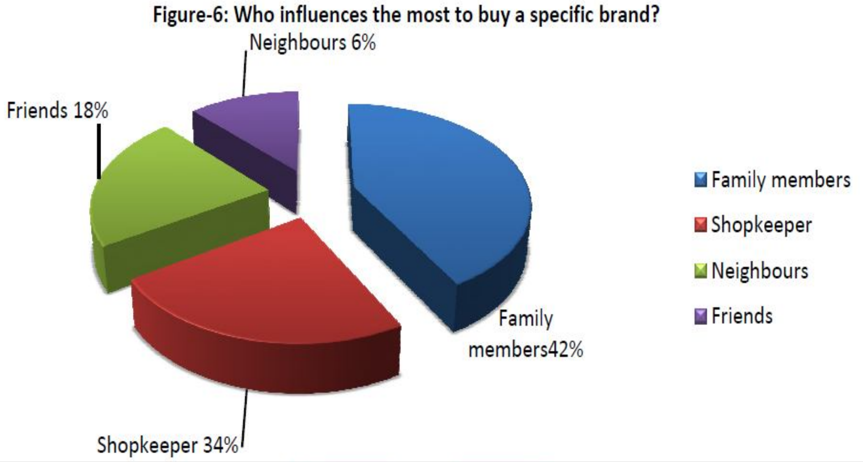
The above pie chart concludes on villagers about their frequency of purchase by rural consumers. Maximum people (56%) purchase the product of weekly 'haats', 24% of the villagers purchase fortnightly. Yet, 15% buy monthly and this category includes mostly Only 5% buy daily which includes daily wagers, but not all the daily wagers make a purchase on daily basis.

Figure-5: Where do you go for your FMCG purchase?



The above pie chart explains the place of making purchase. Rural consumers got four relevant answers. From weekly haats. In rural area people also prefer "Kirana" store because it fulfills their untimely requirement and this a buy from towns because of their visits during business trips. Other sources include seasonal and cultural fairs, network marketing retail outlets like RCM (Right Concept Marketing) etc.

Figure-6: Who influences the most to buy a specific brand?



The above pie chart is the explanation about what plays the important role in influencing the specific brand because they are insisted by family members. 34 % respondents are convinced by the shopkeeper. 18% respondents are influenced by neighbours those people who buy from towns in bulk.

FINDINGS

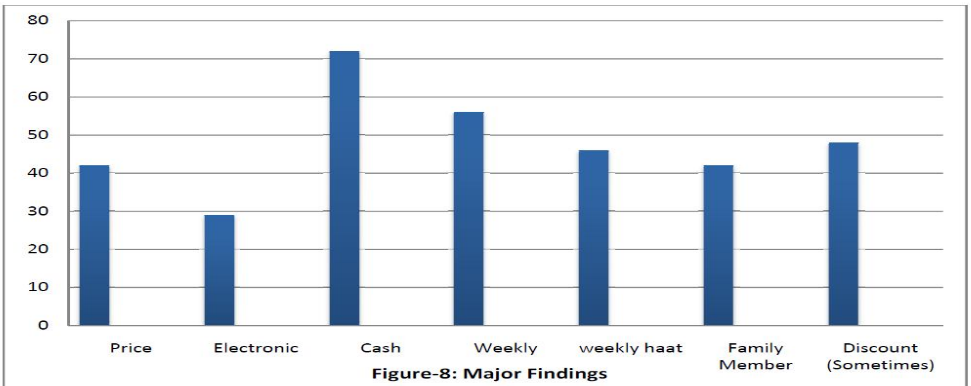


Figure-8: Major Findings

The above bar chart shows all the major findings in the rural areas. Researchers calculated purchasing product (47%). Rural people get to know the FMCG products by the electronic media (29%). They pay the bill by cash the rural people is weekly (56%). Purchase place is weekly haats (46%). Their purchase decision is influenced by family members (42%) and they buy discounted products sometimes (48%).

CONCLUSION

It is observed that the Indian rural market suffers from a variety of problems starting from rural market, companies need to formulate strategies, which can deal with issues pertaining to consumer psychographics and a must always know that the requirements of the rural market are still different from urban markets though the gap is narrowing down slowly but steadily. The companies need to develop special products and strategies for the rural consumer.

