NPC BASED MULTI-LEVEL INVERTER FOR FIVE-PHASE AC DRIVES

Swati Ramesh Saraf[1], Prasad D. Kulkarni[2]
[1]M. Tech student KCE College of Engineering Jalgaon, [2]Assistant Professor KCE College of Engineering Jalgaon,
[1]Electrical Power System Department,
KCE College of Engineering Jalgaon, Maharashtra, India

Abstract: *In the present era, the demand for multi-phase electric machines has been increasing due to their numerous advantages over traditional three-phase induction motors. This paper proposes the NPC based three-level five-phase inverter fed five-phase induction motor. In the five-phase induction motor, in addition to d-q components, x-y components are also present. These x-y components are not helping the production of torque. They distort in stator phase current resulting in more losses and temperature rise in the five-phase induction motor. So, elimination of $x-y$ stator flux is essential otherwise the stator phase current will be distorted. To eliminate the $x-y$ stator flux, SPWM is applied in NPC based three-level five-phase inverter. Simulation results are presented to validate the proposed NPC based three-level five-phase inverter.*

Key words: Five-phase induction motor, Five phase inverter, $x-y$ stator flux component, d-q component, SPWM, NPC, five-phase induction motor model, THLFP-VSI, TLFP-VSI.

1. Introduction:

In multi-phase induction motors stators are having more than three phases. These additional stator windings help to improve the system performance in terms of torque handling capability, reduction in total harmonic distortion (THD), fault tolerance capability, torque density, common mode voltage (CMV)and efficiency of motor [1]-[3]. Currently, because of all these advantages five-phase and six-phase induction motors are finding great opportunities in ship propulsion, more electric aircraft, hybrid electric vehicles, electric traction, and battery-powered electric vehicles, etc [4]-[6].

Analysis of five-phase induction motor can be carried out for the different conduction of Five-phase Inverter from 0° to 180°.Three level five phase inverter gives better results than two level five phase inverter in terms of reduced total harmonic distortion (THD), high-quality torque with lower torque ripple [7]-[14].

When we are feeding five phase drives with discrete source or inverter, x-y subspace current is arising. This x-y sub-space current are not responsible for any power transfer. In five phase induction motor, it leads to thermal losses in the stator of induction motor, which result into increase in temperature of motor and it decreases rating of machine. To overcome this problem here pulse width modulation techniques are used. In this paper we are trying to compare two level and three level five phase inverter output with Sinusoidal Pulse Width Modulation (SPWM) [15]-[20]. This paper aims to present Five-phase induction motor model and simulation results of five-phase induction motor supplied by NPC based Five-phase three level inverter [21].

This paper is organized in five sections. Five-phase induction motor model is explained briefly in section 2. With this motor model we can identify the problems associated with the five-phase load which is feed from the discrete supply (mainly inverter). Main problem of unwanted x-y-subspace currents is addressed in this section. Topology of three level five phase inverter is discussed in section 3 along with the SPWM strategies. Simulation results of the three level five phase inverters feeding the five-phase induction motor is presented in section 4. Conclusion of the paper is presented in section 5.

2. Five-phase Induction motor

2.1 Working Principle

Five phase induction motor works on the same principle as that of three phase induction motor, Faraday's law of electromagnetic induction. Here we need to provide five phase AC supply across stator winding of five-phase induction motor. In balanced condition stator winding is distributed in five groups displaced from each other by an angle 72 degree,

$\alpha = 360/n$, where n= No. of phases.

When five -phase supply is provided across stator winding it produces rotating magnetic field which rotates with synchronous speed. This rotating flux links with rotor winding and an emf is induced in it. Due to induced emf current circulates in the rotor conductor. As a result of interaction between two fluxes torque is produced.

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A Review on Design and Performance Analysis of 3 Phase Solar Integrated PV-UPQC

Rucha H. Belsare[1], Prasad D. Kulkarni[2]

PG Student [EPS], Dept. of EE, KCES'S College of Engineering and IT, Jalgaon, Maharashtra, India[1]

Assistant Professor, Dept. of EE, KCES'S College of Engineering and IT, Jalgaon, Maharashtra, India[2]

ABSTRACT: Today it is very important to provide clean, reliable and continue power to the consumer from supply authority. Due to the increasing customers and use of modern power electronic devices, there is number of disturbances in quality of power such as voltage sag, swell, harmonics. Hence , In order to maintain quality of power, different power electronic devices have been used. In this project, we used unified power quality conditioner with solar PV array to maintain good power quality. UPQC is the combination of series and shunt compensator which performs multi task to improve the quality of power. The proposed system combines both the benefits of distributed generation and active power filtering. The shunt compensator of the PV-UPQC compensates for the load current harmonics and reactive power. It takes power from PV array. The series compensator compensates for the grid side power quality problems such as grid voltage sags/swells by injecting appropriate voltage in phase with the grid voltage. Reference signal is generated by using synchronous reference frame control based on moving average filter.

KEYWORDS: Power Quality, shunt compensator, series compensator, UPQC, Solar PV.

I.INTRODUCTION

There is an increased integration of renewable energy systems such as solar and wind energy into modern distribution systems because it is environmental friendly. These sources of energy are intermittent in nature. The loads present in modern distribution system are mainly power electronics based loads which are highly non-linear. The increased installation of renewable energy sources and non-linear loads result in several power quality problems both at load and grid side [1]. These power electronic loads though energy efficient, inject harmonic currents into grid which cause distortion at point of common coupling (PCC) particularly in weak grid systems. Furthermore, these power electronic loads are sensitive to disturbances in voltages. In weak distribution systems, due to the intermittent nature of the clean energy sources such as wind and solar energy, their increased penetration leads to PCC voltage fluctuations depending upon power generation and demand.

These voltage fluctuations can affect sensitive power electronic loads such as adjustable speed drives, lighting systems etc which can lead to frequent tripping, malfunction and thus leading to increased maintenance costs. Renewable energy integration with power quality enhancing systems such as dynamic voltage restorer (DVR), unified power quality conditioner (UPQC) and distribution static compensator (DSTATCOM) provides an ideal solution by combining benefits of clean energy with power quality enhancement [2]. Efforts are being made by many researchers for the effective improvement of power quality. UPQC is considered as the most powerful solution to the problems arising due to power quality. It is adequate enough to take care of supply voltage disturbances like voltage sag/swells, voltage flickers, load reactive power as well as voltage and current harmonics. The UPQC can also be named as the universal active power line conditioner, universal power quality

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conditioning system and also universal active filter. It is a cascade connection of series and shunt active power filter (APF) connected through a common DC link capacitor [3].

II. SYSTEM CONFIGURATION AND DESIGN

Basic Structure of UPQC: UPQC is the combination of series and shunt converter. Basic structure of UPQC is as shown in fig. 1. The role of series inverter inject compensated voltage in series with the load voltage when source voltage become unbalanced and non sinusoidal. Series compensator injects or absorb voltage at the required magnitude and phase angle which can solve the problem of voltage sag, swell . Series inverter absorbs / inject real power in addition to reactive power. The shunt converter has the ability to regulate the dc link voltage and compensate the current related PQ issues [5]-[6].

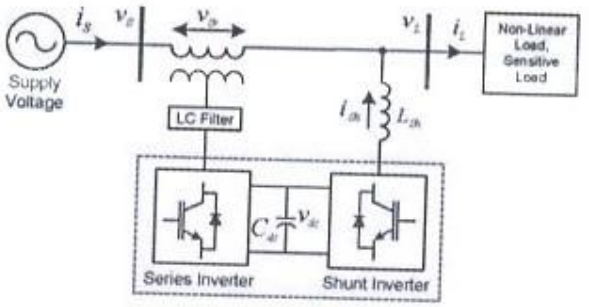

Fig. 1. Basic structure of UPQC

System Configuration

UPQC is used to eliminate distortions of voltage and is used for reactive power compensation. In UPQC series compensator is used as voltage source inverter to compensate for voltage distortions and make voltage at load side completely balanced and sinusoidal. It injects a voltage which is difference of source voltage and perfectly balanced load voltage. Shunt compensator is used for compensation of reactive power. It is also used to maintain value of DC link capacitor constant[6]. The structure of the PV-UPQC is shown in Fig. 2.The PV-UPQC is designed for a three-phase system.

The PV-UPQC consists of shunt and series compensator connected with a common DC-bus. At load side, shunt compensator is connected. The solar PV array is directly integrated to the DC-link of UPQC through a reverse blocking diode. The series compensator used to compensate the voltage which can reduce the voltage sag and swell. The shunt and series compensators are connected to the grid through interfacing inductors. A series compensator injects the voltage into the grid by using series injection transformer. Harmonics are generated by converters are eliminated by using filters[8].

The magnitude of DC link voltage Vdc depends on the depth of modulation used and per-phase voltage of the system. The DC-link voltage magnitude should more than double the peak of per-phase voltage of the three phase system. The load used is a nonlinear load consisting of a bridge rectifier with a voltage-fed load. The DC-link capacitor is sized based upon power requirement as well as DC-bus voltage level. The interfacing inductor rating of the shunt compensator depends upon the ripple current, the switching frequency and DC-link voltage.

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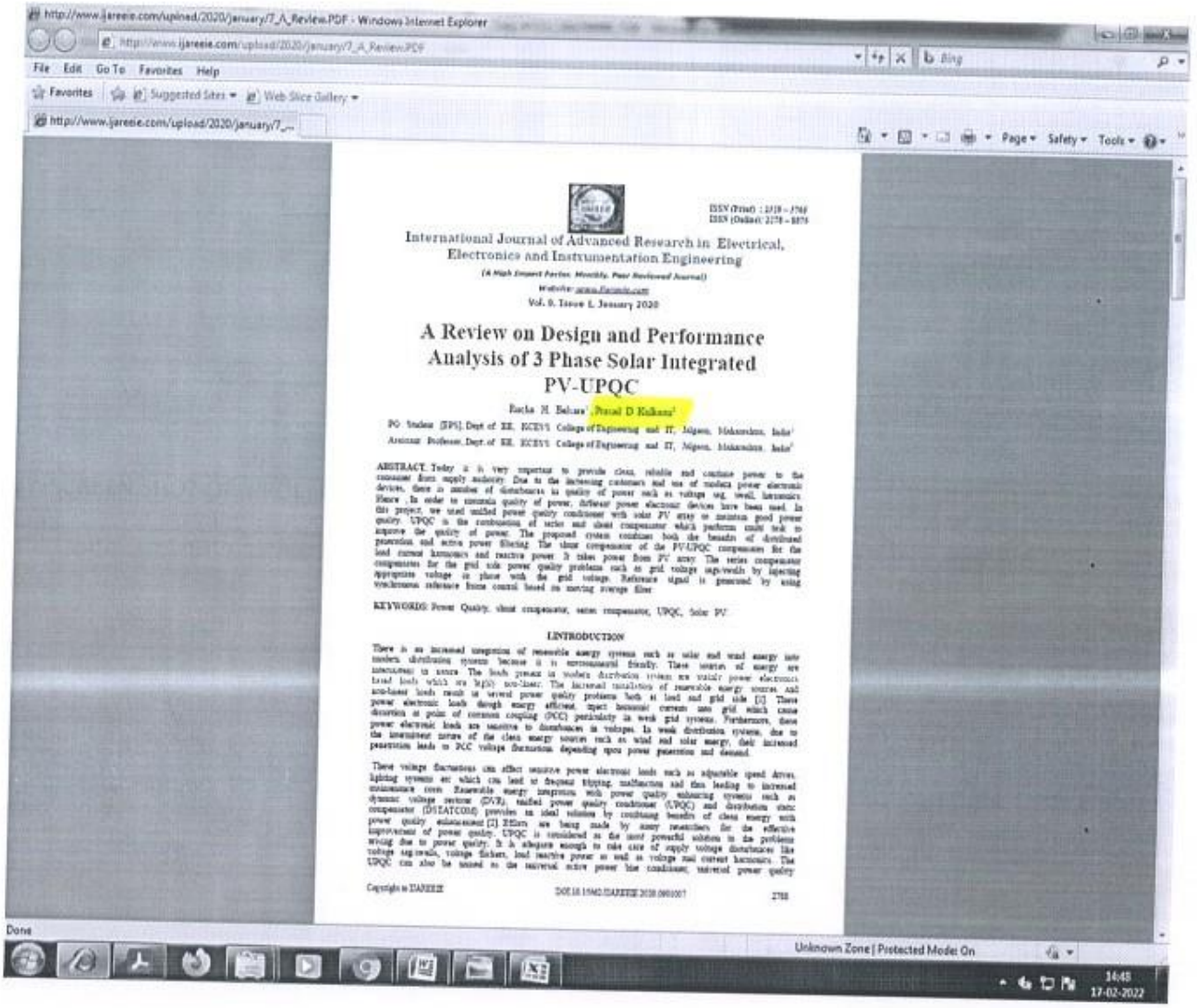

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PG Student [EPS], Dept of EE, KCEVS College of Engineering and IT, Jalgaon, Maharashtra, India[1]

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A Review & Design of Prototype of Sensor less BLDC Motor in Comparison with PMDC Motor for Solar Powered Water Pumping System

Jagdish Patil[1], Pravin Bhangale[2], Kalpesh Mahajan[3]

PG Student, Dept. of Electrical Engineering, KCES'S COEIT, Jalgaon, Maharashtra, India[1]

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KEYWORDS: Renewable energy, skewing of magnet, cogging torque, harmonics.

I. INTRODUCTION

To restrict CO_2 emission and to giving easy solution for water pumping in remote area. This involve introduction of solar supply in combination with pump and to optimize the system performance with proper design of complete system. PMDC is replaced with Sensor less BLDC with MPPT and get maximum output at lower irradiation also. The electrical steel used is of higher grade to reduce no load loss and NdFeB magnet are introduced to design the motor with higher service factor so that in future enhancement there is a possibility to improve the power rating with proper selection of drive. The electrical steel grade is taken similar but SmCo is been replaced with NdFeB.
The PMDC motor with 15 slot armature 2 pole segmented magnet of SmCo grade Sm2Co17 26H. Br = 10.6 kG, Hc = 784 kA/m. The motor working temperature when loaded at 0.3 hp is 78°C Due to lower power rating of motor the magnet eddy current is to be reduced therefore the magnets was been segmented.

1.1 Old System with PMDC Motor:-

1. Stack Length = 68 mm
2. Rotor OD = 58 mm
3. Rotor Slots = 15 Nos
4. Slot Area = 70 Sq.mm
5. Magnet Grade – SmCo26H

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6. Thickness of Magnet = 6mm

Motor Rating = 32V,DC / 9.1 A,DC

Motor Efficiency = 64 % at 0.25 hp

Temperature rise after 2Hrs loading 21°C

1. 2 New System with BLDC Motor:-

Brush Less DC motor + Sensor less EC Drive with MPPT

1. Surface mount Radial Brush Less DC motor (Efficiency <83%)
2. MPPT Algorithm - Perturb and observe (Efficiency <99%)
3. Sensor less EC Drive (Efficiency <97%)

Note: Efficiency is declared at rated load of 0.25 hp

II. DESIGN PROCEDURE AND STEPS

Basic Design of solar water pump using BLDC motor: The biggest confusion for designer to design a motor of independent power source of stator and rotor is to collaborate both stator and rotor design. A poor design collaboration will result in lesser power factor. Therefore it is also necessary to fix the design step either to design stator first or the rotor first. Further iteration will improve the design. Here the rotor permanent magnet is been designed first than the stator lamination, winding. The material selection should be compatible with PWM supplies with higher frequencies.

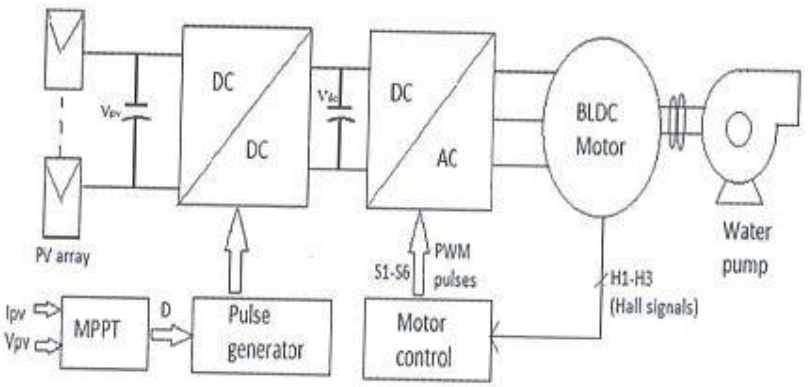

Figure 1. Block diagram of a solar water pump using BLDC motor

III. DESIGN TOPOLOGY

The stator is distributed wound to increase the number of slot for same number of pole with lesser frequency thereby also reducing the hysteresis loss, eddy current loss, and copper loss due to increase in resistance with higher operating frequencies. The surface mount magnet rotor is designed to reduce the manufacturing difficulty and cost. If the service factor is required is less the rotor should be designed with interior permanent magnet design to increase reluctance torque and to reduce cogging torque with lesser number of stator slot and poles.

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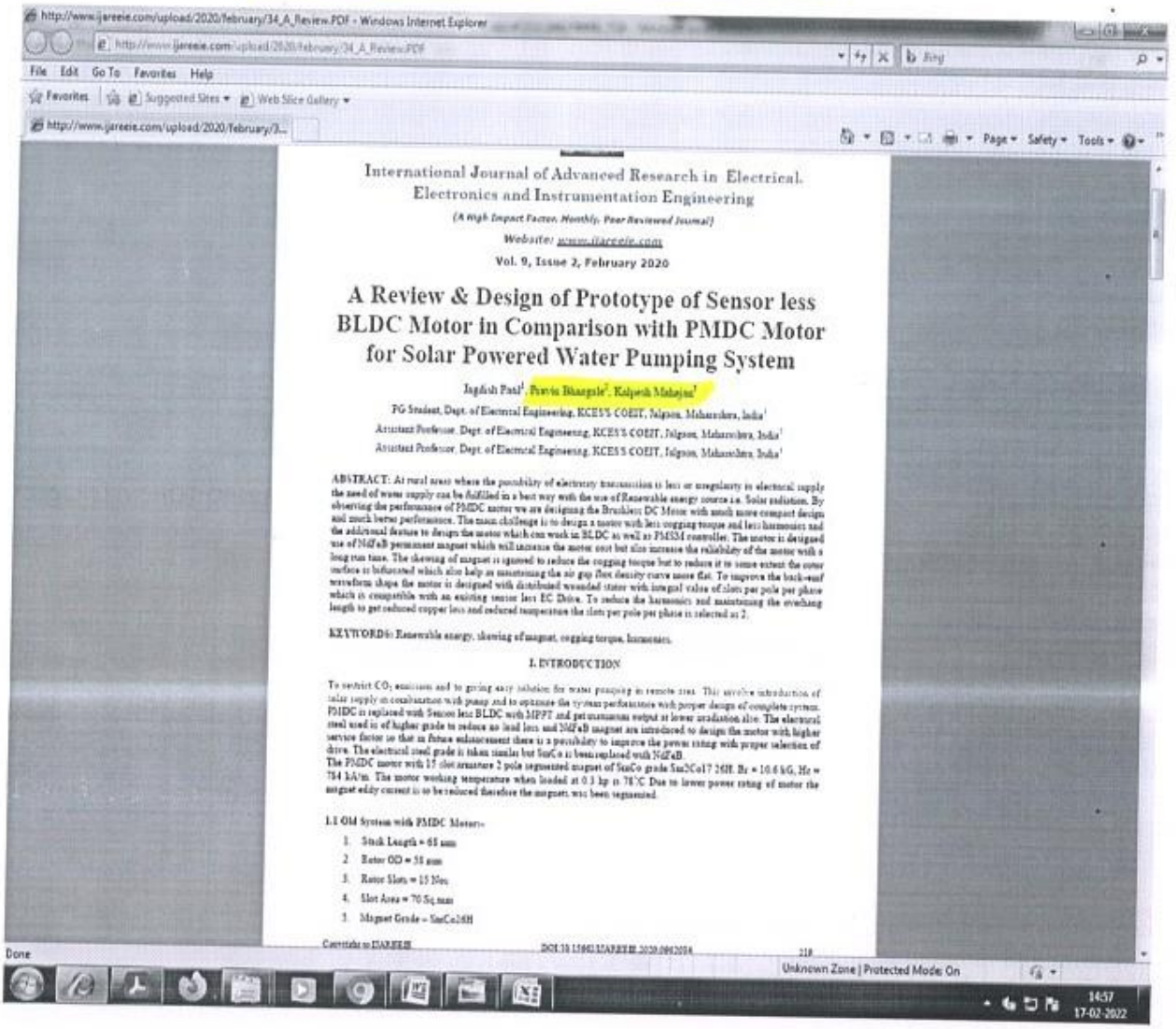

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The PMDC motor with 17 slot armature 2 pole segmented magnet of SmCo grade Sm_2Co_{17} 26H. Br = 10.6 kG, Hc = 754 kA/m. The motor working temperature when loaded at 0.3 hp is 78°C Due to lower power rating of motor the magnet eddy current is to be reduced therefore the magnet, was been segmented.

1.1 Old System with PMDC Motor:-

1. Stack Length = 65 mm
2. Rotor OD = 38 mm
3. Rotor Slots = 17 Nos.
4. Slot Area = 70 Sq.mm
5. Magnet Grade – SmCo26H

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Design of Prototype Model of Sensor less BLDC Motor in Comparison with PMDC Motor for Solar Water Pumping System

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II. LITERATURE SURVEY

To save the fuel consumption by saving electricity leads to use of renewable energy source. Solar water pumping system was the best example of it but the system efficiency was not as good as with grid power. Therefore, to improve the wire to water efficiency of solar pumping system the system was designed in optimized manner. To reduce the cost with better performance. This thesis involves proper system design and Brushless DC motor as a replacement of Permanent magnet DC motor for better performance and better life span. The motor is to be designed with smaller size resulting in increased temperature. Odd Stator Slot Numbers in Brushless DC Machines—An Aid to Cogging Torque Reduction. David G. Dorrell, University of Technology Sydney, Sydney NSW 2007, Australia, Motor Design Ltd, Ellesmere, Shropshire SY12 0EG, U.K. Brushless permanent-magnet dc machines often use an integral number of slots per pole (e.g., 3slots/pole) with fully pitched coils in order to obtain a good trapezoidal back-electromotive-force(emf) waveform. However, this can lead to high cogging torque and load torque ripple. A simple solution is to add one additional slot so that the reluctance slotting that causes the ripple is removed, but the winding pattern is closely retained. This paper illustrates that simple design modification, where one additional slot is used so that the machine does not have an integral number of slots per pole. In this paper, the arrangement is analyzed using simple winding analysis and a finite-element analysis which gives more preciseness to calculations. It is found that there is a substantial reduction in cogging and load torque oscillation, thus proving the principle. However, the stator windings are slightly

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unbalanced and this can lead to vibration. This is also investigated and the resulting unbalanced magnetic pull under load is found to be present but of a low magnitude.

