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Editorial.....

It is heartening to note that our journal is able to sustain the enthusiasm and covering various facets of knowledge. It is our hope that IJMER would continue to live up to its fullest expectations savoring the thoughts of the intellectuals associated with its functioning .Our progress is steady and we are in a position now to receive evaluate and publish as many articles as we can. The response from the academicians and scholars is excellent and we are proud to acknowledge this stimulating aspect.

The writers with their rich research experience in the academic fields are contributing excellently and making IJMER march to progress as envisaged. The interdisciplinary topics bring in a spirit of immense participation enabling us to understand the relations in the growing competitive world. Our endeavour will be to keep IJMER as a perfect tool in making all its participants to work to unity with their thoughts and action.

The Editor thanks one and all for their input towards the growth of the **Knowledge Based Society**. All of us together are making continues efforts to make our predictions true in making IJMER, a Journal of Repute

Dr.K.Victor Babu
Editor-in-Chief

SOCIAL SCIENCES, HUMANITIES, COMMERCE & MANAGEMENT, ENGINEERING &
TECHNOLOGY, MEDICINE, SCIENCES, ART & DEVELOPMENT STUDIES, LAW

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॥ काव्यस्योद्भवे हेतुः न तु हेतवः ॥

ड.अविनाश गायेन

सहकारी-अध्यापकः, संस्कृतविभागः

घाटाल-रवीन्द्र-

शतवार्षिकी-महाविद्यालयः

अपारे काव्य संसारे कविरैकः प्रजापतिः ।

यथोऽस्मै रोचते विश्वं तथेदं परिवर्तते ॥

सृष्टिस्तावद् द्विधा-विधातुः सृष्टिः कवेः सृष्टिश्च । तत्र विधातुः परमेष्ठिनः सृष्टिर्नानाप्रपञ्चसमाकुला नैकनियमनियन्त्रिता च भवति, किन्तु कवेः सृष्टिर्नव नव भावपरिपूर्णा नवरसरुचिरा सत्यशिवसौन्दर्यमयी च विजृम्भते । अत एव सद्यः निखिलानपि सहृदयान् कान्तोपदेशवचनैर्वशमानयति । कविसृष्टस्तु कविरेव विधाता । अतोऽसौ यथेच्छं ललितमधुरं रसालङ्कारमनोज्ञं काव्यं निर्माति । स्व विशिष्टगुणगणनैव कविः सकललोकनिर्माणक्षमं साक्षात् ब्राह्मणमप्यतिशेते । वाग्देवतावतारेण आचार्यमम्मटेन सत्यमेवोक्तम् –

नियतिकृतनियमरहितां ह्लादैकमयीमनन्यपरतन्त्रात् ।

नवरसरुचिरां निर्मितिमादधती भारती कवेर्जयति ॥¹

कविस्तावदेतादृशो विलक्षणः कलाकारो यः स्वकीयाद्भुतप्रतिभया चेतनेऽप्यचेतनवदचेतने च चेतनवद् यथेच्छं व्यवहारयति । अत एवोक्तम् आचार्यानन्दवर्धनेन –

भावानचेतनानपि चेतनवच्चेतनानचेतनवत् ।

व्यवहारयति यथेष्टं सुकविः काव्ये स्वतन्त्रतया ॥²

सुकविः खलु इहस्थोऽपि प्रतिभया परलोकस्थमपि सकलं रहस्यं प्रकाशयितुं समर्थः । असौ लोकेऽसम्भवमपि सम्भवं कर्तुं प्रभुः । काञ्चनवर्णाया अनुपमलावण्यवत्या कस्याश्चिद् युवत्या वर्णने सुकविः कमनीया कल्पनाऽत्र नूनमवलोकनीया –

जाता लता हि शैले जातु लतायां न जायते शैलः ।

सम्प्रति तद्विपरीतं कनकलतायां गिरिद्वयं जातम् ॥³

विधातुः सृष्टौ पर्वते लतानामुत्पत्तिर्दृश्यते किन्तु लतायां पर्वतस्योत्पत्तिरसम्भवा । तत्रापि मसृणदेहायां सुवर्मलतायां तु गिरिद्वयस्योत्पत्तिः नितान्तमेवासम्भवेति को न जानाति ? परं कवेः सृष्टौ तादृशं किमप्यसम्भवं नास्ति । कविरत्र कस्याश्चिद् गौराङ्ग्यास्तरुण्याः कमनीयं वर्णनमुपस्थापयति । अत्र शृङ्गारानुकूलोऽतिशयोक्त्यलङ्कारो झटिति रसिकजनस्य मनोहरति । एतादृशमद्भुतं सामर्थ्यं कश्चिन्महाकविरेव विभर्ति नान्यः कश्चन ।