The success in rural market would certainly come by adopting 4P's of marketing to the 4A's in their strategies i.e., Awareness, Acceptability, Availability and Affordability. Due to the limited reach of the mass media, marketers have to augment their efforts with traditional media awareness. In the coming years, companies should not fight only for profit making but must join hands with the government to the villages through micro enterprises and mainstream these efforts by linking them to the larger Industries.

Getting a right combination of scale, technology, price, sustainability, and usability requires that managers start with "zero based" view of rural markets. Managers need a new philosophy of innovation, product and service delivery for the rural populace.

Affordability is the key driver in rural areas and recognizing this fact, companies should produce small packs by quoting price in the in the range of Re. 1 and Rs.2 and 5.

The only thing which is definite about the times to come is that the rural market will rapidly make way for urban. So, the FMCG giants have to gear up for future challenges that will be posed by rural market in addition to create a base and trust in rural consumers.

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WOMEN EMPOWERMENT: 'MARA TRIBE OF MIZORAM' - CRITICAL ANALYSIS IN SOCIAL CONTEXT

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ABSTRACT

The modern state of Mizoram is situated in extreme eastern corner of India, bounded by Assam & Manipur in North, Burma in the East & South and Bangladesh & Tripura in the West. People belong to Mongolian stock of Tibetan burman family. 95% of the population is tribal with patriarchal social system. Tribes of North India in preface study seems modern and advanced than other tribes, where position of women is better because of the westernization. In Mizoram, women are westernized in their looks, clothes but thinking of society needs to be changed. Division of labor based on gender relations is clearly seen in Mara society. Mara tribal society like other tribal societies, works on their own rules and regulations. Birth of a girl child is welcomed in the family due to help provided by her as a domestic labor and later on after marriage, for getting bride price by her parents from groom's side. Women empowerment is a critical issue in society where their own laws do not permit women to inherit any property from parents or in-law's side. Decision making is done by male members. Women earn money by selling vegetables and weaving but economic independence is still not evident. They are considered as an object for domestic help. Society is bounded by taboos and Education and Government intervention is required for uplifting the status of women in North-Eastern India. Reservations of seats/vacancies for women in every field is essentially required for uplifting their status.

Keywords:
STATUS - Status in the present study means the position held by women as a group in society in relation to their men folk.

TRIBE - A social division in a traditional society consisting of families or communities linked by social, economic, religious or blood ties, with a common cultural and dialect, typically having a recognized leader.

ATTITUDE - Attitude refers to the characteristics of a person, which describe their positive and negative feelings towards particular object, situation, institution, person or ideas.

SOCIAL EMPOWERMENT - social empowerment refers to increasing the economic, political, social, educational, gender or spiritual strength of individuals and communities.

INTRODUCTION

Women empowerment is a burning issue since independence. Lots of policies and plans have been made by government to empower women but still due to patriarchal structure of society goal of achieving women empowerment are far apart. Female feticide, domestic violence, sexual harassment etc are the resultant products of patriarchy. Conditions are worst in case of tribes. Mara is one of the major tribe of Mizoram inhibiting in a land known as Mara-land. Women of Mara tribe are laborious and act as secondary workers whereas in society major decisions are taken by men.

MATERIAL AND METHODS

For the present research work, sample of 509 tribal people of Mara tribe (300 males and 209 females) belonging to different age groups and education levels were selected by using Stratified Random Sampling Technique. Both qualitative as well as quantitative methods of data analysis have been used for analyzing the data. To ascertain the comparative status of Mara tribal women, historical method and survey method were used. Interviews of different people of society were also conducted to clarify the status. Questionnaires were administered to know the present status. Data has been analyzed on percentage basis.

OBJECTIVES

1. To study the changing status of Mara tribal women of Mizoram in social field.
2. To study the attitude of Mara tribal men towards the social empowerment of Mara tribal women.
3. To study the attitude of Mara tribal women towards their own social empowerment.

HYPOTHESIS

There exist changes in the status of Mara tribal women in social field in past and at present.