III. METHODOLOGY

3.1 Permanent Magnet design

Material Grade: NdFeB – N35-M

Back emf max: $= \frac{Vdc}{\sqrt{2}}$

$= \frac{36}{\sqrt{2}}$

$= 25.45\ VAC$

Maximum Speed: 1750 rpm

Torque required:

$= \frac{Power}{2\pi N}$

$= \frac{224*60}{2\pi*3300}$

=0.648 Nm

$T = KD^2L$

$K = 6000$

$L = \frac{0.64}{6000 * (0.042)^2}$

$L = 60.46$ mm

$L_{considered} = 62$ mm

Number of pole = 4

Number of stator slots = 12

$\emptyset_r = B_r * A_m$

$= \theta_{radian} * r * l$

$\theta_{degree} = 87$

Therefore, $\theta_{radian} = 0.0174533 * 87 = 1.51844$

$r = 18.25$ mm ; $l = 62$ mm

$= 0.01825 * 1.51844 * 0.062$

$A_m = 0.001718114\ m^2$

$B_r = 1.17$ T

$\emptyset_r = 1.17 * 0.001718114$

$= 0.00201019$ wb

$P_{mo} = \frac{\mu_0 * \mu_{rec} * A_m}{l_m}$

$P_{mo} = \frac{4\pi * 10^{-7} * 1.04347 * 0.00178114}{0.003}$

$= 7.781 * 10^{-7}$

$A_g = [\theta_{radian} * (0.042 - 0.00125) + 2 * g] * (l + 2 * g)$

$A_g = [1.51844 * (0.042 - 0.00125) + 2 * 0.0025] * (0.06 + 2 * 0.0025)$

$A_g = 0.0043469\ m^2$

$A_g = \frac{[1.51844 * 0.042 * 0.062]}{2}$

$A_g = 0.001977\ m^2$

$C_\emptyset = \frac{A_m}{A_g}$

$C_\emptyset = \frac{0.001718114}{0.001977}$

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$B_g = \frac{C_\emptyset}{\{1 + P_m * P_{ss} * P_g\}} * B_r$

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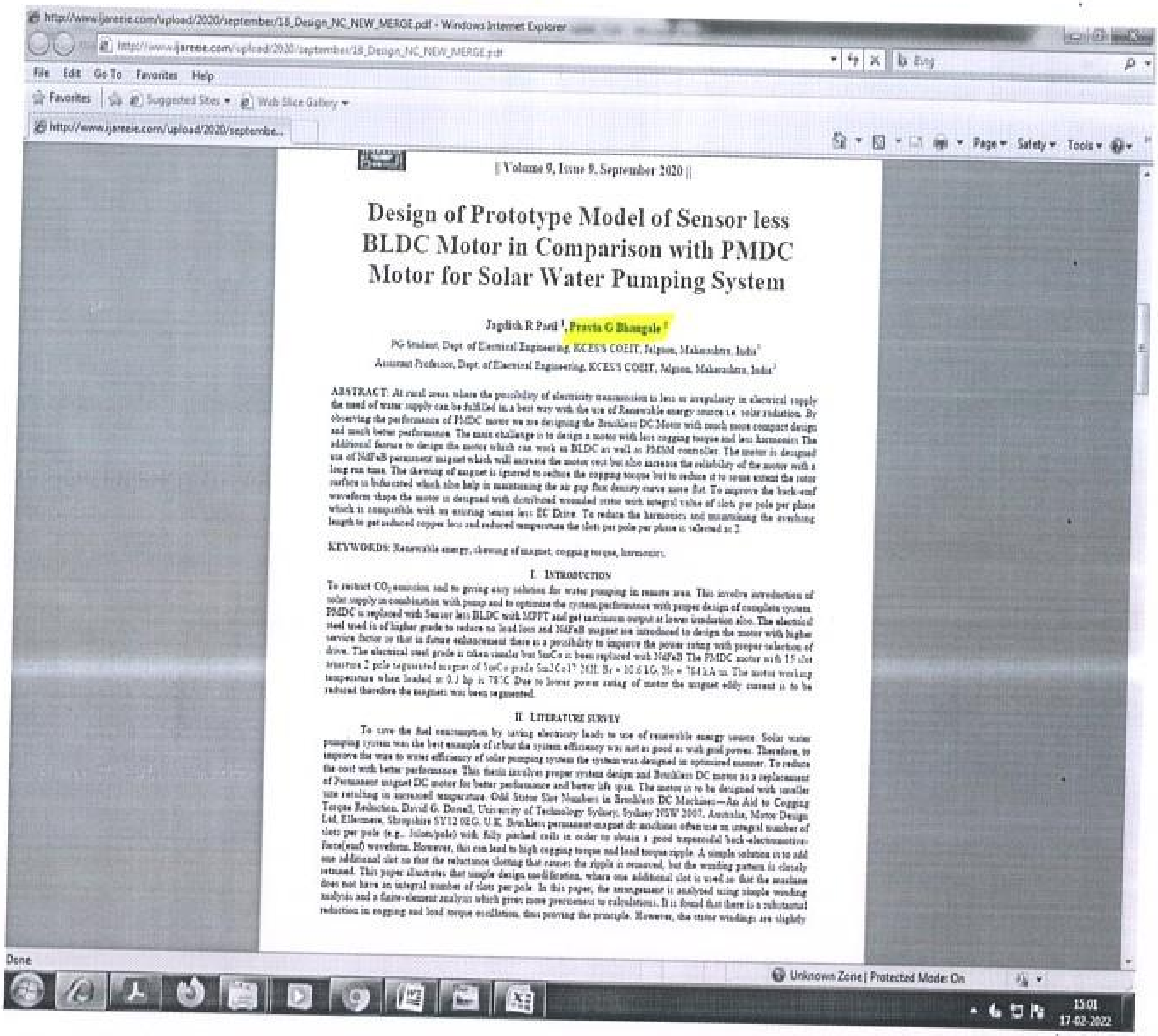

|| Volume 9, Issue 9, September 2020 ||

Design of Prototype Model of Sensor less BLDC Motor in Comparison with PMDC Motor for Solar Water Pumping System

Jagdish R Patil [1], Pravin G Bhangale [2]

PG Student, Dept. of Electrical Engineering, KCES'S COEIT, Jalgaon, Maharashtra, India[1]

Assistant Professor, Dept. of Electrical Engineering, KCES'S COEIT, Jalgaon, Maharashtra, India[2]

ABSTRACT: At rural areas where the possibility of electricity transmission is less or irregularity in electrical supply the need of water supply can be fulfilled in a best way with the use of Renewable energy source i.e. solar radiation. By observing the performance of PMDC motor we are designing the Brushless DC Motor with much more compact design and much better performance. The main challenge is to design a motor with less cogging torque and less harmonics. The additional feature to design the motor which can work in BLDC as well as PMSM controller. The motor is designed use of NdFeB permanent magnet which will increase the motor cost but also increase the reliability of the motor with a long run time. The skewing of magnet is ignored to reduce the cogging torque but to reduce it to some extent the rotor surface is bifurcated which also help in maintaining the air gap flux density curve more flat. To improve the back-emf waveform shape the motor is designed with distributed wounded stator with integral value of slots per pole per phase which is compatible with an existing sensor less BC Drive. To reduce the harmonics and minimizing the overhang length to get reduced copper loss and reduced temperature the slots per pole per phase is selected as 2.

KEYWORDS: Renewable energy, skewing of magnet, cogging torque, harmonics.

I. INTRODUCTION

To restrict CO_2 emission and to giving easy solution for water pumping in remote area. This involve introduction of solar supply in combination with pump and to optimize the system performance with proper design of complete system. PMDC is replaced with Sensor less BLDC with MPPT and get maximum output at lower irradiation also. The electrical steel used is of higher grade to reduce no load loss and NdFeB magnet are introduced to design the motor with higher service factor so that in future enhancement there is a possibility to improve the power rating with proper selection of drive. The electrical steel grade is taken similar but SmCo is been replaced with NdFeB The PMDC motor with 15 slot armature 2 pole segmented magnet of SmCo grade Sm2Co17 30H. Br = 10.6 kG, Hc = 764 kA/m. The motor working temperature when loaded at 0.1 hp is 78°C Due to lower power rating of motor the magnet eddy current is to be reduced therefore the magnet was been segmented.

II. LITERATURE SURVEY

To save the fuel consumption by saving electricity leads to use of renewable energy source. Solar water pumping system was the best example of it but the system efficiency was not as good as with grid power. Therefore, to improve the wire to water efficiency of solar pumping system the system was designed in optimized manner. To reduce the cost with better performance. This thesis involves proper system design and Brushless DC motor as a replacement of Permanent magnet DC motor for better performance and better life span. The motor is to be designed with smaller size resulting in increased temperature. Odd Stator Slot Numbers in Brushless DC Machines—An Aid to Cogging Torque Reduction. David G. Dorrell, University of Technology Sydney, Sydney NSW 2007, Australia, Motor Design Ltd, Ellesmere, Shropshire SY12 0EG, U.K. Brushless permanent-magnet dc machines often use an integral number of slots per pole (e.g., 3slots/pole) with fully pitched coils in order to obtain a good trapezoidal back-electromotive-force(emf) waveform. However, this can lead to high cogging torque and load torque ripple. A simple solution is to add one additional slot so that the reluctance slotting that causes the ripple is removed, but the winding pattern is closely retained. This paper illustrates that simple design modification, where one additional slot is used so that the machine does not have an integral number of slots per pole. In this paper, the arrangement is analyzed using simple winding analysis and a finite-element analysis which gives more preciseness to calculations. It is found that there is a substantial reduction in cogging and load torque oscillation, thus proving the principle. However, the stator windings are slightly

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PRAVIN BHANGALE

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|| Volume 9, Issue 7, June 2020 ||

Using HBCC System Power Factor Correction of Three-Phase PWM AC Chopper Fed Induction Motor Drive System

Chaitra N. Panat[1], Kalpesh M. Mahajan[2]

PG Student [EPS], Dept. of EE, KCES'S College Engineering and IT, Jalgaon, Maharashtra, India[1]

HOD, Dept. of EE, KCES'S College Engineering and IT, Jalgaon, Maharashtra, India[2]

ABSTRACT: In this project I am going to improve Power Factor Of Three-Phase PWM AC Chopper supplied Induction Motor Drive System Employing HBCC Technique. The primary objective of the prospective control scheme is to gain input power factor improvement of the IM drive system under different operating conditions. PFI is obtained by frequently forcing the actual three-phase supply currents with the corresponding reference currents, which are developed in phase with the supply voltages, using hysteresis band current control (HBCC) technique. The planned ac chopper features a smaller number of active semiconductor switches, four IGBTs, with barely two PWM gate signals. As a result, the proposed system is easy, consistent, extremely proficient, and cost effective.

KEYWORDS: PWM, Three Phase PWM AC Chopper ,Hysteresis Band Current Control.

I. INTRODUCTION

AC voltage regulators, too call as AC voltage controllers, are used in a range of applications that necessitate a regulated AC voltage. Lighting control using dimmer circuits, domestic as well as industrial heating, speed control and soft starters for the induction motors are examples of such applications [1], [2]. Different methodologies with different control strategies of these regulators in single phase applications and also in three phase applications are presented. The reason of AC voltage controller is to vary the root mean square (RMS) value of its output that applied to the load circuit. There are three control strategies are obtainable to gain this objective; ON/OFF method, phase angle (PA) method and pulse width modulation (PWM) method. All three control methods can be implemented in both single- phase and three-phase applications.

II. LITERATURE SURVEY

In order to minimize drawbacks such as harmonics present at output voltage, discontinuity of power flow present at both supply and load side even for a resistive load, some another issues in driving dynamic loads such as electric motors, etc. arising from the inherent characteristics of the controller AC controllers can be replaced by PWM

AC choppers. In order to control the load current, HBCC among various PWM strategies is broadly used because of its inbuilt simplicity and fast dynamic response. Mohamed k. Metwaly , Haitham Z. Azazi , Said A. Deraz , Mohamed E. Dessouki and Mohamed s. Zaky "Power Factor Correction of Three-Phase PWM AC Chopper Fed Induction Motor

Drive System Using HBCC Technique." In this paper, an analysis and simulation of a Pwm ac Chopper fed induction motor drive system using HBCC technique is shown. Murat Kale, Murat Karabacak, Bilal Saracoglu "A Novel Hysteresis Band Current Controller Scheme For Three Phase AC Chopper." this paper presents the importance of using Hysteresis band current control scheme and their applications with model.

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|| Volume 9, Issue 7, June 2020 ||

Fig. 2. represents a schematic diagram of the proposed three phase PWM AC chopper fed an IM. The chopper is composed of four power electronics switches (S1; S2; S3 and S4). The three power switches (S1; S2 and S3) are series- connected with the motor. The series-connected switches are utilized to continuously connect and disconnect the motor to and from the AC supply, respectively. Hence, they regulate the delivered power to the motor. While, the power switch (S4) is parallel-connected via a poly phase bridge rectifier with the motor which offers a freewheeling way for discharging the energy kept in the motor windings when the series-connected switches are turned OFF. As series and parallel devices operate in a complementary way, a dead time is introduced to avoid the commutation problems. There are three operating stages: active, freewheeling and dead time. In dead time period, all four devices are turned OFF. Snubber circuit is used to lessen high voltage spikes at IM terminals due to switching of the chopper as well as provide the current path of IM during the dead time period. The input filter is poised of three inductors .The LC input filter is used with the proposed PFC technique in order to diminish the harmonics of the supply current due to switching of the chopper. The proposed control circuit only generates two PWM complementary gate pulses (g1 and g2) which are used to drive the chopper IGBTs in order to make available the three main tasks of the proposed control plan.

1. Simulation Model:

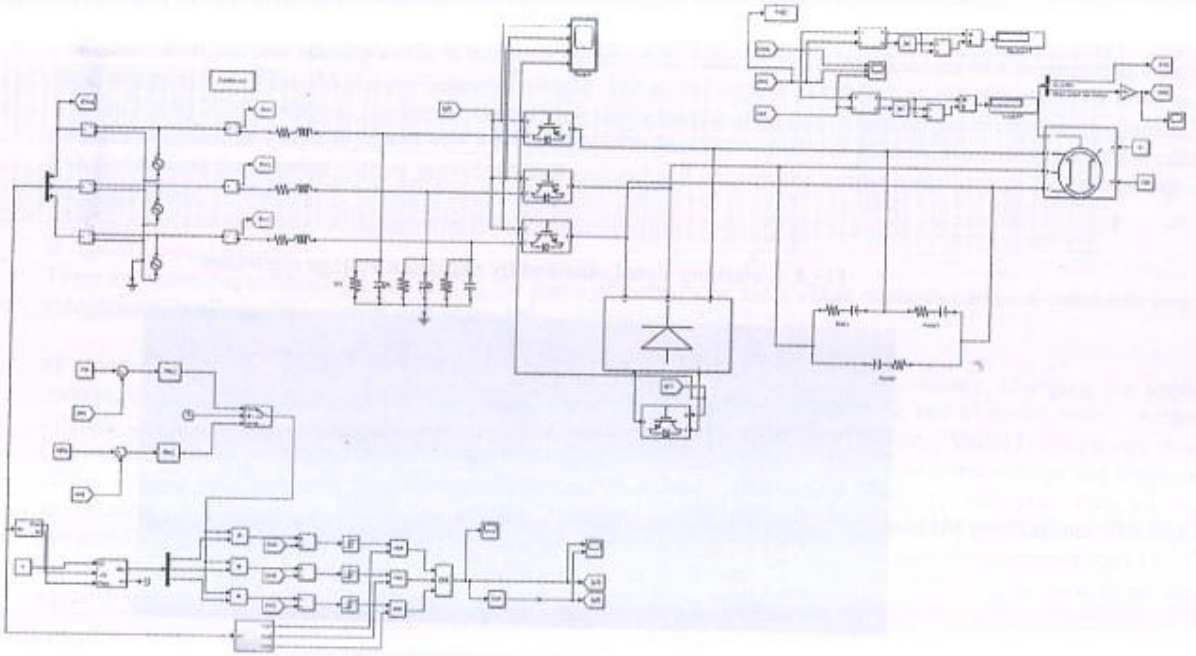

Fig.3. Simulation model of the proposed system

2. Specification:

1. Source Voltage: 300V
2. Source Current: 20 to 25 A
3. Load Current: 20 to 25 A
4. Speed: 1500 RPM

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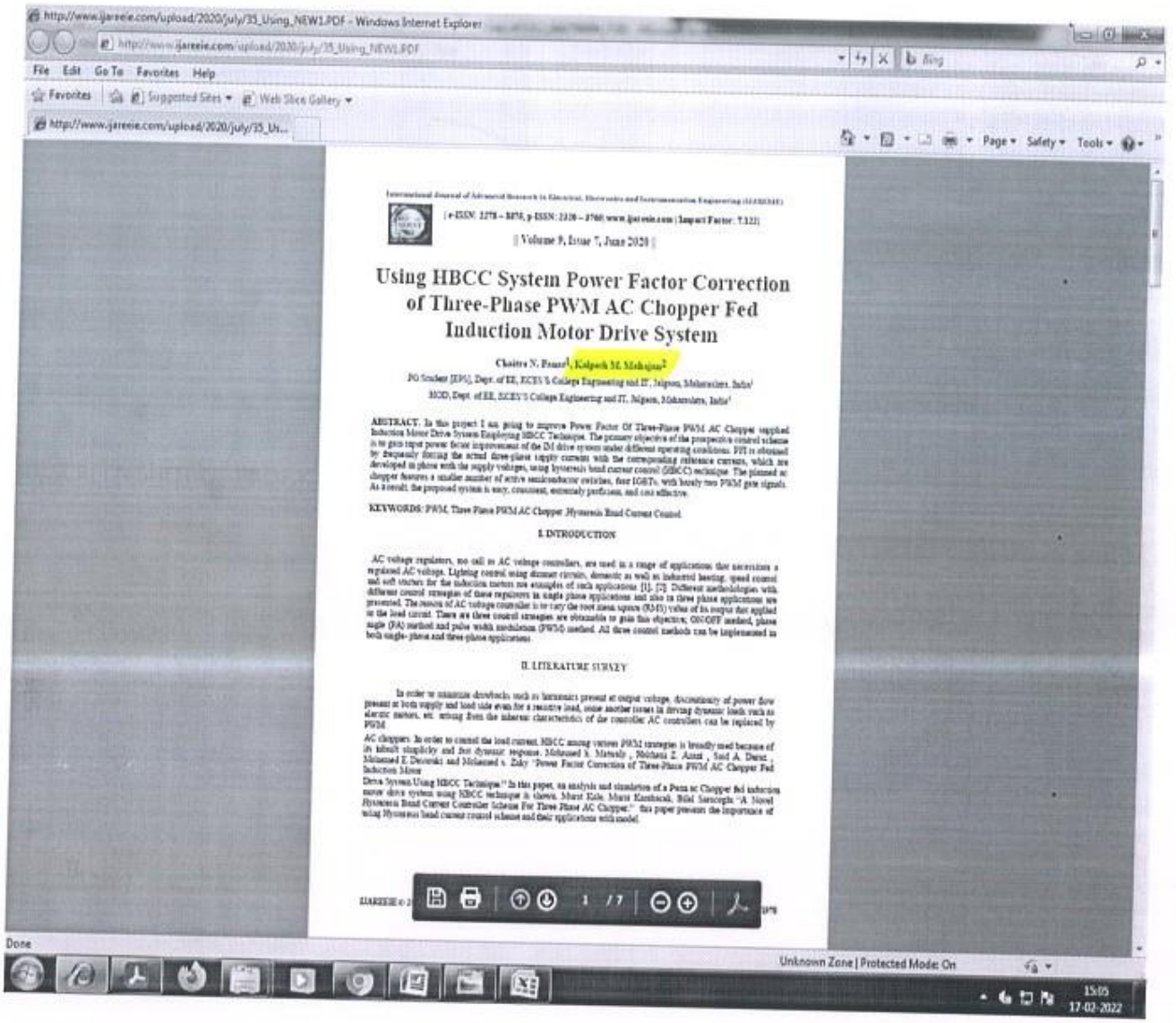

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Chaitra N. Pawar[1], Kalpesh M. Mahajan[2]

PG Student [EPS], Dept. of EE, KCES's College Engineering and IT, Jalgaon, Maharashtra, India[1]

HOD, Dept. of EE, KCEY's College Engineering and IT, Jalgaon, Maharashtra, India[2]

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|| Volume 9, Issue 9, September 2020 ||

Analysis Solar Photovoltaic System with P&O MPPT Techniques

Rohini Purshottam Yeole[1], Pravin Gopal Bhangale[2]

PG Student, Department of Electrical Engineering, K.C.E'S COEIT, Jalgaon, Maharashtra, India[1]

Assistant Professor, Department of Electrical Engineering, K.C.E'S COEIT, Jalgaon, Maharashtra, India[2]

ABSTRACT: Over the past years, the energy demand has been steadily growing and so methods of how to cope with this staggering increase are being researched and utilized. One method of injecting more energy to the grid is renewable energy, which has become in recent years an integral part of any country's power generation plan. Thus, it is a necessity to enhance renewable energy resources and maximize their grid utilization, so that these resources can step up and reduce the over dependency of global energy production on depleting energy resources.

This thesis focuses on solar power and effective means to enhance its efficiency through the use of P&O MPPT Technique. An enhanced maximum power point tracking (MPPT) controller has been designed as part of a Photovoltaic (PV) system to generate maximum power to satisfy load demand. The PV system is designed and simulated using MATLAB (consisting of a solar panel array, MPPT controller, boost converter, voltage source convertor, a resistive load and grid). The two different manufacturer's solar panel chosen for the array one is 100-kW PV Array Maximum Power 330 * SunPower SPR-305 (Nser=5, Npar=66) and second Array is 100-kW PV Array Maximum Power 488 * Kyocera-KD205GX-LP (Nser=8, Npar=61) the array is designed to produce 200 kW of power. The P&O MPPT controller is designed and the results are compared to identify different manufacturer's solar PVs analysis and drawbacks. Both manufacturer's solar PV panels was tested under two different scenarios; the first is when the panel array is subjected to constant amount of solar irradiance along with a constant atmospheric temperature and the second scenario has varying solar irradiance and a constant atmospheric temperature. The performance of these two solar PVs are analysed and compared in terms of the output power efficiency, system dynamic response and finally the oscillations behaviour.

KEYWORDS: Photovoltaic, maximum power point tracking (MPPT).

I. INTRODUCTION

The increasing of the world energy demand, due to the modern industrial society and population growth, is motivating many investments in alternative energy solutions, in order to improve energy efficiency and power quality issues. The use of photovoltaic energy is considered to be a primary resource, because there are several countries located in tropical and temperate regions, where the direct solar density may reach up to 1000W/m.

At present, photovoltaic (PV) generation is assuming increased importance as a renewable energy sources application because of distinctive advantages such as simplicity of allocation, high dependability, absence of fuel cost, low maintenance and lack of noise and wear due to the absence of moving parts. The cell conversion ranges vary from 12% of efficiency up to a maximum of 29% for very expensive units. In spite of those facts, there has been a trend in price decreasing for modern power electronics systems and photovoltaic cells, indicating good promises for new installations. However, the disadvantage is that photovoltaic generation is intermittent, depending upon weather conditions. Thus, MPPT makes the PV system providing its maximum power and that energy storage element is necessary to help get stable and reliable power from PV system for both loads and utility grid, and thus improve both steady and dynamic behaviors of the whole generation system.

In the proposed work, Perturb and Observe (PO) MPPT algorithms analyzed and implemented for two different manufacturer's PV array. Thereafter, PV array connected to the utility grid by a boost converter to optimize the PV output and DC/AC voltage source convertor (VSC) to convert the DC output voltage of the solar modules into the AC system. The results of two different manufacturer's solar PV modules with MPPT algorithm responses compared for grid connected PV array. In addition, performance analysis of grid connected PV array with MPP tracking done in terms of grid voltage response, grid current response and grid power response at utility grid using the input parameters,

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and solar radiation obtained from reference data sheet with constant temperature of 250C. The proposed model, the entire components and control systems simulated under MATLAB/Simulink Software.

II. PROBLEM STATEMENT

Due to the previously mentioned reasons, it is highly recommended to keep investing and researching about the enhancement of renewable energy's efficiency. However, in this article the main concentration will only be on photovoltaic systems. The usage of renewable energy is not a recent trend and solar energy is not an exception. However, it was not till 1954 that Bell labs in the United States came up with the first solar photovoltaic device that can actually produce sufficient amount of electricity. The use of solar energy kept increasing until it finally boomed after the 1970s due to the energy crisis that was going on at the time. Solar panels comprise of semi-conducting materials of both P and N-type. This creates an electric field that directs the electrons from the solar rays that hit the surface and thus creating a current.

Unfortunately, a photovoltaic system requires more components that just a solar panel. It requires a robust, steady mounting structure to support the panel at the right angle and through all the changing weather conditions from sandstorms to rain showers. Also, it requires the use of inverters, which are electronic devices that can be used to convert Direct Current (DC) voltage that is generated from the panel to another level of DC voltage or convert the DC voltage to Alternate Current (AC) to be used in the premises or transmitted to the electricity grid.

The final component of the system is an energy storage device or a battery. Batteries are not needed if the system is connected to the grid or direct use of generated power for stand alone. Batteries are only needed if the user requires power during the night and the user stores this energy in the batteries during the day for it to be used during the night. They have a low maintenance cost as they are very durable and are designed to operate for a couple of decades. Finally, they are very quiet as they are a static system with no mechanical movement at all.

III. METHODOLOGY

A. P&O MPPT Technique

Perturb and Observe (PO) method, also known as perturbation method, is the most commonly used MPPT algorithm in commercial PV products. This is essentially a "trial and error" method. The PV controller increases the reference for the inverter output power by a small amount, and then detects the actual output power. If the output power is indeed increased, it will increase again until the output power starts to decrease, at which the controller decreases the reference to avoid collapse of the PV output due to the non-linear PV characteristic.

Although the PO algorithm is easy to implement, it has a number of problems, including

- PV system cannot always operate at the maximum power point due to the slow trial and error process, and thus solar energy from the PV arrays not fully utilized.
- PV system may always operate in an oscillating mode even with a steady-state sunshine condition, leading to fluctuating inverter output.
- Operation of the PV system may fail to track the maximum power point due to the sudden changes in sunshine.