अहो कश्चित्पूर्वः काव्यमहिमा यस्य श्रवणमात्रेण दर्शनमात्रेणैव वा नीरसहृदयेऽपि रसमयी तरङ्गिणी प्रवाहिता भवति । एवं नितान्तसन्तसस्वान्तस्यापि सहृदस्याह्लादकस्यानेकगुणगणभव्यस्य च काव्यस्योद्भवे किमस्ति कारणमिति नूनं विचारणीयम् । यथाहि काव्यलक्षणपरीक्षणावसरे आलङ्कारिकमूर्धन्यानां विविधा विचारवीचयो नयनमार्गमधिरोहन्ति तथैव काव्यकारणविचारणावसरेऽपि परस्परमलङ्कारतत्त्वमर्मज्ञेषु, विवादो दरीदृश्यते । तत्र साहित्यसौहित्यजु, विदुषां प्राधान्येन द्विधा सरणिवलोक्यते । तत्र दण्डीवाग्भटमम्मटभट्टजयदेवप्रमुखा आचार्याः प्रतिभाव्युत्पत्त्यभ्यासानां दण्डचक्रचीवरादिन्यायेन सम्भूय काव्यत्वं प्रति कारणत्वं प्रतिपादयामासुः ।

तत्र आचार्य दण्डिना सजलजलदगिरा प्रतिपादितं काव्यादर्शं यत् –

नैसर्गिकी च प्रतिभा श्रुतं च बहुनिर्मलम् ।

अमन्दश्चाभियोगोऽस्याः कारणं काव्यसम्पदः॥⁴



इति । एतन्मते स्वाभाविकी प्रतिभा, प्रचुरं दोषहीनं च शास्त्रश्रवणम् (व्युत्पत्तिरित्यर्थः) निरन्तरमभ्यासः (पौनः पुन्येन) काव्यनिर्माणम् । एते त्रयोऽपि काव्यसम्पदः (काव्यस्योत्कृष्ट-तायाः) हेतवो वर्तन्ते । एतदनन्तरमपि दण्डिना निरगादि यत् यदि कदाचित् पूर्वं जन्मनः संस्कारस्य गुणैः सम्बद्धा अद् भूतप्रतिभा न स्यात् तथापि शास्त्रश्रवणं जन्यव्युत्पत्त्या निरन्तरं काव्य निर्माणस्य अभ्यासेन च सम्यगुपासिता भगवती वाग्देवता कमप्यपूर्वमनुग्रहं सेवकोपरि विदधात्येव । दण्डिनोनयोक्त्या प्रतीयते यत् उत्कृष्टकाव्यं प्रति प्रतिभाव्युत्पत्त्यभ्यासानां त्रयाणामपि सम्भूय कारणताऽनिवार्या परं साधारणकाव्यं तु प्रतिभाया न्यूनतायामपि व्युत्पत्त्यभ्यासाभ्यां निर्मातुं शक्यत इति । दण्डिनो अनन्तरमाचार्यमम्मटेन काव्यस्योद्भवे प्रतिभादीनां त्रयाणामपि सम्भूय कारमता स्वीकृताः । तेन काव्यप्रकाशे यत् –

शक्तिर्निपुणता लोकशास्त्रकाव्याद्यवेक्षणात् ।

काव्यज्ञशिक्षयाभ्यास इति हेतुस्तदुद्भवे ॥⁵

शक्तिर्हिः कवित्ववीजरूपः संस्कारविशेषः, यां विना काव्यं न प्रसरेत् प्रसृतं वा उपहासस्पदं भवेत् । शक्नोति जनः काव्यनिर्माणाय आस्वादानुभवाय चानयेति शक्तिः । लोकव्यावहारात् शास्त्राध्ययनात् काव्यानामितिहासपुराणादीनां परिशीलनाच्चोत्पन्ना निपुणता (व्युत्पत्तिः), काव्यं कर्तुं विचारयितुं च ये जानन्ति तेभ्यः शिक्षामवाप्य तदनुसारं निरन्तरमभ्यासेन च काव्यं निर्मातुं शक्यते । यद्यपि मम्मटोक्तकारिकायाः पठनेनापातत एवं प्रतीयते यत् शक्तिर्निपुणता, अभ्यास इत्येते त्रयस्तृणारणिमणिन्यायेन काव्योद्भवे पृथक् पृथक् कारणानि सन्तीति किन्तु सूक्ष्मदृष्ट्या विराचिते सति जायते यत् वस्तुतस्त्वत्र तथा नास्ति । अत्र दण्डचक्रचीवरादिन्यायेन शक्ति निपुणताभ्यासानां त्रयाणामप्येषां काव्योत्पत्तौ सम्भूय कारमता वर्तते । त्रयोऽप्येते काव्योद्भवे परस्परसापेक्षा वर्तन्ते न तु व्यस्ताः ।

ननु कारिकायां त्रयाणामपि पृथक् पृथगुल्लेखात् कथमत्र तेषां तृणारणिमणिन्यायेन पृथक्-पृथक् कारणता न स्वीक्रियत इति चेदुच्यते । महावैयाकरणेनापि मम्मटाचार्येण यत् कारिकायां हेतव इति बहुवचनस्य स्थाने हेतुरित्येकवचनस्य प्रयोगो विहितः, एवमेव कारिकावृत्ति-भागेऽपि सुस्पष्टं यदुक्तम् - “इति त्रयः समुदिताः, न तु व्यस्तास्तस्य काव्यस्योद्भवे निर्माणे समुल्लासे च हेतुर्न तु हेतवः” इति । तेन सुस्पष्टमिदं जायते यन्मम्मटाचार्यमते काव्यस्योद्भवे शक्तिनिपुणताभ्यासानां त्रयाणामपि परस्परसापेक्षतया सम्भूय कारणता स्वीक्रियते न तु पृथक्-पृथक् ।