RESULTS AND DISCUSSION

Status of Women In Past

1. Critical analysis of status of Mara Tribal Women revels that in the past, their status was low.
2. Status of Mara women as reflected in folktales reflects the dominance of men. Women were judged through various methods to check her chastity. Stories reflect the courage of a lady to obey her husband's order which in turn reflects her subordinate status.
3. Study of folkdances of Mara tribal women reveals that in past, hunting reflected the velour of men and women were considered as weaker sex in dances except 'Dawla Dance' where women participated equally. Women were considered as object of entertainment.
4. Strict dress code for women in past reflected their subordinate status.
5. Bride price paid to the parents of bride by the bridegroom side reflected their status as a buying and selling object.
6. The rules and regulations formed by men for their society gave ownership and inheritance rights to the male members of the family while women were given only maintenance rights.
7. Decision making was denied to women and man was the head of family.

Status of Women At Present

1. Regarding decision making at society level, out of total 509 respondents (209 female and 300 male respondents), 89 (42.58%) female and 145 (48.33%) male responded that important decisions in society are taken by male, whereas 37 (17.79%) female and 43 (14.34%) male responded that important decisions in society are taken by female while 83 (39.71%) female and 112 (37.33%) male responded that important decisions in society are taken jointly.
2. Regarding happiness and smooth functioning of family, out of total 509 respondents, 91 (43.39%) females out of 209 female respondents and 102 (34.04%) males out of 300 male respondents, expressed that smooth functioning of a family depends on wife, whereas 42 (20.75%) females and 52 (17.02%) males expressed that relatives too are responsible for the happiness and smooth functioning of a family. 24 (11.32%) females and 76 (25.53%) of the males expressed that both husband and wife are responsible for the happiness and smooth functioning of a family. 32 (15.09%) females and 57 (19.14%) males expressed that husband is responsible for the happiness of the family. 20 (9.43%) of the females and 13 (4.26%) of the males expressed that grandparents are responsible for the happiness and smooth functioning of a family.
3. Regarding perception on domestic work, out of total 509 respondents (209 female and 300 male respondents), 99 (47.16%) female and 140 (46.80%) male responded that domestic work is the primary duty of women. 91 (43.39%) female and 115 (38.29%) male responded that domestic work is the duty of both male and female. 19 (9%) female and 45 (15%) male responded that it is the duty of the domestic helper.
4. Further to know the reasons for Men's disinterest in domestic work, out of total 509 respondents (209 female and 300 male respondents), 63 (30%) female and 109 (36%) male said that due to the laziness of men they have no interest in the common work of domestic chores. 67 (32%) female 89 (30%) male said that they have no knowledge of domestic work. 43 (21%) female and 38 (15%) male said that man considered that domestic work is inferior to his status and 32 (15%) female and 51 (17%) male said that domestic work is none of a man's business. Finally, 4 (2%) female and 13 (4%) male said that men do not have time to do the household chores.
5. Regarding marriage customs, research work reveals that in past polygamy was prevalent and after marriage women were compelled to repeatedly deliver child till she delivers a baby boy. Thus patriarchal institution of motherhood is the fundamental process in reproducing male dominance. Presently monogamy is practiced.
6. Regarding expected qualities of 'would-be-bride' in Mara tribal society, out of total 509 respondents (209 female and 300 male respondents), 51 (24.52%) female and 77 (25.53%) male expressed that obedience to elders should be the prime quality expected of the 'would-be-bride'. 32 (15.09%) female and 83 (27.65%) male responded that beauty is the main quality of a 'would-be-bride'. 59 (28.30%) female and 32 (10.63%) male expressed that main quality is chastity. 35 (16.98%) female and 38 (12.76%) male responded that simplicity is the main quality expected of the 'would-be-bride'. Further, it reveals that 24 (11.32%) female and 51 (17.02%) male expressed that courage is the prime quality expected of the 'would-be-bride'. 8

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(3.82%) female and 19 (6.33%) of the male responded that high fashion is also the expected quality of 'would-be-bride'. Analysis of data reveals that majority of people still consider obedience to the elders to be good quality expected from 'would-be-wife'. This reflects the status of women in society which states that she needs to follow the norms of society which would tag her good or bad.