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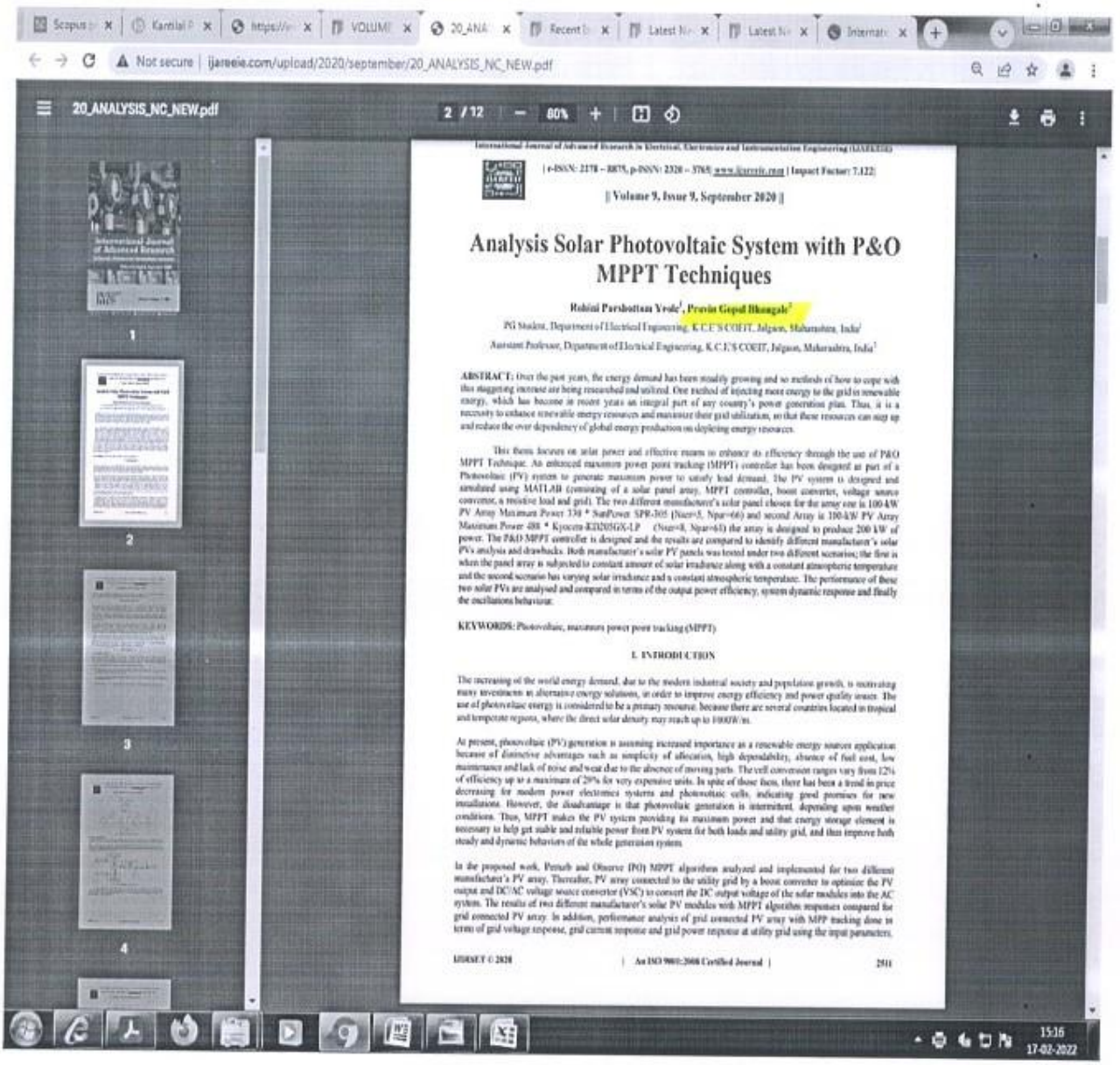

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Rohini Parshottam Vrole[1], Pravin Gopal Bhangale[2]

PG Student, Department of Electrical Engineering, K.C.E.S'COEIT, Jalgaon, Maharashtra, India[1]

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|| Volume 9, Issue 6, June 2020 ||

Rectifier Load Analysis for Electric Vehicle Wireless Charging System

Rupali E Patil[1], Kalpesh Mahajan[2]

PG Student, Department of Electrical Engineering, KCE's College of Engineering and Information Technology, Jalgaon, India[1]

Associate Professor, Department of Electrical Engineering, KCE's College of Engineering and Information Technology, Jalgaon, India[2]

ABSTRACT: This paper presents the analysis of rectifier load used for electric vehicle (EV) wireless charging system, as well as its applications on compensation network design and system load estimation. Firstly, a rectifier load model is established to get its equivalent input impedance, which contains both resistance and inductance components, and can be independently calculated through the parameters of the rectifier circuit. Then, a compensation network design method is proposed, based on the rectifier load analysis. Furthermore, a secondary side load estimation method and a primary side load estimation method are put forward, which adopt only measured voltages and consider the influence of the rectifier load. Finally, an EV wireless charging prototype is developed, and experimental results have proved that the rectifier equivalent load can be correctly calculated on conditions of different system load resistances, rectifier input inductances, DC voltages, and mutual-inductances. The experiments also show that rectifier load equivalent inductance will impact system performances, and the proposed methods have good accuracy and robustness in the cases of system parameter variati

I. INTRODUCTION

ELECTRIC vehicle (EV) wireless charging system (WCS) has the advantages of convenience, space-saving, etc. So, it has attracted much attention. In recent years, working principle, operation characteristics, system design, and control method of both stationary and dynamic wireless EV charging systems have been studied and applied to some demonstrations [1,2].

In applications of EV wireless charging, rectifier and output filter capacitor are needed to convert the high frequency AC to DC, in order to charge the power battery. Rectifier and the circuit after it are usually equivalent to a pure resistance load to design the system or control strategy [3,4]. A conventional way is using the coefficient $8/\pi^2$ to make an equivalent relationship between the rectifier input impedance and the system load resistance [5,6]. However, stray parameters and non-ideal behaviors of the devices will become obvious at the high frequency range [7]. Also, rectifier input impedance can be affected by the input inductance and other parameters. So, it will bring some deviations, if only considering WCS rectifier input impedance as a pure resistance.

Actually, rectifier input impedance of EV wireless charging system contains both resistance part and inductance part [7-9]. It can be expressed as a series of an equivalent resistance and an equivalent inductance [8,9]. Although there has not been an effective method to get the equivalent load impedance of WCS rectifier, some existing researches could be helpful. Based on the on and off states [10], the rectifier and its related inductance and capacitance circuits can be described by the state space model [11], considering the stray resistances and diode forward voltage drop [12]. Then, the expressions of the related voltages and currents have been obtained in the time domain, frequency domain, or complex frequency domain [13,14], which can be used for the analysis of WCS rectifier equivalent load impedance. Besides, non-linear switching functions and circuit simulations could also be adopted to study this issue [15].

The non-linear process of rectifier load will bring some difficulties to system compensation network design. As we know, compensation networks are very important to system performances [16], and can be designed to achieve maximum efficiency, maximum power, or conjugate matching [17,18]. In most cases, a pure resistance is used to express the rectifier load [19-21]. But the operation modes of WCS rectifier load will affect the working states of compensation network [22]. So, actual equivalent input impedance of WCS rectifier load should be considered, while designing the compensation networks.

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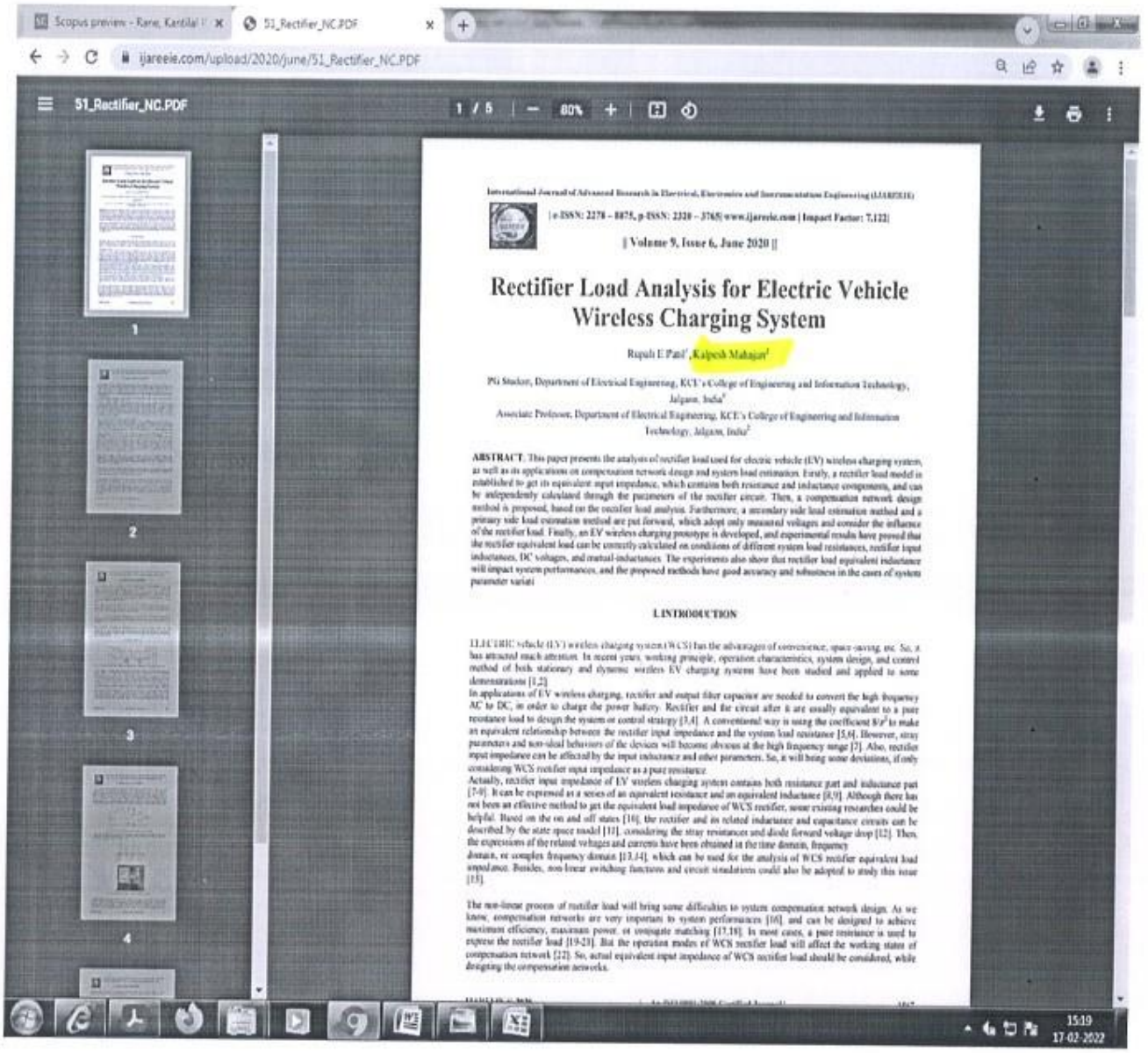

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|| Volume 9, Issue 6, June 2020 ||

Review on Comparison of Symmetric and Asymmetric Multilevel Inverters for Dynamic Loads

Neha Bornare, Prof. Sushant Sananse

Department of Electrical Engineering, KCES'S COEIT Jalgoan, BATU University, Jalgoan, Maharastra, India

ABSTRACT: Multilevel inverter technology has emerged recently as a very important alternative in the area of high-power medium-voltage energy control. This paper implements and compares a symmetric hybridized cascaded multilevel inverter and an asymmetric multilevel inverter utilizing a switched capacitor unit for 17 level inverters. The symmetric hybridized multilevel inverter topology consists of a modified H-bridge inverter, which results in an increase in the output voltage to five level from the three level by using a bi-directional switch at the midpoint of a dual-input dc source. In the proposed asymmetric multilevel inverter, dc sources are replaced with the switched capacitor unit, which in turn boosts the output voltage and produces twice the voltage levels at the loads.

I. INTRODUCTION

In achieving higher voltage levels and power levels, cascaded multilevel inverters (MLI) are proven to be more flexible than conventional topologies. Its modularity property can be used to increase the power output of the inverter. Cascaded MLIs are constructed by linking in series output terminals of several H-bridge inverters. It is hence evident that this configuration supports high power levels with the use of low voltage rating components in inverters. In case of a fault in any one of the inverter cells, it can be easily and quickly replaced because of its modularity property. In order to maintain reliability in inverter output in the event of a fault in any inverter cell, a suitable control strategy can be used to bypass the faulty cell without disturbing the load.

A basic structure of 7-level multilevel inverter is shown in Fig. To obtain a 7-level multilevel inverter, three full bridge inverters are connected in series. Each full bridge inverter can generate three different voltage outputs: +Vdc, 0, and –Vdc. The phase output voltage is synthesized by sum of three inverter outputs, an a1 a2 a3 V =V +V +V
The number of output phase voltage levels in a cascaded multilevel inverter is 2S+1, where S is the number of dc sources. The values of dc sources used are equal which can be called as symmetric cascaded multilevel inverter. Each full bridge unit generates a quasi-square waveform by phase shifting its positive and negative phase leg switching timings.

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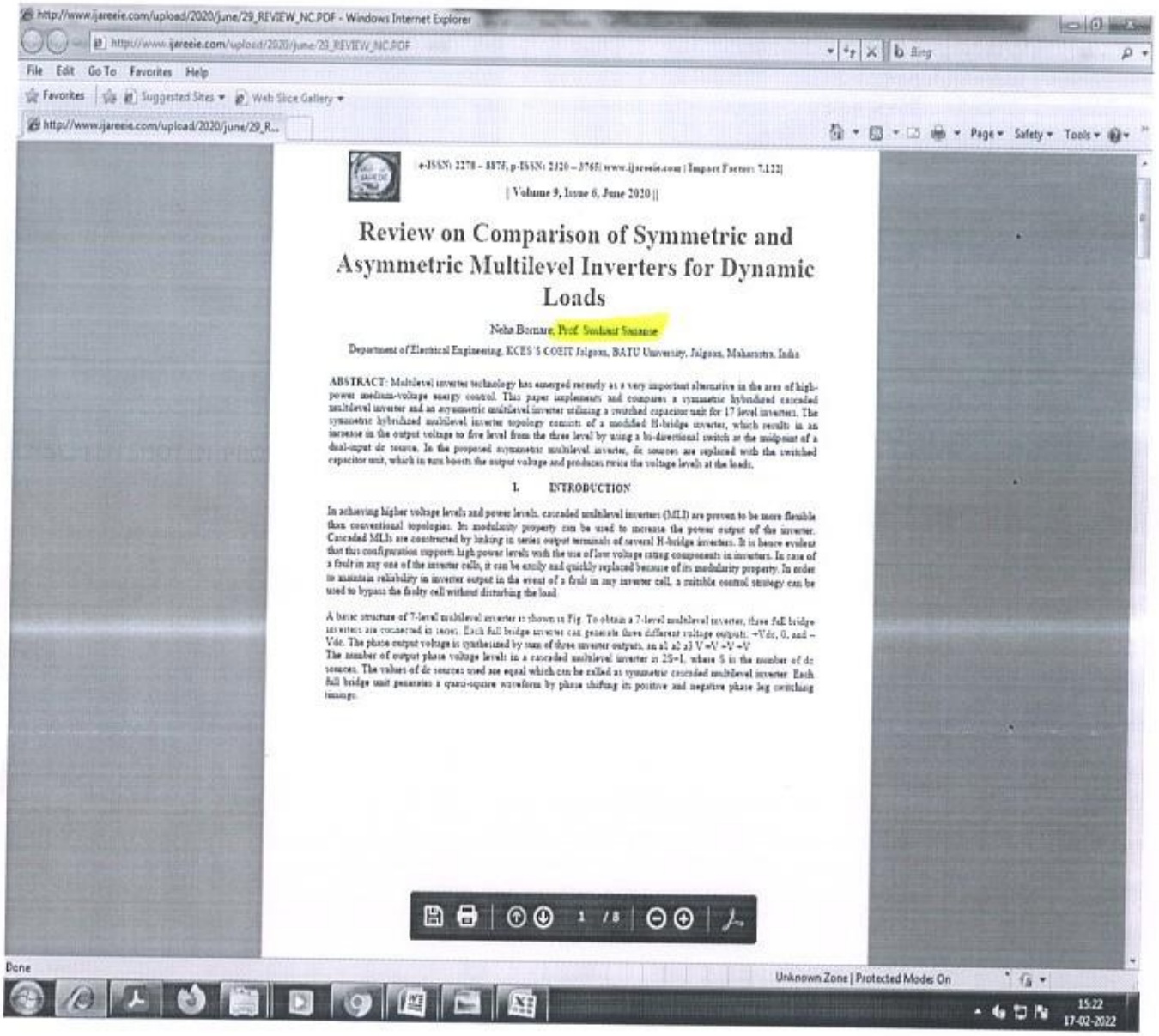

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|| Volume 9, Issue 8, August 2020 ||

An Improved DC-Link Voltage Control Strategy for Grid Connected Converters

Pranali Chopade[1], Prof. S. Sananse[2]

PG Student [EPS], Dept. of EE, KCES'S College of Engineering and IT, Jalgaon, Maharashtra, India[1]

Assistant Professor, Dept. of EE, KCES'S College of Engineering and IT, Jalgaon, Maharashtra, India[2]

ABSTRACT: This paper presents a robust control strategy to improve dc-link voltage control performances for Grid connected Converters (GcCs). The proposed control strategy is based on an adaptive PI controller and is aimed to ensure fast transient response, low dc-link voltage fluctuations, low grid current THD and good disturbance rejection after sudden changes of the active power drawn by the GcC. The proportional and integral gains of the considered adaptive PI controller are self-tuned so that they are well suited with regard to the operating point of the controlled system and/or its state. Several simulation and experimental results are presented to confirm and validate the effectiveness and feasibility of the proposed dc-link voltage control strategy.

KEYWORDS: DC-link voltage control, adaptive PI controller, Grid connected Converters

I.INTRODUCTION

Nowadays, power converters have an important role in a large scale of industrial applications since they allow efficient power transmission between the grid (on one side) and loads or energy sources (on the other side). The commonly used power converters topologies use a dc-link as an intermediate stage for the power conversion process in addition to a Grid connected Converter (GcC) and a filter based on passive (inductive and/or capacitive) elements. For example, this is the case of adjustable speed drives, renewable energy sources active power filters, UPS systems and back-to-back systems. Efficient dc-link voltage control is very important for such applications to reduce voltage fluctuations in the dc-link which are mainly caused by random changes (particularly sudden and sever changes) in the power drawn by the GcC. When these fluctuations cross their limits, the protection devices are activated leading to a system shut-down. Thus, the control objectives pertaining to the dc-link voltage can be summarized in the following key points: 1) the voltage across the dc-link capacitor must be kept at a constant value by controlling the power flow in the AC side of the GcC so that two objectives are satisfied: the first one is the upkeep of the capacitor charge, while the second one is the supply of a load connected to the dc-link (for the rectifying mode case) or the transfer of the power provided by a DC source (for the inverting mode case), 2) the dc-link voltage fluctuations must be minimized, 3) the generation of high grid current harmonics must be prevented and 4) The deviation from the unity power factor operation caused by the grid current ripples must be prevented. The most frequently used dc-link voltage controller is the PI controller Different PI controller design techniques were described in literature. Among them, we can cite the pole zero cancellation method, the pole placement method and the optimum criterion method. For these methods, the PI controller is usually adjusted with respect to different constraints: $C1$) stability; $C2$) dynamic performances; $C3$) disturbance rejection; and $C4$) step responses with low overshoot. In order to satisfy all these constraints, some research works presented the design of adaptive PI controllers. Other ones combine between the benefits of the PI controller and the feed forward compensation method. For that case, despite the excellent improvement of dynamic performances, such a method increases the coupling between the controlled dc-link voltage and the grid currents. Consequently, any noise or fast oscillation in the grid currents can create ripples at the output reference of the dc-link voltage controller. Other works have presented a Direct Power Control (DPC) combined with the boundary control to improve the dynamic performances of the dc-link voltage. Compared to the conventional DPC, the dc-link voltage is considered for selection of the switching states through a switching table. As a result, no outer loop is needed and the dynamic performances are highly improved. However, this method results into a variable switching frequency, which is limited to the half of the used sampling period and which depends on the system parameters, dc-link voltage and ac-side voltage. So, the DPC combined with boundary control cannot be used for applications that require constant switching frequency, like the case of LCL-based GcCs since it will lead to resonance problems. Moreover, this control will lead to high grid current THD values during steady state operation if low mean switching frequency is achieved.

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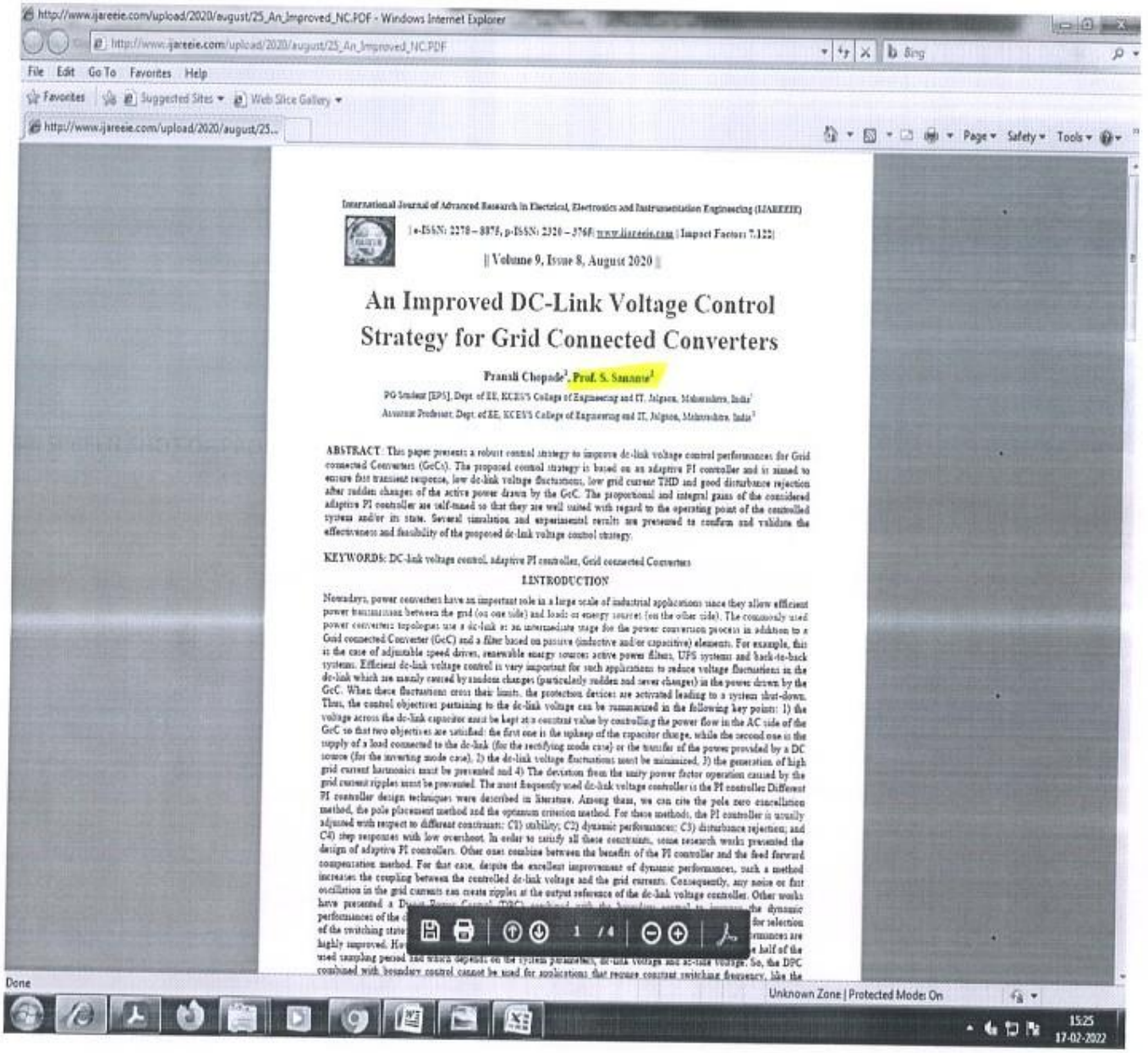

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Association Rule Mining In Student's Dropout Risk Assessment: A Case Study

Dr. NandiniCahudhari[1], Dr. PradnyaVikhar[2], Dr. AvaniVasant[3]

[1]Professor, Babaria Institute of Technology, Vadodara
[2]Assistant Professor, KCES's COEM, Jalgaon
[3]Professor, Babaria Institute of Technology, Vadodara

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ABSTRACT

Student dropout risk assessment is essential for numerous intelligent systems to improve the performance and success rate of an institute. Therefore, efficient methods for prediction of the students at risk of dropping out, is the need of today's education system which enables the adoption of proactive process to minimize the situation. This paper propose a prototype machine learning tool which can automatically recognize the causes for whether the student will continue their study or drop their study using association rule mining. It also extracts hidden information from large data about the factors that are responsible for dropout student.

In this case study, the association rule analysis is carried out to find whether the student is having a dropout risk or not so that some preventive measures can be done to avoid it and improve the performance of the student. The analysis further used to predict the students drop out risk using five major problems such as family problem, health related problem , personal problem, financial problem and institutional problem.

Keywords— Data mining, Education Data Mining (EDM), Dropout, Prediction, Association Rule, Apriori algorithm

I. INTRODUCTION

All educational institutions aim to produce good results in their academic examinations. The data mining techniques can plays vital role in improving the results by predicting the performance of the students and prove beneficial to impart the quality of education in the educational institutions. Education Data mining (EDM)is a very promising discipline which has an imperative impact on prediction of students' performance.

In this paper students' drop out risk is evaluated and some attributes are selected which generate rules by means of association rule mining. The earlier prediction of dropout student is challenging task in the higher education. Data analysis is one way to scale down the rate of dropout students and increase the enrollment rate of students in the college. It is fact that the number of student dropout quite often in the first year of graduation especially in the first semester. The rate of student's dropout in the college depends on the educational system adopted by the University. The needs of current research are as follows:

- Predicting the reasons for dropout students at an early stage of the degree program help management not only to concentrate more on the bright students but also to apply more efforts in developing programs for the weaker ones in order to improve their progress while attempting to avoid student dropouts.
- The generated knowledge will be quite useful for understanding the problem in better way and to have a proper planning or decision to scale down the dropout rate.
- Finding association of various factor leading to students dropout at education in engineering college, where discovering of pattern or association helps in effective decision making
- To study the dropout rate and causes of students in engineering education in North Maharashtra region.

II. RELATED WORK

Educational Data Mining (EDM) has been applied in various studies for exploring hidden pattern to improve students' academic performance.

Ali and Kerem studied the dataset of students of Istanbul EyupI. M.K. B. Vocational Commerce High School and found the relationship between the student performance and course. In their finding they have generated a rule that shows if a candidate is unsuccessful in numerical course in 9th class then those students are likely to be unsuccessful in 10th class. Such results were generated for different courses. This study can facilitate students to choose their appropriate profession by revealing the relation between their concern fields. [1]

R singh and Tiwari et al., conducted a study on engineering students to evaluate their performance by applying data mining techniques to assist them in decision making. They used K-Means algorithm to cluster students. The result predicted that if students are poor in attendance and assignment then there is 75% probability that their grades are poor. [2]

Sen and Ucar analyzed the achievements of students of Computer Engineering Department in Karabük University by means of various factors such as age, gender, type of high school graduation and the students studying in distance education or regular education through data mining techniques. They have taken the dataset of 3047 records. In their study they have used NN architecture called multilayer perceptron (MLP) with back propagation type supervised-learning algorithm to produce both classification and regression type prediction models and decision tree for achieving the highest possible prediction accuracy. The results revealed that as the age of the student increases the success score decreases and students success rate is much better in distance than in formal education, students coming from vocational high school are more successful in cultural lessons than those taking vocational lesson. [3]

Baradwaj and Pal have discussed methods to achieve high quality in higher education. They used various data mining algorithms including different classification algorithm to estimate the accuracy of data. Clustering algorithm was used to cluster the objects which are used as preprocessing approach for attributes. An association rule identifies the correlation between frequent item set with confidence value less than one. Neural Network was used to derive patterns from complicated or imprecise data. The case study identifies the weak students which needsmore attention than others[4].

Ramaswami and Bhaskaran developed a predictive data mining model to identify academically weak students and attributes that affect their performance using CHAID prediction model. The attributes were selected on the basis of chi-square values. If chi-square values of attributes are greater than 100 they are given due considerations and consider the highly influencing variables with high chi-square values. [5]

The SAP prediction of Introductory Engineering Course is done to understand and identify the students' level of performance. For example, if the result of the prediction shows there are some students that will perform poorly in the course, so the lecturers can take appropriate action to help those students. The additional exercise, assignment, or lesson given by lecturers may help the students to improve their understanding in subject taken [6].

The study is also conducted in Malaysia using students' data taken from University Malaysia Pahang (UMP) database management system. The 1000 student records with three courses in the faculty of Computer System and Software Engineering, UMP are considered which contained students' personal, academic, and course information. The students' grade is selected as a predictor parameter and was divided into five categories which are excellent, very good, good, average, and poor. The result indicated that the proposed model is suitable to be used as an SAP prediction [7].

The students' information such as exam scores, grades of team work, attendance, and practical exams are used for profiling and grouping the SAP using selected DM algorithms. The output from analysis process will help the institution to predict academic trends and patterns by categorizing the students into good,

satisfactory, or poor group. It allows the lecturers to get a better understanding about students' learning styles and behaviors [8].

The study involving first year students of school engineering at the National Autonomous University of Mexico (UNAM) is conducted using students' socio-demographic and previous academic information. The data were divided into three categories; students who passed none or up to two courses (low group), students who passed three or four courses (middle group), and students who passed all five courses (high group). The extract patterns from the experiment will allow the IHL to predict academic performance of the new students so that the lecturers will know the level of the new students' preparedness at admission [9].

In our research we have studied the dataset of 600 engineering students to predict their dropout risk. In our work we have proposed that some selected attribute are more influencing for student's academic performance and generated association rules.

III. ASSOCIATION RULE MINING

A formal statement of the association rule problem is [4]:

Definition 1: Let $I = \{I1, I2, \ldots, Im\}$ be a set of m distinct attributes, also called literals. Let D be a database, where each record (tuple) T has a unique identifier, and contains a set of items such that $T \subseteq I$ An association rule is an implication of the form $X \Rightarrow Y$, where $X, Y \subseteq I$, are sets of items called item sets, and $X \cap Y = \phi$. Here, X is called antecedent, and Y consequent.

Support (s) and confidence (α) are used as two important measures for association rules. They can be defined as follows.

Definition 2: The support (s) of an association rule is the ratio (in percent) of the records that contain XUY to the total number of records in the database.

Definition 3: For a given number of records, confidence (α) is the ratio (in percent) of the number of records that contain XUY to the number of records that contain X.

The problem of mining association rules can be decomposed into two sub problems [5] as stated in the following algorithm.

Algorithm Basic:

Input: I, D, s, α

Output: Association rules satisfying s and α

Algorithm:

1. Find all sets of items which occur with a frequency that is greater than or equal to the user-specified threshold support, s.

2. Generate the desired rules using the large item sets, which have user-specified threshold confidence, α.

The first step in above algorithm is to find large or frequent item sets. Item sets other than those are referred as small item sets. Here an item set is a subset of the total set of items of interest from the database. In association mining, an interesting (and useful) observation about large item sets is, if an item set X is small, any superset of X is also small. Of course the contrapositive of this statement (If X is a large item set than so is any subset of X) is also important to remember. Here L is used to designate the set of large item sets. The second step in above algorithm finds association rules using large item sets obtained in the first step.

A. Apriori Algorithm

Apriori algorithm [10] is used for finding the frequent itemsets and association rule mining. There are two major steps in Apriori algorithm; join and prune.

The new candidate set is generated in the join step. Depending on the support count, the candidate set can be defined as frequent or infrequent. Higher level candidate item sets (Ci) are generated from previous level frequent item sets Li-1 by the method join. The pruning step filtered out the infrequent candidate item sets. This step guarantees that every subset of a frequent item set is also frequent. Hence, if the candidate item set contains more infrequent item sets, will be removed from the process of frequent item set and association mining. [11] This process is called pruning.

Apriori Algorithm Basics

Input D, a database of transactions

Min_sup, the minimum threshold support

Output Lk Maximal frequent item sets in D

Ck Set of Candidate k-item sets.

Method:

1. L1 =Frequent items of length 1.
2. For(k=1;Lk!=ϕ;k++) do.
3. Ck+1=candidates generated from Lk.
4. For each transaction t in database D do.
5. Increment the count of all candidates in Ck+1 that are contained in t.
6. Lk+1 =candidates in Ck+1 with minimum support
7. end
8. Return the set Lk as the set of all possible frequent itemsets

The main notation for association rule mining that is used in Apriori algorithm is the following.

1) A_k –item set is a set of k items.

2) The set Ck is a set of candidate k-itemsets that are potentially frequent.

3) The set Lk is a subset of Ck and is the set of k-itemsets that are frequent.

B. FP Growth Algorithm

The FP-Growth Algorithm, proposed by Han in [8], is an efficient and scalable method for mining the complete set of frequent patterns by pattern fragment growth, using an extended prefix-tree structure. It stores compressed and crucial information about frequent patterns named frequent-pattern tree (FP-tree). The FP-Growth Algorithm is an alternative way to find frequent itemsets without using candidate generations, thus improving performance. For so much it uses a divide-and-conquer strategy. The core of this method is the usage of a special data structure named frequent-pattern tree (FP-tree), which retains the itemset association information.

In simple words, this algorithm works as follows: first it compresses the input database creating an FP-tree instance to represent frequent items. After this first step the compressed database is divided into a set of conditional databases, where each one is associated with one frequent pattern. Finally, each such database is mined separately. Using this strategy, the FP-Growth reduces the search costs looking for short patterns recursively and then concatenating them in the long frequent patterns, offering good selectivity.

In large databases, it's not possible to hold the FP-tree in the main memory. The problem can be solved by first partitioning the database into a set of smaller databases (called projected databases), and then construct an FP-tree from each of these smaller databases.

IV. METHODOLOGY

Any institute can improve success percentage rate by identifying the reasons for dropout student. In present study, information on various parameters was collected through a structured questionnaire using Google form from first year engineering students of North Maharashtra region. Predicting the students dropout status whether they continue to their study or not, needs lots of parameters such as personal, academic record, social, environmental, etc. variables are necessitated for the effective prediction. In order to achieve the abovementioned objectives the following steps were followed

Data Collection

The data used in this study was prepared through a structured questionnaire using Google form (https://forms.gle/CiuqptPZQSFsxeGe7). The questionnaire has been constructed by considering theoretical and empirical grounds about factors affecting student's performance and causes of dropout. The questionnaire included socio-demographic indicators (Age, Date of birth, Geographical location, Marital status, Parents education, Parents occupation and Annual income), Educational factors (Performance in High school, Senior Secondary School , Location of Schooling, Type of Examination Board, Medium of Study etc.), Parental Attitudes, and Institutional factors, etc. Data of 600 students was collected from first year engineering students. The data format is presented in Table 1.

TABLE I: STUDENT RELATED VARIABLES

VARIABLES	DESCRIPTION	POSSIBLE VALUES
AGE	AGE	{<18, 18-20, >20}
RES	RESIDENCE	{RURAL, URBAN}
FTYPE	FAMILY TYPE	{NUCLEAR, JOINT}
ANN	ANNUAL INCOME	{LOW, MEDIUM, HIGH, VHIGH}
FEDU	FATHER'S EDUCATION	{ILLITERATE, SEC, HSEC, UG,PG}
MEDU	MOTHER'S EDUCATION	{ILLITERATE, SEC, HSEC, UG,PG}
FOCC	FATHER'S OCCUPATION	{GOVT. SERVICE, PVT. SERVICE, BUSINESS, AGRICULTURE, RETRIED, NA}
MOCC	MOTHER'S OCCUPATION	{GOVT. SERVICE, PVT. SERVICE, BUSINESS, AGRICULTURE, RETRIED, NA}
S_LOC	LOCATION OF SCHOOL	{VILLAGE, TOWN CITY}
HSCG	12 TH GRADE	{A=90-100%, B=80-89%, C=70-79%, D=60-69%, E=LESS THAN 60%}
SSCG	10TH GRADE	{A=90-100%, B=80-89%, C=70-79%, D=60-69%, E=LESS THAN 60%}
PAR_CURR	PARTICIPATION IN EXTRACURRICULAR ACTIVITY	{YES, NO}
SELF STUDY	TIME SPARE FOR STUDY	{<1 HR, 2-3 HRS, 4-5 HRS, >6 HRS}

ENTER	AVAILABILITY OF ENTERTAINMENT IN CAMPUS	{EXCELLENT, V.GOOD, GOOD, POOR, V.POOR}
CURR	EXTRACURRICULAR IN COLLEGE	{EXCELLENT, V.GOOD, GOOD, POOR, V.POOR}
CINF	COLLEGE INFRASTRUCTURE	{EXCELLENT, V.GOOD, GOOD, POOR, V.POOR}
CES	COLLEGE EDUCATION SYS.	{EXCELLENT, V.GOOD, GOOD, POOR, V.POOR}
CLIK	LIKE COLLEGE	{YES, NO}
STRESS	ANY TYPE OF STRESS IN FAMILY	{NO, FINANCIAL, ILLNESS, OTHER}
COL_EXPENSES	EXPENSES IN COLLEGE	{OWN_INCOME, LOAN, BOTH}
C_SYLL	SYLLABUS OF COURSE	{V.SATISFACTORY, SATISFACTORY, BALANCED, DIFFICULT, V.DIFFICULT, LENGTHY}
SAT_LEVEL	STUDENT'S SATISFACTION WITH COURSE	{V.SATISFIED, SATISFIED, NOT V.SATISFIED, NOT SATISFIED}
C_ADMITTED	ENROLLED IN COURSE	{COMPUTER,E&TC,MECHANICAL,CIVI}
A_TYPE	ADMISSION TYPE	{ENTRANCE, MERIT, MANAGEMENT}
MED	MEDIUM OF SCHOOLING	{HINDI, ENGLISH}
PLAC	PLACEMENT STATUS	{BELOW AVG, AVG, GOOD, V.GOOD, EXCELLENT}

Before the initial visit to review the records, a coding system was created for eachvariable to be documented (e.g., rural=0, urban=1).

A. Data Preprocessing

Before application of prescribed model, data preprocessing was applied to measure the quality and suitability of data. In this step, only required and needed attributes for mining of data are chosen. For this, remove missing values; smoothing noisy data, selection of relevant attribute from database or removing irrelevant attributes, identifying or remove outlier values from data set, and resolving inconsistencies of data. The final dataset used for the study contains 60 instances. The study is restricted to the engineering undergraduate students. Finally, the pre-processed data were transformed into a suitable format to apply data mining techniques. Under data set, the reason provided by the students for dropping out of the engineering courses at institute level were divided into five factors such as family problem, health related, personal problem, financial problem and institutional problem.

B. Association Rule Analysis

In EDM, association rule learning is a conventional and well researched method for determining interesting relations between attributes in large databases. Association rule Mining aims to identify strong rules from databases using support and confidence measures.

In this study data was accumulated from the dropout students. These data are analyzed using Association Rule Mining to find out the causes or factors behind dropout. Under data set, the reason provided by the students for dropping out of the engineering courses at institute level were divided into five factors such as family problem, health related, personal problem, financial problem and institutional problem. Overall association rule mining technique was applied to find out the relationship between two different factors affecting the student dropout at the college. From the above analysis it can be conclude that the students who have Personal problem are more prone to dropouts in comparison to Family problem and Institutional problem.

V. EXPERIMENTAL RESULTS AND DISCUSSIONS

From the experimental result, it is found that using Apriori algorithm minimal rules are obtained. The pattern extracted using Apriori algorithm are found more effective in predicting the student drop out risk under three categories: high, medium, low. The parameters used for Apriori algorithm are minimum support, minimum confidence. The importance of the rule is measured using the support value.

In order to conduct the experiment, dataset of 600 students of engineering colleges from North Maharashtra region is collected. For experimentation interesting attributes are selected using number of association rules for different confidence values.

The analysis for generated association rules is as follows:

Final Rules:

Rule #1: 3 --> 1

Support = 0.36667

Confidence = 0.78571

Lift = 1.0476

Rule #2: [3 4] --> 1

Support = 0.11667

Confidence = 0.77778

Lift = 1.037

RULES GENERATED FOR 78% CONFIDENCE AND 0.3 SUPPORTS ARE:
IF Personal Problems THEN Student Dropout Risk = HIGH

RULES FOR CONFIDENCE 77% CONFIDENCE AND 0.1 SUPPORTS ARE:
IF Personal Problems AND Financial Problems THEN Student Dropout Risk = HIGH

The association rules for different confidence values can be interpreted in a way that the students' drop out risk will be high in unit test if either their attendance is poor or assignment is poor or both. So we can interpret that the student's dropout risk is high with personal problems and financial problems as compared to other factors.

The result shows that if a student is suffering from personal problems and financial problems then there are chances that he/she will perform low examinations. This will result in poor performance in institute result. So to improve the student's performance the factors can be considered.

VI. CONCLUSION

Education Data Mining is a promising area of research which has an imperative influence on prediction of students' academic performance. In this paper, student's drop out risk is evaluated using association rule mining algorithm. Research has been done on predicting students drop out risk based on various attributes. In our study important rules are generated using apriori algorithm to measure the correlation among various attributes which will help to predict students drop out risk earlier and improve the student's academic performance. The collected data is categorized in five major factors for association rule analysis. The results showed that the personal problems are more prone to dropouts in comparison to others. This study will help the student's to reduce students dropout risk, to identify those students which needed special attention to reduce failing ration and taking appropriate action at right time. The study can further motivate and help institute to perform data mining tasks on their students' data regularly to find out interesting results and patterns which can help both the university as well as the students in many ways.

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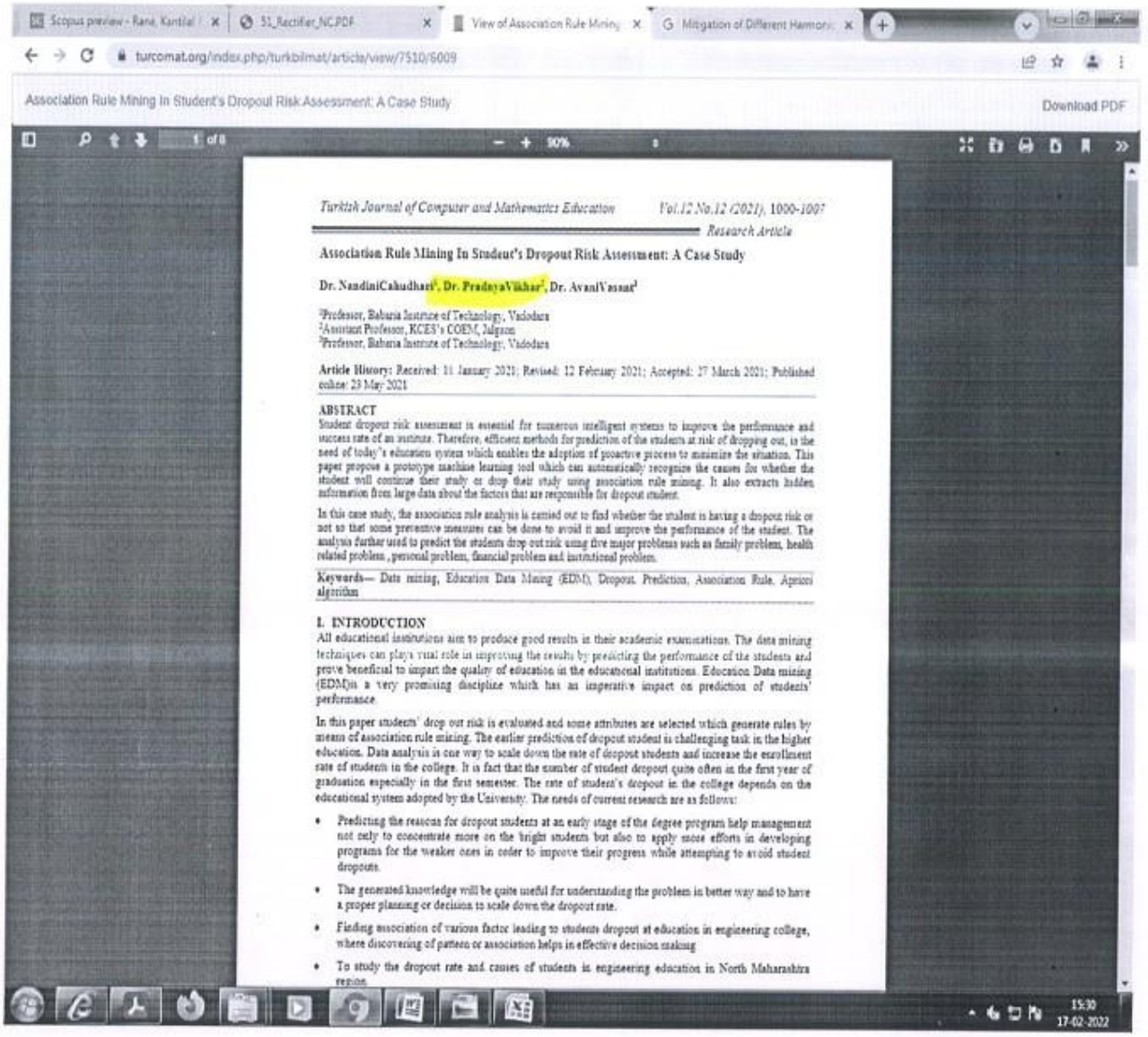
86. SCREEN SHOT OF PROF.PRDNYA VIKHAR



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Association Rule Mining In Student's Dropout Risk Assessment: A Case Study

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Research Article

Association Rule Mining In Studeut's Dropout Risk Assessment: A Case Study

Dr. NandiniChaudhari[1], Dr. PradnyaVikhar[2], Dr. AvaniVasant[3]

[1]Professor, Baharia Institute of Technology, Vadodara
[2]Assistant Professor, KCES's COEM, Jalgaon
[3]Professor, Baharia Institute of Technology, Vadodara

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ABSTRACT

Student dropout risk assessment is essential for numerous intelligent systems to improve the performance and success rate of an institute. Therefore, efficient methods for prediction of the students at risk of dropping out, is the need of today's education system which enables the adoption of proactive process to minimize the situation. This paper propose a prototype machine learning tool which can automatically recognize the causes for whether the student will continue their study or drop their study using association rule mining. It also extracts hidden information from large data about the factors that are responsible for dropout student.

In this case study, the association rule analysis is carried out to find whether the student is having a dropout risk or not so that some preventive measures can be done to avoid it and improve the performance of the student. The analysis further used to predict the students drop out risk using five major problems such as family problem, health related problem , personal problem, financial problem and institutional problem.

Keywords— Data mining, Education Data Mining (EDM), Dropout, Prediction, Association Rule, Apriori algorithm

I. INTRODUCTION

All educational institutions aim to produce good results in their academic examinations. The data mining techniques can plays vital role in improving the results by predicting the performance of the students and prove beneficial to impart the quality of education in the educational institutions. Education Data mining (EDM)is a very promising discipline which has an imperative impact on prediction of students' performance.

In this paper students' drop out risk is evaluated and some attributes are selected which generate rules by means of association rule mining. The earlier prediction of dropout student is challenging task in the higher education. Data analysis is one way to scale down the rate of dropout students and increase the enrollment rate of students in the college. It is fact that the number of student dropout quite often in the first year of graduation especially in the first semester. The rate of student's dropout in the college depends on the educational system adopted by the University. The needs of current research are as follows:

- Predicting the reason for dropout students at an early stage of the degree program help management not only to concentrate more on the bright students but also to apply more efforts in developing programs for the weaker ones in order to improve their progress while attempting to avoid student dropouts.
- The generated knowledge will be quite useful for understanding the problem in better way and to have a proper planning or decision to scale down the dropout rate.
- Finding association of various factor leading to students dropout at education in engineering college, where discovering of pattern or association helps in effective decision making
- To study the dropout rate and causes of students in engineering education in North Maharashtra region.

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COLLEGE OF ENGG &
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PERFORMANCE EVALUATION ANALYSIS IN ORGANIZATION WORKFLOW MANAGEMENT SYSTEM

Pradnya A. Vikhar

KCES's College of Engineering and Management, Jalgaon

Abstract

With the recent advances in web technology, there is rapid growth of internet applications. It also creates an ideal platform for Organization Workflow Management (OWM). OWM manages a number and order of tasks that need to be carried out during the lifetime of project. However, Web based Organization Management includes services that provides preferable conditions to distribute the work and established the cooperation among employees. It becomes the characteristic of the next-generation Organization Management.

The system proposed is a web- based application which can be accessed concurrently from many fields offices. Field offices are supposed to enter information of employee associated with respective offices. This information is assembled and used as base information for workflow management.The system is developed to fulfill the requirements of the employees working on their task.

The system developed is used to analyze the employee's performance, its behavior based on the task allocation. It is further used to monitor the progress of all projects, make the decisions about scheduling/ rescheduling of deadlines and other organizational parameters.

Key words: Workflow Management System (WMS), Organizational Management System (OMS), Performance analysis

1. Introduction

A workflow management system (WMS) [1][2] is an information system which is used for managing and sequencing of various business processes (tasks) in such a way that all tasks are completed with optimal efficiency. A workflow management system involves the creation of various tasks which hold data and automates a sequential path of tasks until it is fully completed. Tasks related to particular workflow may be created manually or by a system [3].

A typical information system (shown in figure 1) [6] [8] suggest a use of computer technology to maintain information about all users/employees in an organization. The basic data of all users is transformed into useful information; and a particular case is known as Human Resources Information System development. Such a system stores data of employees within an organization and generates the reports as per request. These systems can be expanded by integrating other information systems or modules like accounting Information System (AIS) – designed to transform financial data into information, or Management Information System (MIS) that provides decision-oriented information to managers, Workflow management system and so on [5] [9].

However, to create a Workflow management system, which involves automated task creation from workflows is difficult to develop. It needs to develop application program and database on mutual concerns [3] [4]. The application program is worked as a bridge between users of system and database, where the data is stored. Thus, there is a need of well-developed application program and database to achieve reliability, flexibility and proper functionality of the system. Such a systems can easily differentiate from others and their development comprises a great variety of tasks that has to be resolved and implemented [4].

Generally major management problems [5] include functional organization of the system. Functional organization divides and organizes the enterprise to product lines, geographical positioning parts, on the basis of production process, consumers type, and so on. In large companies, it can be organized in segments, doing it repeatedly according to different methods at different operative levels [6] [7]. As a potential source for the development fast increasing software industry is identified, that has a scope in developing big software applications by decomposing them into the series of comparative small software.