7. Study reflects the changing status of women from past to present.

CONCLUSION

Every society weather primitive or modern has a social organization framed by men, women and children. Mara society is characterized by deeply communitarian nature where men and women mix together freely. Thus, it is difficult to make rigid distinction between male and female in work areas which usually let the outside observer feels that there is no distinction between male and female and status of women is no longer inferior to men. But in reality, it is different. It is high time to reveal that depression which haunts many women who have great intellectual ability, much physical strength or the capacity to administer well, but whose God given abilities are sub judged and suppressed by the rules and the customs of society and church. Education being a main factor for women empowerment can not only means mastering the three R's but should enable us to be masters of our lives. Education and awareness are providing special analytical skills which are changing the status of tribal women in India. This study clearly indicates how education and globalization are changing the attitude of society and positively affecting the status of women.

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MANUSCRIPT SUBMISSION

GUIDELINES FOR CONTRIBUTORS

1. Manuscripts should be submitted preferably through email and the research article / paper should preferably not exceed 8 – 10 pages in all.
2. Book review must contain the name of the author and the book reviewed, the place of publication and publisher, date of publication, number of pages and price.
3. Manuscripts should be typed in 12 font-size, Times New Roman, single spaced with 1” margin on a standard A4 size paper. Manuscripts should be organized in the following order: title, name(s) of author(s) and his/her (their) complete affiliation(s) including zip code(s), Abstract (not exceeding 350 words), Introduction, Main body of paper, Conclusion and References.
4. The title of the paper should be in capital letters, bold, size 16” and centered at the top of the first page. The author(s) and affiliations(s) should be centered, bold, size 14” and single-spaced, beginning from the second line below the title.

First Author Name1, Second Author Name2, Third Author Name3

1Author Designation, Department, Organization, City, email id

2Author Designation, Department, Organization, City, email id

3Author Designation, Department, Organization, City, email id

5. The abstract should summarize the context, content and conclusions of the paper in less than 350 words in 12 points italic Times New Roman. The abstract should have about five key words in alphabetical order separated by comma of 12 points italic Times New Roman.
6. Figures and tables should be centered, separately numbered, self explained. Please note that table titles must be above the table and sources of data should be mentioned below the table. The authors should ensure that tables and figures are referred to from the main text.

EXAMPLES OF REFERENCES

All references must be arranged first alphabetically and then it may be further sorted chronologically also.

- **Single author journal article:**

Fox, S. (1984). Empowerment as a catalyst for change: an example for the food industry. *Supply Chain Management*, *2*(3), 29–33.

Bateson, C. D.,(2006), ‘Doing Business after the Fall: The Virtue of Moral Hypocrisy’, Journal of Business Ethics, 66: 321 – 335

- **Multiple author journal article:**

Khan, M. R., Islam, A. F. M. M., & Das, D. (1886). A Factor Analytic Study on the Validity of a Union Commitment Scale. *Journal of Applied Psychology*, *12*(1), 129-136.

Liu, W.B, Wongcha A, & Peng, K.C. (2012), “Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher’s Colleges In Thailand”, International Journal on New Trends In Education and Their Implications, Vol.3.3, 108 – 114.

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S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

Raine, A. (Ed.). (2006). *Crime and schizophrenia: Causes and cures.* New York: Nova Science.

- **Edited book having more than one editor:**

Greenspan, E. L., & Rosenberg, M. (Eds.). (2009). *Martin's annual criminal code:Student edition 2010*. Aurora, ON: Canada Law Book.

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Bessley, M., & Wilson, P. (1984). Public policy and small firms in Britain. In Levicki, C. (Ed.), *Small Business Theory and Policy* (pp. 111–126). London: Croom Helm.

- **Chapter in edited book having more than one editor:**

Young, M. E., & Wasserman, E. A. (2005). Theories of learning. In K. Lamberts, & R. L. Goldstone (Eds.), *Handbook of cognition* (pp. 161-182). Thousand Oaks, CA: Sage.

- **Electronic sources should include the URL of the website at which they may be found, as shown:**

Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology*, *2*(2), 38-48. Retrieved from http://ojs.lib.swin.edu.au/index.php/ejap

- **Unpublished dissertation/ paper:**

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- **Article in newspaper:**

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- **Article in magazine:**

Holloway, M. (2005, August 6). When extinct isn't. *Scientific American, 293*, 22-23.

- **Website of any institution:**

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