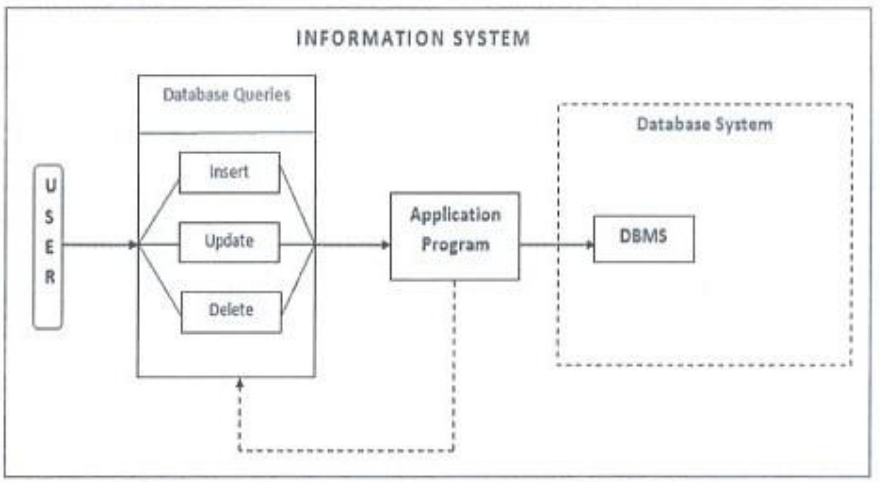

Figure1: Information System Diagram

Need for the workflow management system [1][2]:

- Employees and Managers can set goals and deadlines for assigned task. It further helps to keep track the work done by individual employee.
- Complete work status of an organization is generated on one click. This information can be used to spot various risks within organization. It also helps to identify under-utilized employees, high performing employees or low performing employees who are consistently below standards and so on.
- The system can be tailored to send automated messages/emails to remind, motivate and encourage employees about their assigned tasks, their accomplishments throughout the year. It will definitely improve bond between employees and management.
- Goal tracking throughout the year helps to improve overall productivity in the organization. Managers and employees can work more collaboratively ensuring expectations are set and met.

2. Development of system

The whole process of development of system is divided into two steps: development of database and development of application program. The first step is to create a database. The logical database model (tables, their content and the relationships between them) should respond to the given task and cover the basic requirements. The Interface of the program should be user-friendly, and easy to use. The application program should perform basic operations upon the database like addition, deletion, updation and retrieval required data [5]. In addition to these operations, the system must be able to provide functions like task creation, task submission, checking deadline, provide intimation about deadlines etc [6].

Controls and forms used to develop a system should logically and functionally be linked within the program and must respond to the structure of the database. It needs to established proper connection with the database so that it can respond to every query performed upon it. Exception-handling is also equally to handle various exceptions generated during implementation. The system proposed is implemented using software are ReactJs for front end development and Firebase as the back end tool.

The system developed is having following advantages:

- Increased collaboration and teamwork
- Access to reliable data and information in real time
- Reduced waste and reduced operating costs
- Promotion of continuous process improvement
- Assistance in decision-making and strategic planning from the company
- Increased profitability of the company

- Reduction of human failures

3. Methodology

Step 1: Registration and login:

Every employee in an organization has its own login account through which they can manage their assigned tasks. To get login account, employee should first register using sign up process. A set of rules and privileges can be automated after successful registration and as a response, reference login id and password is provided to all employees. In process of registration admin needs personal information of employee's like: name, date of birth, national identity no/ passport no, mobile, email, dependents, educational information may include: field of study, qualification, experience and other related information such as health problems, more responsibilities.

Step 2: Task creation and assignment:

Once the project has been finalized, manager identifies and creates various tasks into it. The tasks are further assigned to the appropriate employee according to the designated trigger. The assigned task is supplemented with specification of time and days of work. Manager can maintain data about employee's attendance as per the activity record of employee using login time and date. Manager can also view or update employee details or progress of assigned task. Let's consider P represents a project and Ts represents the set tasks belong to that project. The set of tasks Ts are also assigned to different employees (E) for its implementation. It can be represented mathematically as follows,

$$Pa = \sum_{i=0}^{n} Tsi \text{ Such that, } Ts \in \{PaTs1, PaTs2, \dots, PaTsn\}$$

$$E \in \{E1, E2, \dots, En\}$$

Step 3: Data Entry:

Employee can login to system every day and mark attendance. After task/workflow is assigned to particular employee, all the appropriate information like assigned date, start date, end date, particulars about tasks, hours utilized is provided along with it. Employee can also view/ update his/her own status about progress of assigned tasks. The employee have the rights view and manage all information through own login account.

Step 4: Update/Delete task:

For implementation of particular project, the complete project (P) is divided among number of tasks (Ts) and these task be further assigned to employee (E). These tasks can further verified for improvement or deleted, if no longer required.

Step 5: Performance Evaluations/ Analysis:

The performance analysis can be done at two levels: at employee level and at admin level. The performance of individual employee can be calculated based on the tasks assigned and tasks completed in given period. Further efficiency of an employee is also analyzed based on number of hours utilized, number tasks completed over the period of time. At Admin level, the manager can evaluate the percentage of work done related to a project, status of all projects in an organization.

The process performance analysis is simplified using checklist. It includes filling and submitting the necessary documents to Admin for record keeping. Figure 2 represents the task allocated to an individual employee.

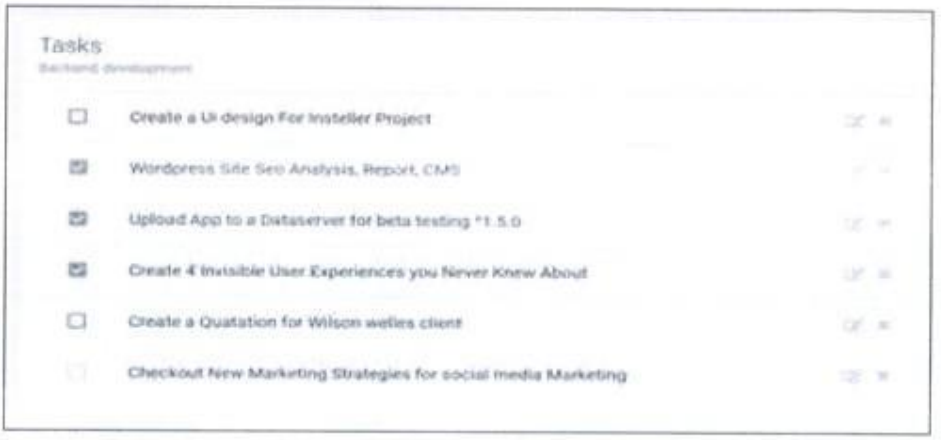

Figure 2: Task assignment and checklist in employee account.

- Employee behavior (Eb) is calculated using work done (Wk) in hours (hr) at particular time (t). It is mathematically represented using equation 1. Figure 3 shows the behavior of an individual employee based on the work done with respect to time.

$$Eb = Wk(hr)/t \qquad \text{----(1)}$$

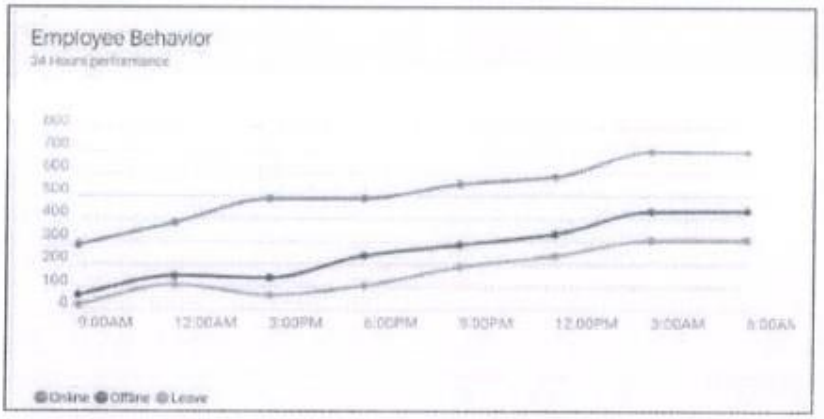

Figure 3: Employee behavior analysis (based on work done in hours)

- Employees performance (Ep) is the total number of task completed (Tsc) by total task assigned (Ts) to an individual employee. It is calculated using equation 2. The overall task completion status, percentage of pending and current working task of individual employee is calculated as shown in figure 4.

$$Ep = \frac{Tsc}{Ts} * 100 \qquad \text{-------(2)}$$

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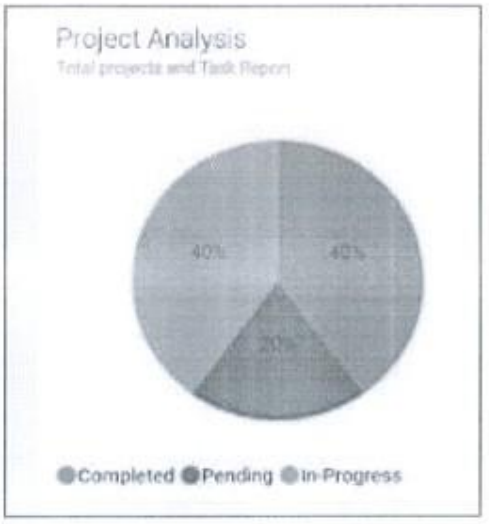

Figure 4: Employee behavior analysis (based on amount of task completed)

- Admin can use individual employee's performance parameters to calculate the overall status of individual project and all projects in an organization. For project (P) the status of project (Ps) is calculated using total tasks completed (Tsc) by individual employees (E) by total number of task in a project.

$$Ps = \frac{Ei(Tsc)}{Ts} \qquad \text{where, i= 1 to n} \quad \text{----- (3)}$$

Using above equation, Admin/ Manager can check the complete status of all the projects. The individual status of each project is shown in figure 5. It may help admin to take administrative decisions like scheduling/ rescheduling of task, deadlines, and human resource allocation.

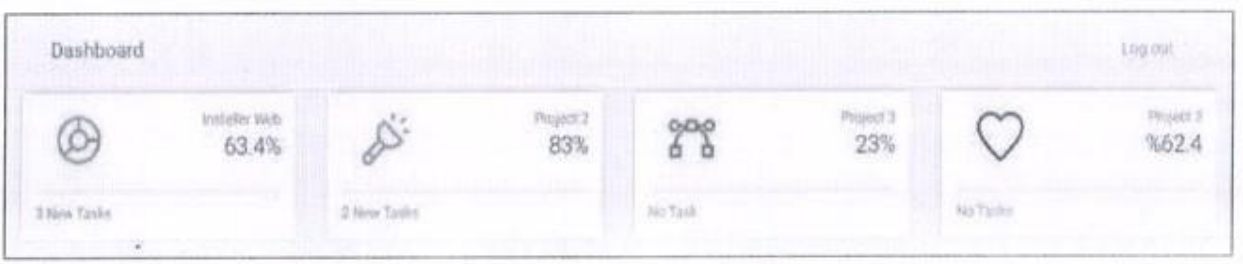

Figure 5: Overall project status of all projects in an organization

4. Conclusion

This system explores an effective way to organize employee details in an organization. The combination of all processes of workflow management system (WMS) in one application will ensure the perfect platform to manage employee data and assigned work. The information to store can further use in the future for various analysis.

The system 'Organization Workflow Management' is designed and developed using ReactJs as front end and Firebase as a database to back end.The system involves basic features required like registered of employee, creation and assignment of tasks, calculating performance of employee. Employee can view information about login, assigned task, and working hours. Overall, the system designed proves beneficial for an organization to assigning and monitoring various business processes and employee performance evaluation. Organization can have overall control and record of all employees regarding; personnel data, efficiency and performance at all levels in its structure.

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The scope system can further expand by using machine learning algorithms which will definitely proves beneficial in finalizing deadlines, making business decision about critical processes, deciding future plans of the organizations.

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APPLICATION OF GENETIC ALGORITHM IN IMAGE RETRIEVAL

Pradnya A.Vikhar KCES's COEM,Jalgaon :; pradnyav123@gmail.com

Abstract

Genetic algorithm belongs to the class of Evolutionary Algorithm which is a family of computational models and a part ofartificial intelligence. GAs is techniques inspired by natural evolution. These algorithmsprovide a promising solution to a specificproblem based on a simple chromosome like data structure and can be widely acceptable in diverse areas.

This paper gives an overview of Genetic Algorithm, its components and algorithms to implement it.It alsodiscusses how GAsis different from traditional search techniques. Further it provides theoretical approach of GA in image retrieval which is also an important area of research now days.

Keywords:*Genetic Algorithm, Image Retrieval, Selection, Crossover, Mutation*

1. Introduction

Genetic Algorithms (GAs) are inspired by Darwin's theory of Evolution in 'The Origin of Species'. These are adaptive methods which may be used to solve search and optimization problems [1].They are based on the genetic processes of natural selection and survival of fittest.

Because of robustness [2], GA can deal successfully with a widerange of problem areas, including those which are difficult for other methods to solve.

GAs are not guaranteedto find the global optimum solution to a problem, but they are generally good at finding acceptably good solutions to problem [1]. The main grounds for GAs are in difficult areas where no traditional techniques exist.

GA is a method for moving from one population to a new population by using a kind of "natural selection" together with the genetics–inspired operators ofcrossover, mutation, and inversion.The evolution usually starts from a populationof randomly generated individuals andhappens in generations. In each generation, the fitness of everyindividual in the population is evaluated, multiple individuals are selected from thecurrent population (based on their fitness), andmodified to form a new population.

2. Genetic algorithm (GA)

Genetic Algorithms (GAs) are the heuristic searchand optimization techniques that mimic theprocess of natural evolution. Genetic algorithms were invented by John Holland in the 1960s and were developed by Holland andhis students and colleagues at the University of Michigan in the 1960s and the 1970s [2][3]. The original goal to design genetic algorithms is to develop ways in which the mechanisms of natural adaptation might be imported into computer systems, rather than tosolve specific problems, in contrast with other evolutionary techniques. Thus it leads to important discovery in both natural science and artificial systems.

Genetic algorithms are widely used in optimization, search and machine learning [2]. It gets popularity to solve problems in diverse areas due to following features [4]-

- Concept is attractive easy to understand
- Modular and separate from application
- Supports multi-objective optimization
- Always generate an answer; answer gets better with next population.
- Easy to exploit previous solutions or to give alternate solutions

2.1 GAs and traditional search methods

GAs are differ from traditional search methods in some very fundamental ways [2][5][6], are summarizes in the following table.

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Table 1: GAs VS Traditional Methods

Sr no	Genetic Algorithm	Traditional Methods
1	Works with a coding of Parameter set	Works with Parameters themselves
2	Searches from population of points	Searches from a point
3	Uses objective function	Uses derivatives or auxiliary knowledge
4	Uses probabilistic transition rules	Uses deterministic rules

2.2A simple Genetic Algorithm

The simple genetic algorithm (SGA) is presented here represents the basic components of the GA. A pseudo-code [6] outline of the SGA is shown in Fig. 1.

```
function sga ()
{
Initialize population;
Calculate fitness function;
While(fitness value != termination criteria)
{
Selection;
Crossover;
Mutation;
Calculate fitness function;
}
}
```

Fig 1. A simple Genetic Algorithm

2.2.1 Components of GA

From the above algorithm the basic components of any typical Genetic algorithm are as follows [2][6]

- **Population Representation and Initialization:** GAs is a population based algorithm. Here the number of potential solutions is called a population which consists ofsome encoding of the parameter set simultaneously. Typically, a population iscomposed of between 30 and 100 individuals. A GA starts with a population of strings and then generates successive populations of strings.
- **The Objective and Fitness Functions:** The ***objective function***provides a measure of how individuals haveperformed in the problem domain. GAs is blind. In order to perform an effective search for better and better results, they only require objective functions values associated with individuals. The ***fitness function***is normally used to transform the value objective function intorelative fitness, thus:F □x□□□□g □f □x□□□□□where f is the objective function, g transforms the value of the objective function toa non-negative number and F is the resulting relative fitness.
- **Selection:** Selection is the process of determining the number of times, or *a trial, a particular individual is* chosen for reproduction. This operator selects chromosomes (individual) in the population to generate new population which is called reproduction. The fitter (satisfying the objective function) chromosome will probably select more times than the bad ones. Poor may not be selected at all.
- **Crossover:**Crossover is the basic operator for producing new chromosomes in the GA.Similar to nature, Crossover takes two individuals, and produces new individuals that have some parts of both parent's genetic material. It cuts their chromosome strings at some randomly chosen position, to produce two head segments, and two tail segments,which is called as single point crossover. This is a simplest form of crossover.

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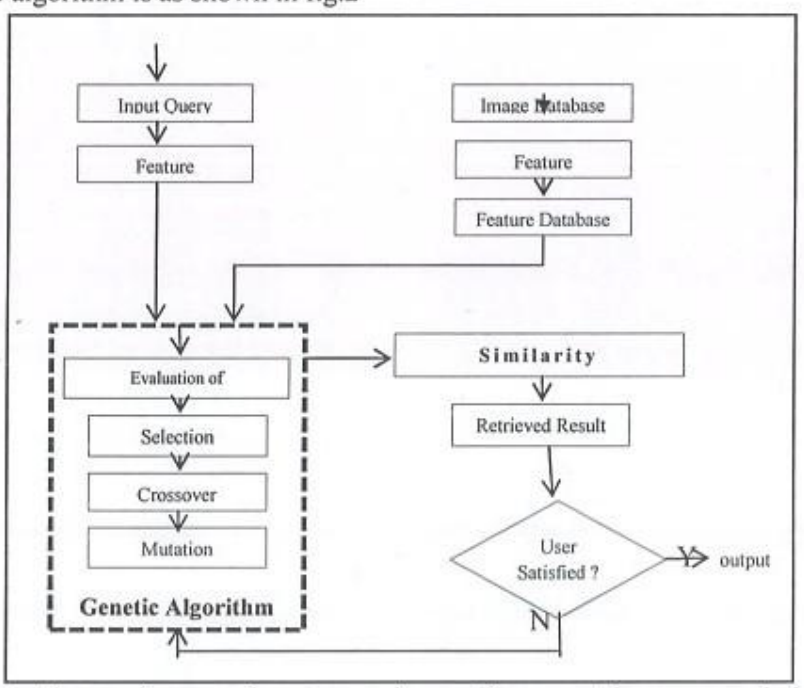
- **Mutation**: the next step after the crossover is Mutation. It is applied to each child individually after crossover. It randomly alters elements in the chromosomes with a smallprobability (typically 0.001).It is a backgroundoperator whose role to provide a guarantee that theprobability of searching any given string will never be zero. It also responsible to always recover good genetic material that may be lost through the action ofselection and crossover.

3. Applications of GA in Image Retrieval

Image retrieval is the process of searching the images based on some contents (like color, shape, texture etc.) from the large image database as per user'sinterest [7]. With the advance in digital technology and storage media, the amount of digital data generated increased tremendously throughout the world. To utilize this data, effective search and retrieval process is required. Therefore image retrieval becomes a promising area of interest among many researchers.

In order to retrieve the images from image databases, there are many systems presents like QBIC of IBM, QVE of NEC, CHABOT of UC Berkeley, PHOTOBOOK of MIT etc [8]. These techniques are based on traditional method of searching. Query in form of image is provided to system and it determines other images like the input query image without manual description or interaction from humans [9][10].

Basically GAs is search algorithms. It performs an effective search for better and better result using the objective function values. Therefore GAs can be applied with traditional Image retrieval methods. It will add interactiveness (human interface) to the system. Again as it is optimization algorithm further it will optimize the retrieval performance. The typical image retrieval system along with Genetic algorithm is as shown in fig.2



System takes an image as input query image. User can take any sample image as a query image. The features (color, shape, texture etc.) of query image are extracted. Similarly features of the images in the database are also extracted which forms feature database.

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In the next step, GA is applied. First the fitness function of the input image is evaluated, then it select the images based on fitness. Either horizontal or vertical crossover is applied to selected images and it generates the output in the form of list of images.

If output generated is as per user's interest, it displays the result. But if the user is not satisfied with the output generated, next generation of GA is evaluated. It goes on iteration until the user is satisfied.

Conclusion

As genetic algorithm is optimization algorithm, it can give promising results in various areas where the traditional algorithm does not provide satisfactory output. Due to it features GA is emerged as new area of interestamong many researchers. Image retrieval is centered on searching the appropriate images from large dataset. One can apply GA in Image Retrieval process which will help to design more efficient and interactive system.

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Desktop Security Provider by using Fingerprint Authentication, Image Capture and Screen Recording

Dhanashri R. Zope[1], Prashansa N. Kankariya[2], Priyanka S. Patil[3], Prof.Leena R. Waghulde[4]

BE Scholar , Department of Computer Engineering, KCES's. COEIT, Jalgaon, India[1, 2,3]

Assistant Professor, Department of Computer Engineering, KCES's. COEIT, Jalgaon, India[4]

ABSTRACT: In Institute or Colleges some demos of the practical give to the student on PC or on projector. But sometimes student may be absent or not understand practical demo then teachers can show recordingof practical demo. In this situation teacher give demo repeatedly to the student. Desktop Security Provider is project to record desktop activity in media file and stored on hard-disk. User can play this media file in media player to see which activity will perform on desktop.Screen Recording also useful when system give the demo of critical settings on computer. System record this setting and make media file. This media file system give to user rather than explain manual daily life many user send message from one pc to another PC in network. In this process data are more important. In many cases hackers hack the message which travelling between the networks and change this data.

KEYWORDS:JMF Player , JDK tools , Java 1.6.0_16,Mantra MFS100 biometric fingerprint scanner.

I. INTRODUCTION

The system deals with recording activities happening on monitor. Desktop Security Provider is project to record desktop activity in media file and stored on hard disk. User can play this media file in media player to see which activity will perform on desktop. In Institute or Colleges, some demos of the practical give to the student on PC or on projector. However, But sometimes student may be absent or not understand practical demo then teachers can show recording of practical demo.In this situation teacher, give demo repeatedly to the student.

This system deals with recording screen using our Desktop Security Provider. In today's computer age all the vital areas are become computerized. With the increase in the dependence of the computer, system should have the provision in order to keep record of all audio video activities happening on the computer. With the help of this project, security systemcan do this in way that is more convenient and can save the recorded activities on hard disk or other storage devices. This project includes the video as well as audio recording of the screen in any colour depth and with any quality sound. Since it is the visual age for computers, system have made our application visually appealing, to attract even non-professionals.

II. RELATED WORK

Ashwini R. Patil, Mukesh A. Zaveri in, "A Novel Approach for Fingerprint Matching using Minutiae" have proposed effective fingerprint matching algorithm based on feature extraction.For minutia marking they considered one special false minutiae removal method.[1]

Chandra Bhan Pal, Amit Kumar Singh, Nitin, Amrit Kumar Agrawal in "An Efficient Multi Fingerprint Verification System Using Minutiae Extraction Technique" has combined many methods to build a minutia extractor and a minutia matcher. [2]

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System analysis is the process of gathering and interpreting facts, diagnosing problem and using the fact to improve the system.

The existing system concentrates only on the security provided by the client and fragments data based on it. But the enhanced performance is achieved if the sensitivity of the data is also considered before storing the fragments. If suppose a non-sensitive data occupies the full storage space of the Level 1 client (highly secured client), then the sensitive data will not find space for itself. So we propose a simple quantitative metric termed as Fragmentation Factor which accounts both the security of the client and the sensitivity of the data. The highly secured data must be fragmented and placed in highly secured clients. The less secured data can be placed in Level 3 (less secured) clients in [1].The fragmentation Factor for each file is determined by the level of security of client required and the level of security necessary for data. Here we assure the bit wise values for the parameters to reduce the complexity.[2]

Very little research has been done to study the difficulty of cracking graphical passwords. Because graphical passwords are not widely used in practice, there is no report on real cases of breaking graphical passwords. Here we briefly exam some of the possible techniques for breaking graphical passwords and try to do a comparison with text-based passwords. The attack programs need to automatically generate accurate mouse motion to imitate human input, which is particularly difficult for recall based graphical passwords. Overall, we believe a graphical password is less vulnerable to brute force attacks than a text-based password. [3]

Fingerprint Scanners is a biometric device for authentication and identification through fingerprint recognition module which has superior execution, precision, toughness based on the fingerprint reader. Fingerprint Reader or Scanner is very safe and easy to use device for security compared to remembering the password that is vulnerable to fraud and difficult to keep in mind. [4]

The system deals with recording activities happening on monitor. Desktop Security Provider is project to record desktop activity in media file and stored on hard disk. User can play this media file in media player to see which activity will perform on desktop.

This system deals with recording screen using our Desktop Security Provider. In Institute or Colleges, some demos of the practical give to the student on PC or on projector. However, sometimes student may be absent or not understand practical demo when teacher display this practical demo. In this situation teacher, give demo repeatedly to the student.Fingerprints are the tiny ridges, whorls and valley patterns on the tip of each finger. They form from pressure on a baby's tiny, developing fingers in the womb. No two people have been found to have the same fingerprints -- they are totally unique. There's a one in 64 billion chance that your fingerprint will match up exactly with someone else's.[5]

Robot Fingerprint Matching Method ability to discriminate among different textures comes partly from our fingerprints, new research shows. Scientists say this study could influence the development of prosthetic hands for amputees, as well as for robotic systems.

As the finger passes over a surface, nerve endings in the skin detect vibrations that arise when the finger touches something, the study demonstrates. These nerve endings, called Parisian corpuscles, are connected to sensory neurons, which signal the brain. [6]

III. PROPOSED METHODOLOGY

Important phase in system development is the successful implementation of the new system design. Implementation includes all those activities that take place to convert from the old system to the new system. Two type of authentication is provided in our system, one is password login and the other is fingerprint authentication.

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- **Block Diagram**

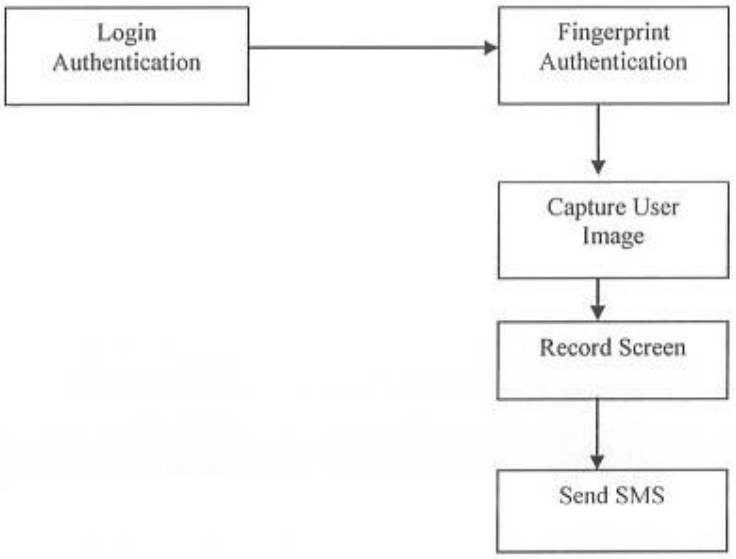

Figure 1 : Block Diagram of Desktop Security

1. Login Authentication

If unauthorized user trying to access the system forcibly through password and after many attempts he was not able to access the system then software will access through fingerprint authentication if the password showing incorrectly.

2. Fingerprint Authentication

For finger authentication we used Mantra MFS100 biometric fingerprint scanner. Mantra MFS100 biometric fingerprint scanner is high quality USB fingerprint biometric device for fingerprint authentication. MFS100 is based on optical sensing technology which efficiently recognizes poor quality fingerprints easily. System also used Robust Fingerprint Matching algorithm. Robust fingerprint matching algorithm is robust to rotation and translation alignment in which the best alignment of two fingerprints is achieved by maximizing the correlation between their extracted orientation fields. It utilizes the orientation field (OF) features for evaluating the similarity between test and trainee fingerprint images. Fingerprint Scanners is a biometric device for authentication and identification through fingerprint recognition module which has superior execution, precision, toughness based on the fingerprint reader.[7]

3. Capture User Image

If unauthorized user trying to access the system forcibly through fingerprint authentication and after mightily attempts he access to the system or many attempts he was not access the system the software capture the user image through simply web camera and send SMS .

4. Record Screen

When the user enters unauthorisedly , the screen will record through JMF player.

(a) JMF

Java Media Framework (JMF), which deals with media functions, were also helpful to us in implementing audio video effects. It supports recording, streaming, playing, and converting between multiple media formats.
JMF Players performs following activities :

- Record Screen : Select this option for screen recording.

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- Pause : It pauses the screen recording.
- Resume : By clicking on this button, recording will resume.
- Stop : Use his button to stop the recording.
- Area : By using this menu, we can select the area for recording.
- FPS Setting : This button will display a dialogue box to do setting for FPS.

(b) Displaying Menus

The task of this module is to display the menus of a Desktop Security Provider to navigate through the application. Giving reliable shortcuts and tool menus Is the main purpose keep in mind.

(c) Perform Various Functions (Record/Stop/Snap)

The task of this module is to allow the user to record, stop, snap the screen according to his needs. He should be able to choose the specific file where he want to save his recorded file. Then, recording, saving according to the requirement can be performed. Data validation should be performed before accessing the database.

(d) Browsing storage

The task of this module is to allow the user to allow to browse the destination storage for the recorded screen or captured screen shot.The proposed system is robust to rotation and translation alignment in which the best alignment of two fingerprints is achieved by maximizing the correlation between their extracted orientation fields. The proposed approach utilizes the orientation field (OF) features for evaluating the similarity between test and trainee fingerprint images This approach requires very few pre-processing steps as compared to other approaches in the literature, which require very complex and computationally expensive steps.

5. Send SMS

When the user enters unauthorisedly , the screen will record the activity which perform by unauthorized user and Send SMS through email or text.

Robot Fingerprint Matching Method ability to discriminate among different textures comes partly from our fingerprints, new research shows. Scientists say this study could influence the development of prosthetic hands for amputees, as well as for robotic systems.

As the finger passes over a surface, nerve endings in the skin detect vibrations that arise when the finger touches something, the study demonstrates. These nerve endings, called Pacinian corpuscles, are connected to sensory neurons, which signal the brain.[8]

Algorithm for Normal Profile Generation And Attack Detection

In this algorithm the normal profile Pro is built through the density estimation of the MDs between individual legitimate training traffic records (TAM normal, i, lower) and the expectation (TAM normal, lower) of the legitimate training traffic records.

Step 1: Input network traffic records.
Step 2: Extract original features of individualrecords.
Step 3: Apply the concept of triangle area to extractthe geometrical correlation between the J^{th} and k^{th}features in the vector xi.
Step 4: Normal profile generation
i. Generate triangle area map of each record.
ii. Generate covariance matrix.
iii. Calculate MD between legitimate record's TAM and input records TAM
iv. Calculate mean
v. Calculate standard deviation.
vi. Return pro.
Step 5: Attack Detection.
i. Input: observed traffic, normal profile and alpha.
ii. Generate TAM for i/p traffic

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iii. Calculate MD between normal profile and i/p traffic
iv. If MD < threshold
Detect Normal
Else
Detect attack.

In the training phase, we employ only the normal records. Normal profiles are built with respect to the various types of appropriate traffic using the algorithm describe below. Clearly, normal profiles and threshold points have the direct power on the performance of the threshold based detector. An underlying quality usual shape origins a mistaken characterization to correct traffic of network.

This algorithm is used for classification purpose.
Step1: Task is to classify new packets as they arrive, i.e.,decide to which class label they belong, based on the currently existing traffic record.
Step2: Formulated our prior probability, so ready to classifya new Packet.
Step 3: Then we calculate the number of points in the packetbelonging to each traffic record.
Step 4: Final classification is produced by combining bothsources of information, i.e., the prior and to form a posterior probability.

IV. EXPERIMENTAL RESULTS

- **Result For Successfully Login (Fingerprint Match)**

If unauthorized user trying to access the system to forcibly through fingerprint authentication or password and after mightily attempts he access to system. When he login to the system, the software capture image of unauthorized user and send SMS to the system owner and also records the activity which perform by unauthorized user.

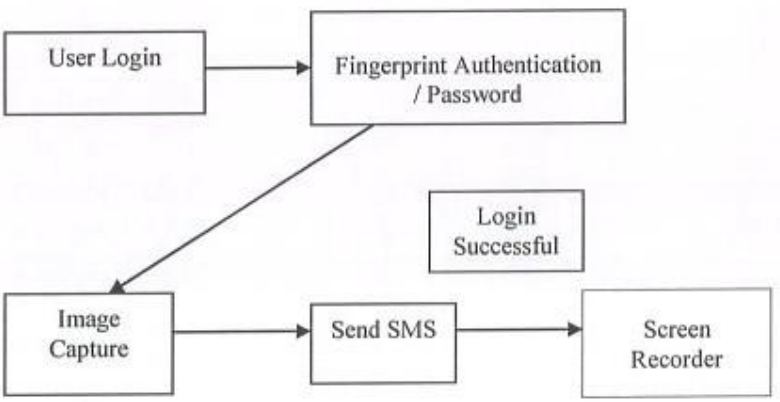

Figure 2 : Fingerprint Match

- **Result For Unsuccessful Login (Fingerprint Not Match)**

If unauthorized user trying to access the system forcibly through fingerprint authentication or password and after many attempts he was not able to access the system (Fingerprint not match) then software capture image of that user send SMS to the system owner and shut down or exit the system.

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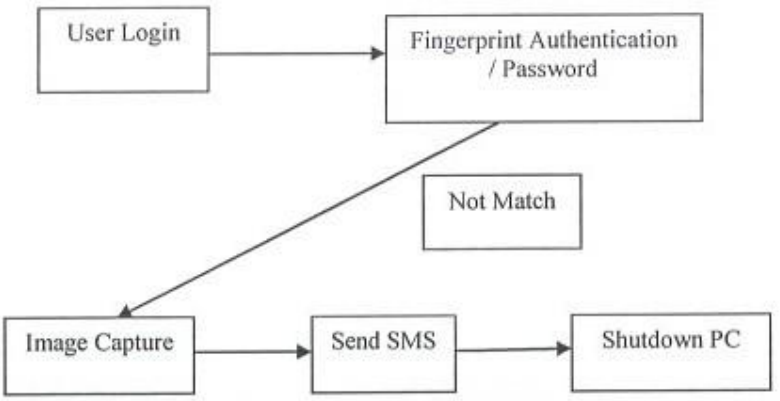

Figure 3 : Fingerprint Not Match

V. CONCLUSION

With the help of this desktop security provider can be said that project is a sincere effort to design and implement a digital diary that can be somewhat considered different from the run of the mill applications of similar nature. With the help of this system have learned a lot, especially about bit operations and bit masking, something that system never understood before. Desktop security provider was fun from the start and only got more interesting as system went on developing it. Desktop security became more interested in the subject the more we researched it. System have learned that while implementing screen recording is important, thinking of how to take screen shots and merge them into the video file with audio.There is a lot of research that is beginning to discover new ways to screen recording, most of which involves some variation of statistical analysis. Improvements to software are always possible. Similarly further improvements to this software can also be made. Providing the application's own website so that "Desktop Security Provider" can be accessed with ease on the Internet can also be tried out

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89. SCREEN SHOT OF PROF.LEENA R. WAGHULDE

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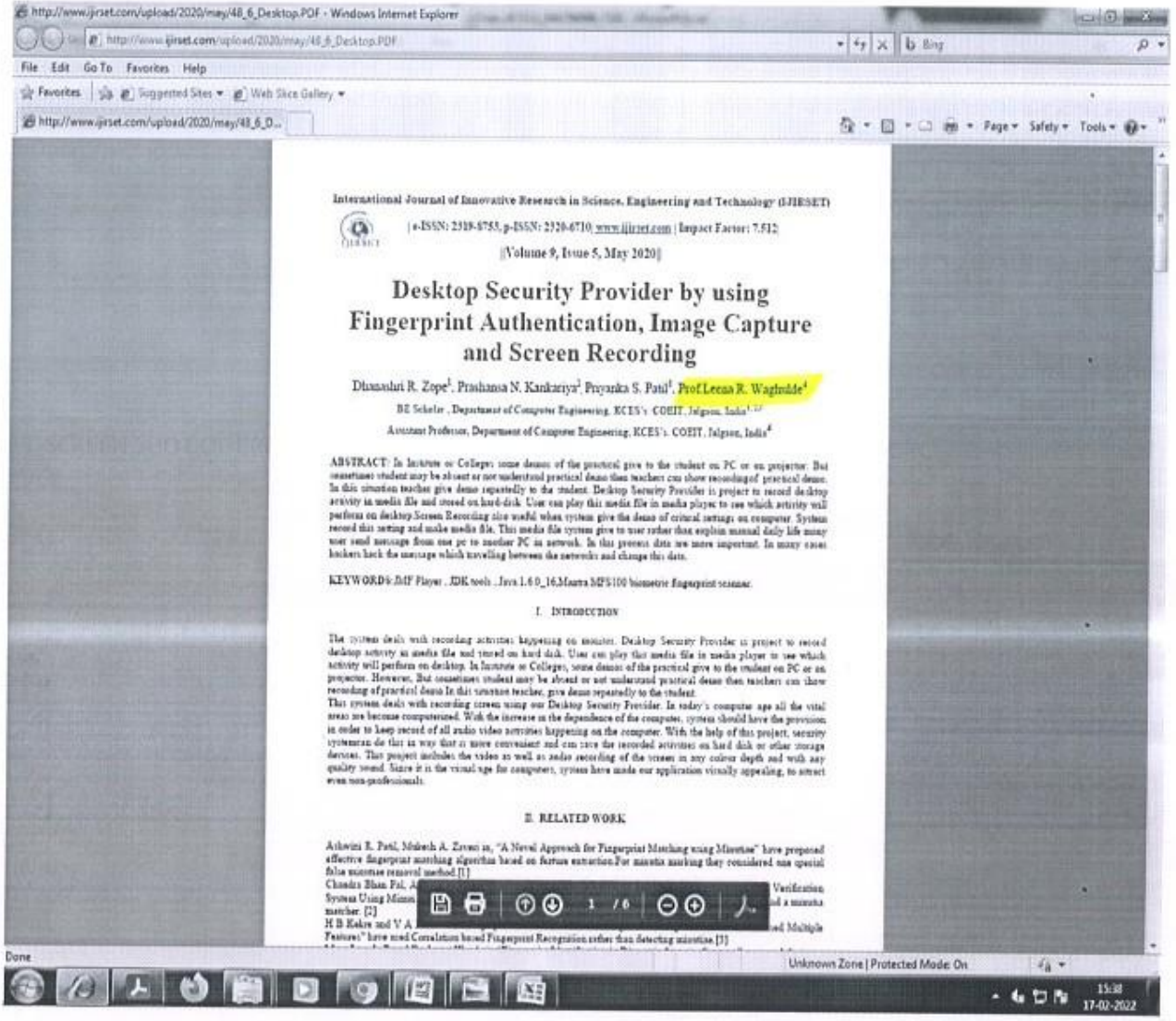

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In The Current Emerging Global Order 2020

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Impact of Electronic Service Quality (e-SQ) on Customers Satisfaction and Loyalty while Online Shopping.

Shefali M. Agrawal
Assistant Professor,
KCES's College of Engineering & Management, Jalgaon

Sanjay Sugandhi
Assistant Professor,
KCES's College of Engineering & Management, Jalgaon

Abstract -

The purpose of this survey is to measure the impact of e-service quality on customer satisfaction and loyalty when shopping online. The growing use of the Internet and online shopping creates tremendous prospects in the e-commerce market. As a result, electronic service quality (e-SQ), satisfaction and loyalty become crucial for online retailers to attract and retain online shoppers in this virtual environment. The results show that the quality of electronic services has a positive and significant impact on satisfaction. Consumer satisfaction also positively and significantly influences loyalty. The indirect impact of the quality of electronic services on loyalty is higher compared to the direct effect. This means that satisfaction is an important variable in shaping customer loyalty. This study provides a better understanding of the relationship between e-service quality, satisfaction and loyalty in the context of online shopping.

Introduction -

The tech boom in India is a well-known phenomenon that positively affects the economy. Due to globalization and technological advances, the internet has become an excellent platform for all kinds of companies to deliver their products and services to customers around the world.The e-commerce business (e-Com) has witnessed intense growth along with enthusiastic competition. Compared to physical stores, online companies offer convenience to customers. Customers can just sit at home, place orders, pay by credit card and wait for goods to be delivered to their home. Companies use this sales channel extensively to compete with their competitors in the e-commerce market.

The rapid development of information technology has led to a cultural change. Customers started shopping via e-commerce rather than physical stores. Physical companies have tried to gain a competitive advantage by using e-commerce to interact with customers (Lee and Lin, 2005). In online companies, competition can easily enter the market due to low entry barriers (Wang et al., 2016). From the customer's point of view, they have low costs of switching to another online store (Mutum et al., 2014). In physical and online companies, customer purchasing experiences influence future customer behaviour, including intent to re-purchase, intent to revisit the store, and word of mouth (WOM) (Chang and Wang, 2011). The rapid growth in online shopping is fuelling research efforts to identify customer satisfaction, which is considered a key factor in measuring the quality of service for websites and thus helps determine whether or not customer expectations of these online shopping sites are confirmed or not. So far, no research has been conducted to describe the impact of confirming expectations as to the quality of website service on determining customer satisfaction with online shopping. Hence, the present study addresses this issue and examines the indirect impact of confirming customer expectations on the relationship between the quality of website service and customer satisfaction with online shopping.

Objectives -

1. To study the customer satisfaction vis-a-vis e-service quality.
2. To find the impact of e-SQ on Customer loyalty.
3. To study the impact of Customer satisfaction on Customer Loyalty.

Literature Review -

E-service quality -

Quality of electronic services is generally defined as the difference between an expected service and a

perceived service (Gronroos, 1982). According to Zeithaml, Parasuraman and Malhotra (2002), eService quality is defined as the degree to which a website enables efficient and effective shopping, purchase and delivery of products and services. For example, Lee and Lin (2005) identified the main factors influencing customer perception of eService quality in online shopping, namely the degree of user-friendliness, reliability and security, responsiveness, and trust mechanisms provided by a website. Fassnacht and Koese (2006) recommend that service providers provide high-quality services as they provide a competitive advantage.

Customer satisfaction -

Kotler (2000) described satisfaction as a sense of pleasure or disappointment resulting from comparing the perceived performance or result of a product against its expectations. Aderson and Scrinivasan (2003) defined customer satisfaction as the content of a customer in relation to their previous purchasing experience with that e-commerce company. Smith (2005) views customer satisfaction with the quality of e-services as a general item or negative perception of their purchasing experience with a given online purchasing company. Satisfaction is important for establishing long-term customer relationships and further developing customer loyalty However, the strength of the relationship between satisfaction and loyalty differed significantly under different conditions (Anderson and Srinivasan, 2003).

Customer Loyalty -

Customer loyalty is defined as the percentage of cases where a buyer chooses a product or service in a specific category compared to the total number of purchases made by a buyer in that category (Neal, 1999). Maximizing the loyalty and long-term value of customer purchases is the most important goal of a website (Smith, 2005). It is considered difficult to gain customer loyalty on the Internet (Gommans, Krishman & Schefforld, 2003). In the online environment, researchers found that overall online customer satisfaction reduces the perceived benefits of switching supplier and therefore leads to strong re-purchase intentions for e-commerce (Szymanski and Hise.,2000). Developing customer loyalty can be a major source of sustained growth and profit as loyal customers are not price sensitive, direct other customers to the company, and can make suggestions that help improve service delivery (Anderson and Mittal 2000).

Conceptual model and creating hypotheses -

Drawing on existing literature on service marketing, a conceptual model is developed in Figure 1. Model consists of four structures, i.e. one predictor (e-service quality), two mediators (customer satisfaction and perceived customer value) and score (customer loyalty). The relationship model shows that the quality of e-services has both and indirect relationships with customer loyalty. Providing the quality of e-services affects customer satisfaction, coleads to customer loyalty or e-service influences the perceived value of the customer and ultimately develops customer loyalty customers.

Quality of electronic service and customer loyalty -

Researchers generally agree that the quality of online e-services has a significant impact on online customer loyalty shopping (Zeithaml et al., 2002). Hsu (2008) mentions that there are more websites that are user-friendly and enough informative, the greater the likelihood that customers will purchase and re-purchase. Moreover, a study by Hsu (2008) revealed that all aspects of e-service quality are significant predictors of consumer loyalty. Similarly, Jin et al. (2007) found it Online shopping reputation positively influences customer loyalty. Therefore, the more users trust the quality of internet services, the more likely they are to become loyal to the internet business. Therefore, based on empirical evidence this study assumes that:

Customer Satisfaction & Perceived Value by Customer

Customer Loyalty

E-Service Quality

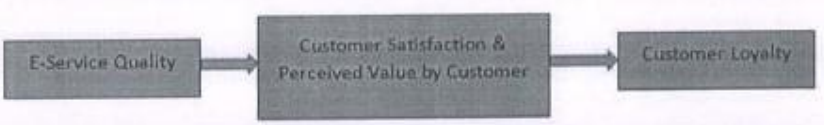


Fig1: Relationship of E-service Quality and Customer Loyalty

Electronic service quality and customer satisfaction -

Wu & Lin, 2006 suggest that websites that are better and easier to use make consumer transactions easier and that it encourages consumers to visit again or purchase again, which translates into customer satisfaction. Alpar (2001) identified two e-service quality features that determine customer satisfaction with the website

(refer Fig-2): ease of use (speed of reaction, navigation support, use of new internet technologies); and information content (quantity, quality, accuracy, personalized) Information). It follows that the more user-friendly your website is, the more likely customer engagement is online shopping. Moreover, several empirical studies confirm that a higher level of service quality is associated with a higher level customer satisfaction

Fig2: Relationship of E-service Quality and Customer Satisfaction with reference to Ease of Use & Information content.

Customer satisfaction and loyalty -

Satisfied customers visit the website more often due to increased loyalty since they used to be an online customer get used to shopping in a particular place, its process of making a purchase decision becomes a habit (Alba & Hutchinson, 2007) Customer satisfaction is therefore widely recognized as a key predictor of customer loyalty (Taylor and Baker, 2004). Satisfied customers are more likely to tell others about their positive experience and thus engage positively whisper advertising (File & Prince, 2002). Therefore, in this study, a positive relationship is expected between customer satisfaction and loyalty, this study assumes that: Fig3.

Hypothesis -

H0 - There is positive impact between the quality of e-services and customer loyalty vis-a-vis customer satisfaction.

H1 - There is less impact between the quality of e-services and customer loyalty vis-a-vis customer satisfaction.

Methodology -

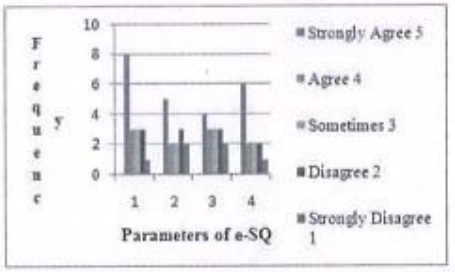
The research covers the three dimensions of service quality factors for Instance of responsiveness, trust and personalization and five variables in the client customer satisfaction and loyalty. The questionnaire for this survey was formulated in accordance with degree requirement and consists of two departments. The first section related toparameters of e-SQ while the second part consists of statements relating to different aspects of service quality such as responsiveness, trust and customization together with the customer satisfaction and loyalty.

Five-point Likert scale from 1-StronglyDisagree to 5 - Strongly agree was used to evaluate customer feedback. Sample unit of 100 people were collected for the study.

Table 1. – The table below reflects the parameters of E-service Quality, Loyalty and Customer Satisfaction as per data collection.

Sr No	Sample Size (100)	Strongly Agree	Agree		Sometimes	Disagree	Strongly Disagree	
	Parameters of E-service	5	4		3	2	1	
1	Ease use of merchants website	8	3	11	3	3	1	4
2	Customer's Feed Back	5	2	7	2	3	2	5
3	Return Policy	4	3	7	3	3	3	5
4	Speed of reaction	6	2	8	2	2	1	3
	Sub Total of e-SQ	33			10	17		60
	Loyalty & customer satisfaction	5	4		3	2	1	
5	Detail about product specification	4	1	5	1	2	1	3
6	Choices given	3	2	5	1	2		2
7	Customer choice of repeat purchase	7	2	9	2	3	2	5
8	No. of Suppliers	3	1	4	0	1	2	3
	Sub Total of Loyalty & Cust Satisfaction	23			4	13		40

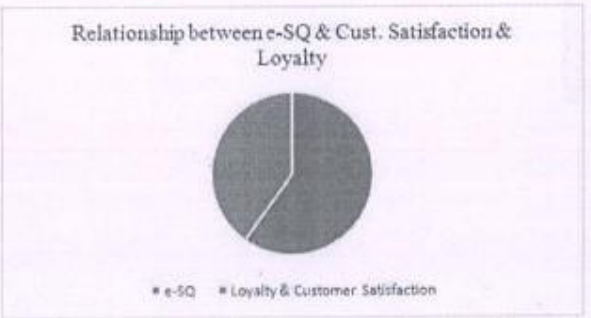
Chart 1- The below bar chat shows the parameters of E-service Quality.



Interpretation - The consumers says that they strongly agree with the parameters. The consumers wants the ease use of merchant's website with speedy reaction on customer's feedback and return policy.

Chart 2- The below bar chat shows the parameters of customer loyalty and customer Satisfaction.

Interpretation - The above bar graph shows the loyalty and satisfaction of the consumers to their merchants while online purchasing as they get all the detail specification of the products, multiple choices, and supplierswith all the quality services they are satisfied and loyal customers as they repeat their purchases from the same site



Interpretation - With the reference from table 1 we can prove that there is a positive impact of E-Service Quality on Customer Satisfaction and Loyalty while online purchasing. As service quality, as well as E-service Quality both are far more essential for the consumers while shopping online.

Hence, H0 is accepted.

Results & Analysis -

This study tested the structural model of the relationship between the quality of e-services and the customer satisfaction and loyalty. The study was conducted to determine the impact of the quality of e-services satisfaction and loyalty variables inthe context of online shopping.

The analysis of this study shows that the quality of e-services consists of three dimensions (reliability, responsiveness, and trust). The other two dimensions (web design and personalization) have a load factor below the cut-off value. Service quality dimensions including online store functionality, product attribute, ownership conditions, delivery,customer service and security. While the reference determines the quality of the information, security, ease use, availability, customization, community, responsiveness and delivery are important indicators. In addition, another study uses ease of use, transaction speed, update speed, traffic levels,integration and security. In the context of this study, consumers may not only consider website design and personalization as important factors.Consumers care more about trust, reliability and responsiveness as important factors. It's because of online buyers want to deal with online stores that they can trust, respond quickly to their inquiries and orders and reliable in the provision of long-term services. The result shows that the direct impact of the

quality of e-services on the consumer satisfaction is high. This means that online shoppers see the electronic service quality variable as important variable in creating their satisfaction.

The third finding of this study is that the satisfaction variable is very important in determining consumer'sloyalty. The impact of variable satisfaction on loyalty is moderately high.Onlinestores need to considerinfluential factors that may shape Consumers satisfaction. Meeting customer expectations through satisfactionwill significantly affect the future behaviour of the consumer: buying again in the same store and recommendation for potential buyers.

Conclusion -

For any type of business, customer satisfaction is very important is the main predecessor of loyalty. As everyone knows, everything is traded today companies started the marketing trend through the online mode with a variety strategies by identifying the characteristics of the market in which they deliver them Customer Service. The work presented in this study concerned researching the quality of online business services and their impact on the customer satisfaction and loyalty. The reason for this study is still incidents observed that customers are reluctant to buy a new product, especially through the website by an unknown website.These results suggest that consumer satisfaction is largely influenced by e-service quality elements: trust, reliability and responsiveness. Moreover, satisfaction is an important factor in the eyes of consumers as customers will not be loyal to the online store until they are satisfied.

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Face of Digitalize Education in India during Corona pandemic

Piyush Vinayak Joshi
Assistant Professor, Department of Management Studies,
KCE Society's College of Engineering and Information Technology,
Jalgaon

Abstract -

Instructors are been second by internet encouraging help by method of online instructional exercises and training helps gave by various web based learning applications, for example, Google Meet, E Pathshala, Zoom Lectures ,Google Classroom and so on, which are giving on spot answers for understudies. Course readings are being supplanted by digital books. The highlight make is that we are moving a long way from physical method of instructing and learning towards virtual teaching and learning abilities. This adjustment in training framework has created immense bit of leeway as far as horning information base of understudies and making them more certain to contend in the dynamic climate. Nonetheless, there is a flip side of it also, that most of the times understudies believing that they can get to the data on line are not centered enough around class addresses and by and large they don't give anticipated that respect should their instructors. In this foundation the paper attempts to discover what the different electronic mediums and component are accessible to understudies, what the benefits of digitization of instruction are and instruments and what new ways or software,apps of online teaching can be used.

Key Words - Technology, Digitization of Education System, Smart Classes, Online Teaching Assistance

Introduction -

It's a powerful world which doesn't acknowledge static character rather empowers and supports a constant change in all fields of life. Training which is the essential thing of making information asset and the base of better way of life and advertiser of bliss has likewise gone through commendable changes with the advancement of economy and society according to the differing needs to suit the given climate. In India, in the event that we return to Ancient period training was bestowed through gurkul framework where master instructs the devotee in regular habitat under the tree where understudies were under exacting control, direction and checking of master and need to watch severe bhramcharyajeeven.The education was given in the brace of environment which would make learner to get practical benefit of nature and see the live effect and happening in the nature itself. From that point, came the time of study hall instructing and realizing where training was granted in informational mode dependent on slate clarification and course books for additional readings. With the kickoff of Indian economy in 1991 and with the development of data innovation upheaval the method of instructing and learning has changed colossally, where black sheets havebeen supplanted by savvy sheets, associated with LCD projector and PC, disclosing the ideas to understudies not through the essential medium chalk and talk but rather supplanting it with Power Point Presentations and talk, video lectures and visual clippings. We are digitizing our instruction framework and moving bit by bit towards paperless society in this way conventional books are been supplanted by digital books, paper tasks are been supplanted by e-tasks in delicate duplicate, etc. Indeed, even instructor – trained connection is going the electronic path through different instructional exercise sites and on-line learning applications. The digitization of instruction has made accessible tremendous heaps of data exactly at the snap of catch and has brought about limitless material accessible to the end client whocan extinguish the hunger for information without any problem.

Objective of Study -

1. To have a knowledge with respect to essential parts needed for advancement of computerized training.
2. Knowledge of component of online environment.
3. To think about the significant internet learning applications accessible to understudies

It helps in paper less sharing of information as well as instruction.

Components of a successful Online Learning Environment - Online Learning is an evolving craft that requires sound pedagogy. We are on a journey of discovery as we practice and hone in on and I am also on a journey of discovery and learning to find the best pedagogical practices for the learners that we work with.

1. Supplement text-heavy environments with other types of resources - Use interactive and visual resources to engage your learners and promote deeper levels of comprehension. Web 2.0 multimedia including live chats can help move beyond the structured discussion threads to real-time dialogue and sharing. It also promotes innovative ideas and the integration of past experiences and knowledge.

2. Encourage and Model Participation - Just as in physical environments, participation in Online Learning Environments can be encouraged when the instructor explicitly sets clear expectations surrounding participation. Other strategies include modelling what effective participation looks like or sounds like, posting clear information in different sections to make it readily available, providing ongoing formative feedback through discussion posts, emails, and timely summative feedback.

3.Assessment / Checking - Feedback and assessment is ongoing. It is timely, it is constructive, and it models effective practices. It usually works best when there are no clear marks. One strategy is to keep a running spreadsheet of each participant to record important information. Keeping track of this information also provides you with windows into patterns and learning gaps that you can help learners fill.

Findings - Above graph show the rise in online learning and teaching from different regions

Conclusion -

By overall reading and reference it has been found that the traditional methods of teaching along with Traditional instruments has been decreased. Also a large development in use of digital component and instrument is done for education provision.Use of technology has led to bring improvement andincrease online education which expect large development in future.

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Certificate

Awarded to

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Dr. Shubhada Kulkarni
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Prof. Shilpa K. Bendale
(Conference Chair)

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Title of the Research Paper: Comparative study of Old and New Education Policy in the Indian Education System

Mrs. Madhuri Sanjay Tambe
Assistant Professor
Department of Management Studies,
KCE Society's College of Engineering and Information Technology
Jalgaon
Email id: madhugauri1421@gmail.com
Contact Number: 7507438713/9923603383

Abstract

In India, a replacement education policy typically comes along just one occasion every few decades. The Education policy was first introduced by the administration in 1968 under Mrs. Indira Gandhi. The policy has taken place by the NEP in 1986 by her son Mr. Rajiv Gandhi who was Prime Minister at that point. A few years later in 1992, it had been slightly modified again by Prime Minister P V Narasimha Rao. And now in 2020, approximately three decades later, a replacement education policy with drastic changes has been brought in by the ruling government. The National Education Policy for India has been acquiescence and replaced on 29th July 2020 after the time span of 34 years .The policy signifies an enormous milestone for India's Education system, which can certainly make India a beautiful destination for education world-wide.

After the Cabinet approval the contents of the policy were made free to the nation on 29th June. It was said that this National Education Policy or the NEP 2020 was said to be a complete framework to escort the development of education in the country.

Keywords: national education policy, government of India policy, NEP, student education, teacher training.

Introduction

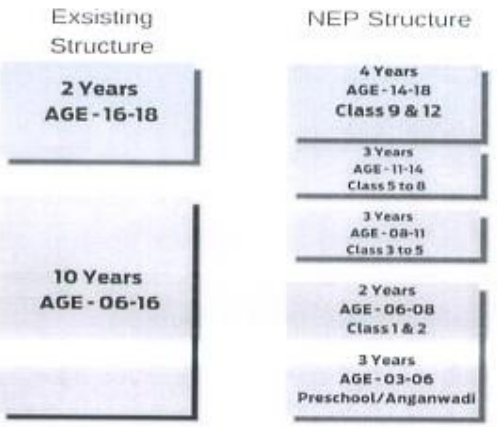
Education is the special emboider of human being, Education is the treasure trove which can be conserved without the fear of loss, Education secures material pleasure, happiness and fame; Education is the teacher of the teacher; Education protects honour at the hands of the State, not money.

Education is essential for realizing the full human potential, developing a fair and just society, and promoting national development. Providing universal, high-quality education is the key to economic growth, social justice and equality, scientific progress, ethnic integration and cultural protection; and India's continuous improvement, progress and leadership on the global stage. In the next ten years, India will be the country with the largest young population in the world, and our ability to provide them with high-quality educational opportunities will shape the future of our country.

As India gradually becomes a developed country and ranks among the world's three major economies, the demand for humanities and arts will continue to grow. Indeed, with the rapid changes in employment and global ecosystems, it is becoming more and more important for

children not only to learn but to learn how. Therefore, education must reduce content, and learn more about how to think critically and solve problems, how to be creative and multidisciplinary, and how to innovate, adapt and absorb new materials in new and changing fields. Although rote learning may be beneficial in certain situations, pedagogy must be developed to make education more experiential, holistic, comprehensive, discovery-oriented, learner-centered, discussion-based, flexible, Of course also pleasant.

The unfinished agenda of the National Education Policy of 1986 (NPE 1986/92) revised in 1992 has been appropriately dealt with in this policy.



The Principles underlying this policy are:

- flexibility,
- In order for learners to choose their learning trajectory and courses,
- Then choose your own life path according to your own talents and interests;
- There is no rigid separation between art and science,
- Between extracurricular activities,
- Between professional and academic etc.,

Ensure the integrity and unity of knowledge, and eliminate harmful hierarchies and silos between different learning fields; multi-disciplinary and holistic education for the multi-disciplinary world (covering the fields of science, social science, art, humanities and sports).

Vision of this policy

In addition to introducing greater flexibility mainly for testing core competencies, student selection and multiple attempts at the best assessment, the board may also develop further feasible board exam models and quality over time to reduce stress and coaching Culture, for example:

- Can formulate annual/semester/modular board examinations, each test requires much less materials, in order to better spread the test pressure throughout the high school stage, reduce the intensity and reduce high risks;
- According to NCF 2005 recommendations, all subjects starting from mathematics can be divided into two levels. Students can complete certain subjects at the standard level, and complete the remaining subjects at a higher level;

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- Each board exam can be divided into two parts-one is an objective type with multiple choice questions and the other is a descriptive type.

• NEP 2020 paves the way for many major changes in the Indian education system. The changes and goals of NEP 2020 are as follows:

1) School Education

- The current "10 + 2" structure covering 6-18 years old will be replaced by the new teaching and curriculum structure "5 + 3 + 3 + 4" corresponding to 3-18 years old
- Now, students no longer take the annual exams each year, but only take the exams for levels 3, 5 and 8
- The 10th and 12th board exams will be conducted as usual, but by allowing students to take the exam twice a year, the exams will become easier. The exam is divided into two parts: objective and description
- Common learning standards and regulations for public and private schools
- Lesson 6 will introduce vocational education and coding
- Mother tongue or regional language should be at least level 5, preferably the language of instruction before level 8
- The report card will be a 360-degree overall progress card, which will provide a comprehensive report on skills and abilities, not just scores and achievements
- Focus the curriculum on core concepts
- Universal education, from early childhood care (ECCE) to middle school
- Achieve 100% gross enrolment rate (GER) in school education by 2030
- The new national curriculum framework open learning system for early childhood education, schools, teachers and adult students brings 20 million "out-of-school children" back to the mainstream
- Deploy counsellors and social workers to improve students' mental health.
- The Chinese meal plan will be expanded to include breakfast.

New vision of the Indian higher education system:

Higher education plays an extremely important role in promoting the well-being of mankind and society and in the development envisaged in the Indian Constitution. India is a democratic, fair, socially conscious, cultural and humane nation, and always enjoys freedom, equality, fraternity and justice for all. Higher education has greatly promoted the country's sustainable livelihoods and economic development. As India gradually becomes a recognized economy and society, younger Indians may be eager for higher education.

It proposes a four-12 months multi-disciplinary bachelor's degree in an undergraduate programme with a couple of go out options. These will encompass professional and vocational regions and might be applied as follows:

• A certificate after finishing 1 year of look at
• A degree after completing 2 years of observe
• A Bachelor's degree after of entirety of a 3-yr programme
• A 4-yr multidisciplinary Bachelor's degree (the preferred alternative)
• MPhil (Masters of Philosophy) courses are to be discontinued to align diploma schooling with how it's miles in Western models.

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• A Higher Education Council of India (HECI) might be set up to modify better education. The council's goal may be to boom gross enrolment ratio.

The HECI will have four verticals:

- National Higher Education Regulatory Council (NHERC), to regulate higher education, inclusive of teacher training, at the same time as apart from medical and legal schooling.
- National Accreditation Council (NAC), a "meta-accrediting frame".

- Higher Education Grants Council (HEGC), for investment and financing of universities and faculties. This will update the present National Council for Teacher Education, All India Council for Technical Education and the University Grants Commission.

- General Education Council (GEC), to frame "graduate attributes", particularly the gaining knowledge of outcomes predicted. It may also be accountable in framing a National Higher Education Qualification Framework (NHEQF). The National Council for Teacher Education will come underneath the GEC, as a professional standard placing body (PSSB).

- Other PSSBs will encompass expert councils along with Veterinary Council of India, Council of Architecture, Indian Council of Agricultural Research and National Council for Vocational Education and Training.

  The policy proposes that higher training institutes like the IITs make modifications with reference to the range of getting to know. The coverage proposes to internationalize schooling in India. Foreign universities can now installation campuses in India. The charges of both non-public and public universities may be fixed.

The Basic principles of the policy are:

- Recognize, identify and strengthen the unique abilities of each student.
- Promote the overall development of each student in academic and non-academic fields.
- All students in the third grade have reached basic literacy and arithmetic.
- Learners can flexibly choose their own learning track and courses, so as to choose their own path according to their talents and interests.
- There is no rigid separation between arts and sciences, courses and extracurricular activities, occupations and academic genres to eliminate harmful hierarchy and silos in the field.
- Multi-disciplinary comprehensive education across science, social sciences, arts, humanities and sports to ensure the unity and integrity of all knowledge.
- Promote the power of multiple languages and languages in learning and teaching
- Life skills such as communication, teamwork, cooperation and resilience..
- Perform formative evaluations on a regular basis instead of summative evaluations.
- Full equality and tolerance are the basis of all educational decisions.
- Teachers and staff are the core of the learning process.
- "Light and tight" regulatory framework to promote the integrity, transparency and resource efficiency of the education system.
- Encourage innovation and out-of-the-box ideas through autonomy, good governance and empowerment.

PRINCIPAL

Objectives of the Study

- The National Education Policy 2020 has taken many initiatives to improve the quality and scope of the Indian education system.
- The objectives of this research on the National Education Policy 2020 are:
- Highlight and outline the policies of the newly accepted higher education system (NEP 2020
- Compare the National Education Policy 2020 with the current policy adopted in India
- Determine the innovations in the new "National Higher Education Policy 2020".
- Forecast the impact of NEP 2020 on the Indian higher education system.
- Discuss the advantages of NEP 2020 higher education policy.

Hypothesis

H 0- NEP is a revolution encouraged overall students to learn with skill based Education.
H 1- NEP as a problem for poverty line unable to access internet for online Education and to adopt new education policy.

H0 is Accepted

Methodology of the Study

The method includes a conceptual discussion that focuses on the main points of the national education policy framework, highlights the various parts of the NEP 2020 policy, and compares it with the currently adopted education policy.
This is a descriptive research paper;
This research was compiled with the help of auxiliary data.
The secondary data is collected from various websites, books and journals.

Some of the Major Highlights of the Old and New Education Policy in the Indian Education System are:

1. **Schooling to begin from the age of 3 years:**

   The revised policy expands the age group for compulsory education from 6-14 to 3-18. This new system will include a 12-year school system and a 3-year Anganwadi/preschool education. The existing 10 + 2 course structure will be replaced by the 5 + 3 + 3 + 4 course structure, which corresponds to 3-8 years old, 8-11 years old, 11-14 years old and 14-18 years old.

2. **Mother tongue to be instated as medium of instruction:**

   The 2020 "National Education Policy" will use students' mother tongue as the language of instruction. Although it insists on the "three-language formula", it also stipulates that no language can be imposed on anyone. The policy states that where possible, both public and private schools should follow the mother tongue/mother tongue/regional

language until at least the fifth grade, and preferably until the eighth grade and beyond specification.

3. **A Single Overarching Body of Higher Education:**

   The Higher Education Commission of India (HECI) will now establish an overall institution for the entire higher education (except medical and legal education). The same set of norms, accreditations and academic standard norms applicable to public and private higher education institutions. The government's goal is to phase out university affiliation within 15 years and establish a phased mechanism to give universities hierarchical autonomy.

4. **Separation between subject streams to be blurred:**

   According to NEP 2020, strict separation between object streams will be eliminated. Students are free to choose the subjects they want to study across subjects. Starting from the 6th grade, vocational education will be introduced into the school, which will also include internships.

5. **The Return of the FYUP Programme and No More Dropouts:**

   The duration of the undergraduate degree is 3 or 4 years. During this period, students will also get a variety of exit options. If the university wishes to complete 1 year in a certain subject or field (including vocational and professional fields), obtain a diploma after 2 years of study, or obtain a bachelor's degree after completing a 3-year course, it must issue a certificate to the student.

Conclusion

The 2020 National Education Policy (NEP) is a major revolution that replaces the 34-year-old policy concept and envisages much-needed changes in the Indian education system. This policy maintains a delicate balance between traditional and interdisciplinary approaches, which is a requirement of the 21st century.
Digital India, Skills India and New Industrial Policy are just a few examples to achieve coherent structural transformation
NEP has the potential to improve the skills of our youth and has all the right tools needed to be competitive on a global scale.
Needless to say, the new education policy is undoubtedly the progressive and ambitious policy that India is waiting for.

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Title of the Paper: Assessing Economic Impact of COVID-19 Pandemic

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Mr. Digambar Bhaskar Sonawane

Assistant Professor
Department of Management Studies,
KCE Society's College of Engineering and Information Technology
Jalgaon
Email id: dbsmba01@gmail.com

Contact Number: 7719012452

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Abstract

The outbreak of COVID-19 brought economic life to an immobilize. In this study the focus is on assessing the economic impact on affected sectors, such as tourism, aviation, retail, capital markets, Micro-Small-Medium-Enterprise Sector, and oil. International and internal mobility is restricted, due to this revenues generated by travel and tourism, which contributes 9.2% of the GDP, will take a serious effected on the GDP rate of growth. Aviation revenue will fall by US$1.56 billion. Oil has drop straight down at high speed to 18-year low of $ 22 per barrel in March, and Foreign Portfolio Investors (FPIs) have withdrawn huge amounts from India, about USD 571.4 million. While lower oil prices will reduce the present account deficit, reverse capital flows will expand it. Rupee is continuously devalue. Micro-Small-Medium-Enterprise Sector will undergo a severe cash crunch. This crisis has witnessed such a large number of migrants fleeing on foot under a nationwide blockade. Their main concerns are unemployment, daily rations and no social safety net. India must reconsider its development paradigm and make it more inclusive. COVID 19 also provides some unique opportunities for India. With the opportunity to participate in the global supply chain, multinational companies have lost their trust in China. In order to "Make in India", some reforms are needed, one of which is labour reform.

Keywords

COVID 19, economic impact, GDP growth rate, sectoral impact, COVID relief measures

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1. Introduction

The COVID-19 outbreak has had a huge impact on nations, especially nationwide blockades that have put social and economic life to a standstill. A world that has always been teeming with life has gone silent, and resources have been channel into coping with an unprecedented crisis. There is a multi-sectoral impact of the virus as the economic activity of nations has slowed. Surprising and noteworthy is the wake-up call that the World Health Organization (WHO) chose in 2019, speaking of the world's inability to fight the global pandemic. The 2019 joint report by WHO and the World Bank estimated the impact of such a pandemic at 2.2% to 4.8% of global GDP.

Another International Labour Organisation report, COVID-19 and the world of work: impact and policy responses, explained that the crisis has already turned into an economic and market shock, affecting not only supply (production of goods and services) but also demand (consumption and investment). The head of the International Monetary Fund (IMF) said that "The world is facing extraordinary uncertainty about the depth and duration of this crisis, and it was the worst economic impact since the Great Depression." The IMF has estimated the need for external financing for emerging markets and developing economies at trillions of dollars. India is also groaning under the yoke of the pandemic, and according to the Economic Times published on March 23, 2020, economists set the cost of COVID-19 blockade at $ 120 billion, or 4 percent of GDP (The Economist, 2020).

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2. Literature Review

Impact on Tourism, Aviation and Retail

Internationally, due to the COVID crisis, the tourism industry has been the most affected. Estimates from the World Tourism Organization (WTO) (2020) indicate that the number of international tourists has fallen by 20% to 30%. These figures are also based on current conditions and may increase or decrease in the future. Millions of people associated with industry may lose their jobs. In India, the tourism industry is booming and has made a huge contribution to the economy. FICCI-Yes Bank's report entitled "Inbound Tourism in India: Unlocking Opportunities" stated that India is a tourism

powerhouse and the largest market in South Asia. India's tourism industry accounts for 9.2% of GDP. In 2018, it generated 247.3 billion U.S. dollars in revenue and 26.7 million jobs. Currently, its contribution to GDP ranks eighth (Jagan Mohan, 2020). According to the report, by 2029, the industry is expected to provide employment for nearly 53 million people. In 2017, the number of foreign tourist arrivals (FTA) exceeded 10 million. However, the corona virus pandemic restricts international mobility, and the revenue generated by this sector will cause significant losses to GDP growth. This may lead to a 0.45% drop in GDP growth rate.

India's aviation industry currently contributes US$72 billion to India's GDP. The number of foreign tourist arrivals declined in the first quarter. The blockade will have a major impact on the arrival of the second quarter. If we conservatively estimate that the contribution of the aviation industry will drop by 25%, it will reach 18 billion. Railway contributed 27.13 billion U.S. dollars to GDP in 2019. The 21-day lock-in period will reduce revenue by $1.56 billion.

The value of Indian retail in fiscal year 2019 was US$790 billion. It accounts for more than 10% of the country's GDP and about 8% of the employed population. In the past few years, online retail has achieved very rapid growth, and market forecasts indicate that online retail will grow by 30% in 2020 (National Investment Promotion and Promotion Agency, 2020). The one-month retail closure will affect revenue in the second quarter. In the retail sector, the trend of sluggish demand has a tendency o recover quickly. Once the lock is released, this will enable the sector to make up for the loss.

Impact on GDP Growth Rate

Although as of April 15, 2020, the COVID-19 pandemic is still growing and there are few signs of containment, its adverse impact on the country's economic growth may be very serious. The United Nations warned that the coronavirus pandemic is expected to have a significant adverse impact on the global economy. Most importantly, India's current economic GDP growth is expected to drop to 4.8% (United Nations, 2020). Similarly, the United Nations 2020 "Economic and Social Survey of Asia and the Pacific (ESCAP) United Nations, 2020)

In the second scenario, where India is controlling the spread of the virus but there is a significant global recession, growth could be anywhere from 4 to 4.5 percent. KPMG India in its report estimated that India's GDP growth rate would fall below 3 percent if the virus continued to spread in India and the lockdown was extended (KPMG, 2020). Research by Motilal Oswal suggests that one day of complete blockage may reduce by 14-19 basis points in relation to the annual increase (Oswal, 2020). Barclays reported the cumulative cost of downtime was around $ 120 billion, or 4 percent of GDP (Barclays, 2020). Yashwant Sinha, India's former finance minister, estimated the cost of the country-wide 21-day blockade at 1 percentage point of GDP. The global recession and uncertainty about the future may cause the growth rate to slow down by 2 percentage points (in 2020-2021).

Impact of COVID-19 Pandemic on Migratory Labour

The ILO described the coronavirus pandemic in its report as "the worst global crisis since World War II." In India's informal economy, about 400 million people (76.2% of the total labour force) are plunged into deeper poverty due to the catastrophic consequences of the virus. As half of the world is in confinement, this will lose 195 million full-time jobs, accounting for 6.7% of global working hours. Many people are engaged in low-paid, low-skilled jobs, and sudden loss of income is disastrous (International Labour Organization, 2020). Seasonal labour-for-work migration is a widespread reality in rural areas of India. There is a migration of millions of people from rural areas to industries, urban markets and farms. The main migration corridors in India run from UP and Bihar to Punjab, Haryana, Maharashtra and Gujarat. New corridors are also being created from Odisha, West Bengal and the northeast to Karnataka and Andhra Pradesh, from Rajasthan to Gujarat, from MP to Gujarat and Maharashtra and from Tamil Nadu to Kerala. These migrant workers are employed in the construction sector (40 million), domestic work (20 million), textiles (11 million), brick kiln work (10 million), transportation, mining and agriculture (IIPS, 2001).

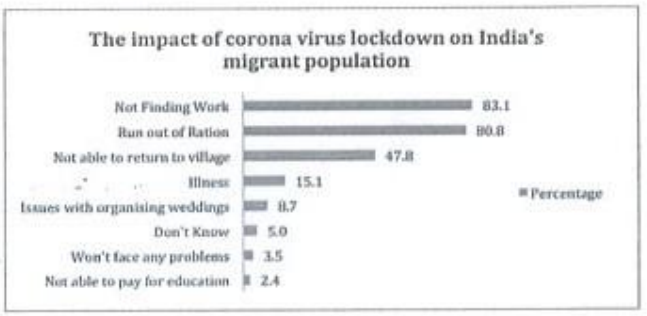

Figure 1. Impact of COVID-19 on Migrant Population
Source: Jan Saahas Survey (2020).

The study further explains that about 99.2 percent of these workers have an Aadhaar card, 86.7 percent have a Jan Dhan bank account or papers, 61.7 percent have food cards, and 23.7 percent have below the poverty line (BPL) cards. Although the government has announced an aid package of £ 1,700 billion, many may find it difficult to take advantage of these benefits. These workers expected the government to provide monthly food rations and monthly financial support (Jan Saahas Survey, 2020). The crisis witnessed the appalling mass exodus of such a floating pedestrian migrant population amid nationwide closure. Their fears stem mainly from job loss and a lack of social security. Despite the government's assurances, they continued to return to their homes. It is a story about inequality, poverty and the social exclusion of vulnerable populations struggling to overcome this sudden crisis.

Implications on Capital Markets, its Impact on India

Coronavirus concerns have caused shock waves in global financial markets. Due to interest rate cuts and the global stock market decline, the Indian capital market is planning to flow funds to Western capital markets. According to NSDL data, foreign securities investors (FPI) have withdrawn huge sums of money from India. In just 13 days (i.e. from March 1 to 13, 2020), they withdrew 247.76 billion rupees from the stock market and from the debt market. 140.05 billion rupees were withdrawn. In the next six months, due to the rapid flow of capital from one market to another in the world, the capital market will experience great volatility.

Fiscal and Monetary Measures

The coronavirus pandemic requires coordinated fiscal and monetary policy measures to deal with it. Fiscal measures include paying for the health bill caused by the pandemic. Providing masks, gloves, test kits, personal protective equipment, ventilators, ICU beds, quarantine units, drugs and other equipment would mean a huge increase in healthcare spending. Public healthcare expenditure in India is 1.1 percent of GDP. It is likely to increase in the current fiscal year. The government has pledged an aid package of £ 1,700 billion that will be used for money transfers to poor and vulnerable groups. The sectors most affected, namely MSME and farms, will be supported under the next aid package to be announced soon. Tourism and sectors integrated into global supply chains will need support.

The Federal Reserve cut the interest rate by 1 percentage point and decided to keep it in the range of 0-0.25 percent. IN USA. Monetary policy is less effective in dealing with a pandemic because liquidity itself is not the problem. Disruptions in economic activity and uncertainty about the future lower investment sentiment. Savings caused by anxiety among companies and investors eliminate investment demand.

Impact on Start-Ups and Micro, Small and Medium Enterprises

Micro, small and medium-sized enterprises, which have created more than 90% of jobs in India, employ more than 114 million people and generate 30% of GDP (Radhika Pandey, 2020), are at risk of serious money. Crisis if the blockade is extended to 8 weeks. Many of these MSMEs have loan obligations and monthly EMI payments. Many of them may just disappear if their cash cycle is disrupted due to a lockout and fixed costs hang over them in such a situation. They need a moratorium on loan repayments. The RBI has made funds available to non-banking financial corporations, some of which provide funding to MSMEs. In addition, the flow of perishable goods is difficult, and thus these companies are exposed to huge losses. India cannot achieve real and sustained growth without a thriving MSME sector. The COVID-19 crisis will also test the resilience of India's start-ups.

3. Methodology

The Research of the paper is based on Secondary data only. The secondary data is taken from websites, reports, journals and other research papers.

4. Discussion

The COVID-19 pandemic poses a huge threat to the main players in global production, because the mobility of Chinese migrant workers has been restricted and production activities have ceased. Currently, half of the world's people are under the blockade. If the blockade continues, the sales losses of Chinese companies in other parts of the world will lead to layoffs, cuts in investment spending and severe recession. Even if the virus is not controlled, increased demand for commodities will raise prices, even when global supply shocks and unemployment are high, that is when stagflation intensifies.

In order to reduce costs, multinational companies expose themselves to supply chain risks. The global industry relies on "just in time", product refurbishment, so inventory levels are very low. China is a large manufacturing country, with a share of 16% of global exports and 7% of global mining imports (The Economist, 2020). The area's most severely affected by COVID-19, such as Wuhan and Shanghai, are where multinational companies in the mobile, automotive and optical fibre manufacturing sectors rely on streamline operations. Indian companies should assess their supply chain risks before they start sourcing globally or integrate their supply chains with global supply chains.

India needs to rethink its development paradigm. Equal access to health and education is an important condition for equitable development. An important lesson that the COVID-19 pandemic has taught policymakers in India is to give more impetus to sectors that allocate resources better and reduce income inequality. COVID-19 has also taught a lesson that in times of crisis, people are returning to reliance on the agricultural sector. India has large arable land, but the agricultural sector has its own structural problems. However, 50% of households, directly or indirectly, are still dependent on the agricultural sector. More support for MSMEs, higher public spending on health and education, and making the workforce a formal worker in the economy are just some of the milestones a nation must achieve.

One of the country's upcoming reforms is labour reform. Labour laws are outdated in India, some of which date back to the last century. People blame India's complex labour laws for shrinking manufacturing and hindering job creation. Industry employs labour informally due to complicated laws, which leads to low wages. India's unemployment rate peaked in 2018, reaching a 45-year high of 8.1% (Hinduism, 2019). Simplified labour laws leading to higher wages will stimulate demand and provide investment incentives. The COVID-19 pandemic provides an opportunity to accelerate the labour reform process. Achieving financial inclusion through labour reforms will help increase wages and reduce unemployment.

The availability of advanced digital technologies can easily make this possible in India. The outflow of a large number of migrant workers, the news that some people died after walking for miles under the scorching sun, and the news that many were still hungry for a few days are the most disturbing images of the blockade. In the absence of a formal social safety net, relief work is repeated and the last mile where a part of the population is abandoned cannot be reached.

5. Conclusions

The spreading COVID-19 pandemic has distorted the world's booming economy in unpredictable ambiguous terms. But it strongly suggests that the current downturn seems very different from the past recessions that have affected the country's economic order. Although countries, corporate groups, companies, and multinational companies continue to understand the severity of this epidemic, there is no doubt that it will take time to prepare for a sustainable, structurally more suitable future for life and work?

While this unprecedented situation has caused enormous damage to the economy, especially in times of blockade, the nation will have to deal with it by introducing fiscal measures. As predicted by the national government, protection of both livelihood and livelihood is required. Economic activity should start gradually after the labour force survey. Industry should implement strict preventive measures to protect workers' health. While policies and reforms should be made by government appropriately to save the economy, industry, civil society and communities have an equal role to play in maintaining the balance. The norms of distancing ourselves, avoiding or cancelling meetings, and using masks and disinfectants should be a way of life until we are able to eradicate the virus. At this time, the economy collides with the social behaviour of mankind, so the responsibility of bringing back economic action is not of government alone.

However, every crisis presents a unique opportunity to rethink the path taken for the development of humanity, community and society. The COVID-19 pandemic sends a clear message to the Indian economy to adopt a sustainable development model based on a self-reliant, inclusive framework and environmentally friendly.

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Impact on Hospitality Industry

Author- Mayur Kishor Borse

Asst. Prof. KCES-COEM JALGAON

Email- mayur.mba2013@gmail.com

Mob-9765911230

Abstract

The Indian Hotel Industry is developing at a quick movement. This is because of the intercession by Government of India to encourage the business through financial changes, changes in various tax assessment strategy, permitting unfamiliar direct venture and so forth This paper follows the advancement of the Indian Hotel Industry in India directly from provincial occasions so peruses are acquainted with its various phases of improvement. This paper additionally features the job the Government of India has played in the improvement of this Industry at various phases of history and the powers that formed those choices. The pretended by Indian inn business visionaries in setting up the Hotels and taking those lodgings to worldwide business-sectors has been talked about. The difficulties presented by passage of unfamiliar lodgings in India and what it implies for Indian Hotel Industry will make peruses familiar the elements of Globalization. The methods and techniques they use to enter worldwide strategies and the reasons have been broadly examined. The chronicled idea of Hotel arrangement in India and how it has taken the current structure and what media has detailed about it has been examined. The paper examines the writing audit from the assortment of sources to set up the substance of Hotel Industry in India and its elements in twenty first century.

Keywords

Training, effective training, staff performance, staff skills, staff productivity and cost reduction.

Human attention, Span Study, Brian Diagnoses, Time Machine, Human Behaviour, Talent Acquisition, Human Technology, intelligence calculation, Reasoning Method, Magazine,.

Introduction

Connection Between the Hospitality Industry and Tourism Scope of the Hospitality Industry "Visitors" signifies the individuals who are away from their homes and it in this manner, has created an observation that the cordiality business ought to incorporate or cover with the travel industry to a limited degree. Without an away from about the extent of the accommodation business, some proposed that it ought not just spread all housing and food administration activities yet other the travel industry related tasks, for example, carriers and amusement parks. Plus, there were likewise some who thought about placing accommodation and the travel industry into one industry.

What is the importance of HOSPITALITY? There is nobody single and basic definition to clarify the term of accommodation in this stage. Numerous individuals have attempted to depict the cordiality business in various manners. Some attempted to sum up the extent of the business and its qualities of including both substantial and impalpable highlights in the administration transport measure. Others attempted to portray the business by exploring the accomplices being referred to, shared preferences made and the business' consequences for the overall population

and economy. Completely, Hospitality is the act of kindness in welcoming and dealing with the key needs of

Clients or outsiders, for the most part corresponding to food, drink and convenience. A contemporary clarification of Hospitality alludes to the relationship cycle between a client and a host. At the point when we talk about the "Neighbourliness Industry", we are alluding to the organizations or associations which give food as well as drink and additionally convenience to individuals who are "away from home". In any case, this meaning of the "Friendliness Industry" just fulfils most circumstances.

As of now, the accommodation business in India is viewed as a 'dawn industry' which implies it has a gigantic extension sooner rather than later. It is considered as one of the most gainful ventures which additionally represents over 8.78 percent of the absolute labor force, making right around 15 million positions in the previous five years. The area pulls in a significant lump of unfamiliar direct speculation inflow alongside the most significant methods for unfamiliar trade for the nation.

Literature Review

The idea of the audit includes different examinations made identifying with the exploration subject and specialization by various analysts during various occasions. In this part, examines embraced by different specialists are contemplated and a concise report of the perceptions, investigation and ends, in light of the destinations of their particular examination, are introduced as audit of before writing accessible in the connected subject. This exploration study is with respect to Comparative investigation of the marked spending inns versus non marked spending inn, the premise of correlation are Marketing techniques for example (Client Relationship Marketing, Customer Satisfaction) and Human Resource Practices embraced by these lodgings.

This investigation likewise attempts to discover the purposes behind the development and development of marked and non-marked spending inn and the notoriety that it has increased over some undefined time frame. In this part the specialist has attempted to connect the work done in the past with the present and the extension for future investigation, the writing audit likewise attempts to guarantee that the point under examination has not been done previously. Henceforth an unobtrusive endeavor is made to survey the accessible writing existing on lodging industry in spending portion, focussing essentially on Marketing methodologies, CRM, Customer Satisfaction and HR Practices. Finally the point of this writing survey is to feature holes and defects of past examination and illuminate future possibilities.

Being one of the "mega trends" that has significantly impacted the tourism system, the role and use of social media in travellers' decision making and in tourism operations and management have been widely discussed in tourism and hospitality research. This study reviews and analyses all extant social media-related research articles published in academic journals during, mainly in tourism and hospitality fields. Based on a content analysis on the analysed articles from both the consumers' and the suppliers' perspectives, this article found that consumer-centric studies generally focused on the use and impact of social media in the research phase of the travellers' travel planning process. Supplier-related studies have concentrated closely on promotion, management, and research functions, but few discussed product distribution. Research findings thoroughly demonstrate the strategic importance of social media for

tourism competitiveness. This study also contributes to the academia and industry by identifying some research voids in extant research and providing an agenda for future research.

Objectives

To investigate the adequacy of HRP in the lodging

- To distinguish how Recruitment and Selection is completed in the lodging
- To distinguish the adequacy of Training and Development at La Plantation Hotel
- To evaluate how execution the board is acted in the lodging and its viability
- To survey the significance of compelling correspondence
- To decide if the association is giving appropriate thought to its work force.
- Primary goal of the friendliness business is client volume.
- To dissect the speculation patterns and accommodation improvement examples of worldwide cordiality firms.
- To distinguish rising abroad business sectors for the travel industry and neighborliness advancement.
- To comprehend the financial effect of creating the travel industry in non-industrial nations.
- To comprehend the administration elements of the travel industry and friendliness industry including human asset the executives, budgetary administration, showcasing and innovation applications.
- To identify potential vocation chances of our understudies through temporary position programs and on instruction preparing

Mythology:-

It is a descriptive research method which is based on observation and questionnaire. Here, the researcher has tried to describe the process of performance appraisal with reference to Chassis Brakes International.

Primary Data:

The study is based on primary data. That is awareness towards objectives of the employees, their skill set, their preparation for job expectancy is collected through structured questionnaire.

Secondary Data:

The study is also based on secondary data. It involves basic theories related with performance appraisal and company details. The secondary data is collected through various sources like books and websites.

Project Research Approach:

<table>
<tr><td>Observation</td><td rowspan="2">Primary Data</td></tr>
<tr><td>Collection Of</td></tr>
<tr><td>Analysis of Data</td><td></td></tr>
<tr><td>Interpretation of Data</td><td rowspan="2">Secondary Data</td></tr>
<tr><td>Formulation of Report</td></tr>
</table>

Analysis and Conclusion

Purpose – The paper aims to present answers to the strategic question:

- What commitment will accommodation and the travel industry make in making sure about reasonable financial development in India? It endeavours to incorporate the finishes of the six articles

- Contributed by industry specialists to the Worldwide Hospitality and Tourism Themes (WHATT) issue on friendliness and the travel industry in India.

- Design/technique/approach – The methodology is to coordinate the discoveries and proposals from the six articles and to incorporate the issues and recommendations that were made by professionals and scholastics at the subject issue roundtable conversation.

- Findings – While examining the general difficulties to the cordiality and the travel industry in India, the experts proposed measures which whenever tended to, could animate financial development in this industry as well as for India's economy all in all.

- The most noteworthy components influencing friendliness and the travel industry in India are: framework the board; government strategy; labor force issues and instruction in cordiality and the travel industry; procedures for development; emergency the executives; the administration of objections in India and the sending of online strategies for promoting.

Recommendation

1. Capture and investigate input to upgrade the visitor experience

Hoteliers ought to proactively catch, break down and follow up on visitor input. The wellsprings of criticism ought not to be restricted to visitor fulfilment overviews and travel survey sites yet in addition incorporate contribution from lodging staff.

2. Track and measure execution

Various apparatuses and estimation lists, the most broadly utilized of which is Net Promoter Score®, can be utilized to check the present status of visitor fulfilment and track progress after some time. These records give a decent read by requesting input from visitors about various parts of their stay encounters.

3. Tie staff motivators to visitor fulfilment

To ingrain a hierarchical spotlight on improving the visitor experience, an inn should set up budgetary rizes. Such rewards may incorporate rewards based

4. Zero in on visitor portions that remain to profit most.

A GEM business activity is probably going to profit a few portions more than others. Assets ought to be apportioned in like manner.

5. Deal with each journey like a big name

With GEM, the objective ought to be to regard every visitor as a superstar. However, remember: there's an almost negligible difference among commonality and provocation. Inn staff would prefer not to be seen as stalkers.

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COLLEGE OF ENGG. &
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Heat Treatment Method for H13- An Analysis of Carbon Diffusion

Dhiraj S. Patil[1]
dhirajpatil16798@gmail.com

Darshan K. Thakur[2]
Darshankathakur22@gmail.com

Manoj M. Nehete[3]
manojnehete24.7@gmail.com

[1,2,3]Assistant Professor,
Department of Mechanical Engineering,
KCE Society's College of Engineering and Information Technology, Jalgaon, India

Abstract— **However, while being a small percentage of the total cost, heat treatment is perhaps the most important and critical factor in determining fabric quality. Under entirely varied circumstances and treatment lengths, a series of heat treatment tests were undertaken to examine the carbon diffusion in H13 steel during austenitization. Austenitization was investigated in four different ways; without part management, with stainless steel foil wrapped over it, and in a vacuum. Researchers found that chrome steel foil wrapping may prevent decarburization, leading to a persistent hardness profile similar to that of vacuum heat treatment. While these two heat treatment techniques have very similar tempering characteristics, they are fundamentally different. H13 steel has a carbon content independent of its layer thickness and hence hardness, according to results obtained from gas component samples.**

Index Terms— Carburization, H13 tool steel Hardening, Heat treatment, Nitriding.

I. INTRODUCTION

Heat treatment is a procedure to adjust the metallurgical and mechanical properties for explicit purposes that includes warming and cooling of the material. It is realized that the hardness got from solidifying process is extraordinarily impacted the accessible carbon content in steel during extinguishing [1]. The nearness of carbon inside the steel lattice is to a great extent dependable to the possible mechanical properties, which makes the steel material an exceptionally valuable product of regular daily existence. It likewise influences both the base solidifying temperature and the greatest feasible hardness [2]. To build up a legitimate heat treatment climate for steel, there is a need to comprehend the connection between the environment structure and the carbon substance of steel during the austenization time frame. Practical carbon dispersion model for the carbon profile is significant. Carbon can either diffuses out or into the steel network contingent upon the workplace [3]. In the event that decarburization occurs, the hardness on the outside of the rewarded material will be lower than anticipated. Be that as it may, if carburization was led, the rewarded material would be solidified [4]. Numerous explores have been led identified with the carburization procedure (e.g., [5–8]); in any case, understanding of the decarburization during heat treatment is as yet restricted, particularly for H13 apparatus steel. In spite of the fact that Arain [9] researched the contrast between the open air heat treatment furthermore, the vacuum heat treatment, his emphasis was basically on H13 durability conduct. The motor of the carbon dissemination inside the H13 device steel is additionally not yet clear. Along these lines, the primary goal of this exploration is to research how the encompassing condition during heat treatment process impacts the material hardness profile and to examine the carbon dispersion active when the material is exposed to distinctive barometrical conditions during austenitising

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stage. Tests of H13 steel would be exposed to warm treatment process with various term times and under various climatic conditions. Hardness profile of each example would then be investigated. It is additionally important to explore the viability of the gas nitriding process. The carbon dissemination motor of H13 steel during heat treatment will likewise be examined. Carbon dispersion process is displayed dependent on the Van-Ostrand-Dewey arrangement and the carbon actuation vitality and carbon diffusivity at 1020 ◦C is resolved.

Fig. 1 Pack carburization with stainless steel foil wrapping [5]

II. Research And Testing

The four distinctive heat treatment and air conditions researched in this investigation are heat treatment without environmental control, heat treatment with tempered steel foil wrapping, pack carburizing heat treatment, and vacuum heat treatment. Further treatment would likewise be directed to research the impact of carbon content on the proficiency of the nitriding case solidifying process. Subsequent to extinguishing, the examples were exposed to two hardening forms followed by gas nitriding. Between each procedure, an example was gathered for investigation. Table 1 sums up the test plan. The examples utilized in this examination have the size of 7mm× 10mm× 60mm with the underlying hardness of ~12HRC. For the warmth treatment without barometrical control, the examples were warmed in a suppress heater at austenitizing temperature of 1020 ◦C for the predetermined timeframe. The examples were situated at the inside locale of the suppress heater furthermore, were in direct contact with the encompassing air. For this barometrical condition, carbon in steel could openly respond with the encompassing air. An electrical warmed open environment heater (mute heater) was utilized for all warmth treatment forms aside from vacuum heat treatment process. Information lumberjack with a thermocouple was utilized to screen and guarantee the correct treatment temperature was kept up during the procedure. In the warmth treatment with hardened steel foil wrapping, examples were completely wrapped with a bit of pure steel foil to diminish the pace of concoction dissemination between the example and the heater climate. This strategy is normally utilized in industry and the recommended wrapping strategies can be found in [10]. For this exploration, each example was first wrapped with the long side (the length) twofold collapsed, at that point twofold collapsed deep down from the other two closures (the widths). This analysis setting expected to limit the ceaseless carbon response and oxidation between the example what's more, the encompassing environment by the presence of treated steel foil. The tempered steel foil goes about as an obstruction to confine the carbon response between the example and the environmental factors. The test enclosed by tempered steel foil is appeared in Fig. 1a. In pack carburization heat treatment, a steel box holding an example was completely pressed with charcoal with case solidifying precious stone, barium salt, chemical formula of Ba(ClO3)2 and was warmed to a temperature of 1020 ◦C. The example is situated at the focal point of the steel box and is completely secured by barium salt, so every example surface is in contact with the equivalent carburized climate condition. A photograph of the pack carburization explore before the example is concealed with barium salt is given in Fig. 1b. The vacuum treatment was led in an A bar vacuum heater at rough 25 and preheated at temperature of 650 ◦C and 850 ◦C. Each preheating stage took 1h. At that point it was warmed up to 1040 ◦C and held for either60, 90 or 120min, and at last cooled to room temperature in a pace of 30 ◦C/min.

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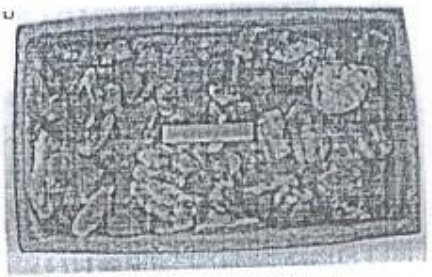

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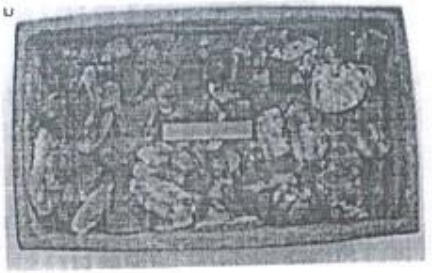

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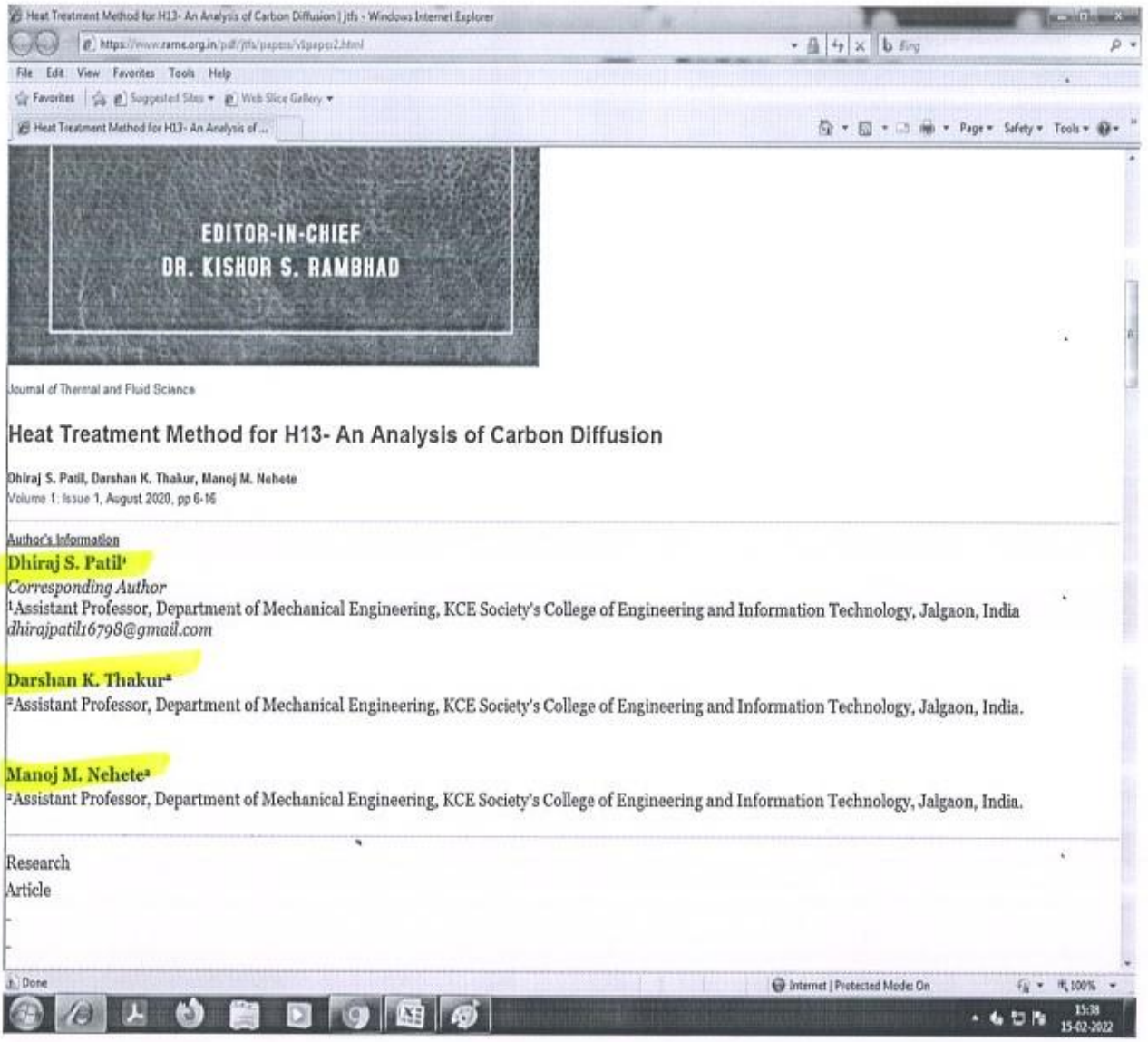

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Dhiraj S. Patil, Darshan K. Thakur, Manoj M. Nehete
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Author's Information

Dhiraj S. Patil[1]
Corresponding Author
[1]Assistant Professor, Department of Mechanical Engineering, KCE Society's College of Engineering and Information Technology, Jalgaon, India
dhirajpatil16798@gmail.com

Darshan K. Thakur[2]
[2]Assistant Professor, Department of Mechanical Engineering, KCE Society's College of Engineering and Information Technology, Jalgaon, India.

Manoj M. Nehete[3]
[3]Assistant Professor, Department of Mechanical Engineering, KCE Society's College of Engineering and Information Technology, Jalgaon, India.

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