आचार्यवाग्भटेनाप्युक्तम् –

प्रतिभा कारणं तस्य व्युत्पत्तिस्तु विभूषणम् ।

भूशोत्पत्तिकृदभ्यास इत्यादिकविसंकथा ॥⁶

एतन्मते काव्यस्योद्भवे कारणं प्रतिभा, व्युत्पत्तिर्भूषणमभ्यासश्चक काव्यरचनां समुन्नतं विदधातीति । वाग्भटानुसारेण प्रतिभायां इदं स्वरूपम् – प्रसन्नपदनव्यार्थयुक्त्युद्बोधविधायिनी इति । अस्य कथनस्यायमभिप्रायो यत् प्रतिभा काव्यमुत्पादयति, व्युत्पत्ति स्तत्र सौन्दर्यमानयति, अभ्यासेन च काव्यं शीघ्रं निर्मीयत इति । परिणामतः द्राविडप्राणायमेन वाग्भटेनापि त्रयाणां सम्भूय कारणता स्वीकृता ।

चन्द्रालोककारेण जयदेवेन काव्योत्पत्तिविचारणावसरे निगदितं यत् –

प्रतिभैव श्रुताभ्याससहिता कवितां प्रति ।

हेतुर्मृदम्बुसम्बद्धबीजोत्पत्तिर्लतामिव ॥⁷

इति । कवित्वबीजभूतः संस्कारविशेषो हि प्रतिभा । यथा हि लतां प्रति न केवलं मृत्तिका न वा केवलं जलं, न वा केवलं बीजपुञ्जो हेतुर्भवति प्रत्युत मृदम्बुसम्बद्धं बीजपुञ्जं समुदिते हेतुर्भवति तथैव काव्यनिर्माणे शास्त्राणामध्ययनम् शास्त्राभ्यासो, नवनोन्मेषशालिनी प्रज्ञा (प्रतिभा) चैतत्त्रयसमुदितमेव काव्यनिर्माणे हेतुः । प्रतिभाविषये एवममुक्तं विद्वद्भिः –



बुद्धिस्तात्कालिकी ज्ञेया मतिरागाभिगोचरा ।

प्रज्ञा नवनवोन्मेषशालिनी प्रतिभा मता ॥⁸

अपारे पुनर्वामनरुद्रटपण्डितराजजगन्नाथादयः काव्यस्य कारणत्वेन केवलां प्रतिभामेव स्वीकुर्वन्ति । आचार्यवामनेन काव्यालङ्कार सूत्रवृत्तौ लोकविद्या प्रकीर्णाख्येषु त्रिषु वर्गेषु समस्तानां काव्याङ्गना विभाजनं कृत्वा प्रथमवर्गे लोकवृत्तज्ञानस्य, द्वितीये निखिलशास्त्रज्ञानस्य, तृतीये च लक्ष्यज्ञत्व – अभियोग – वृद्धसेवा – अवेक्षण – प्रतिभान-अवधानाख्यानां षट्तत्त्वानामुल्लेख दृश्यते ।

तत्र अभियोगस्तावत् – काव्यबन्धोद्यम इत्युच्यते । तेनाग्रे कथितं यत् काव्योपदेशे ये गुणवत्तेषां शुश्रूषेव वृद्धसेवेति निगद्यते । वृद्धसेवातः काव्यविद्यायाः संक्रान्तिर्भवति । अवेक्षणेन पदेषु स्थैर्यमायाति सरस्वत्यपि सिद्धा भवति । अवधानेन कवेः स्थितं नवनवार्थवोधने समर्थं जायते । एतेषां सर्वेषामप्यङ्गानां काव्यगतं सापेक्षिकं महत्त्वं स्वीकुर्वताऽपि वामनेन काव्यदुमप्ररोहणाय तद्दीजतया प्रतिभैव सहर्षमङ्गीकृता ।

आचार्यरुद्रटेन अयमेव विषयः किञ्चित् भिन्नतया वर्णितः । प्रतिभायाः स्वरूपं निरूपयता तेनोक्तम् –

मनसि सदा सुसमाधिनि स्फुरणमनेकधाऽभिधेयस्य ।

अक्लिष्टानि पदानि च विभान्ति यस्यामसौ शक्तिः ॥⁹

एतन्मते प्रतिभा द्विधा – सहजा उत्पाद्या चेति । तत्र जन्मसिद्धा प्रतिभा सहजेति निगद्यते । व्युत्पत्तिजन्या प्रतिभा चोत्पाद्या कथ्यते । उत्पाद्या प्रतिभा सहजा संस्कारोति । यथा हि सुवर्णादिधातूनां संशोधनं परिष्करणं च समुचितोपायै रपेक्षितं भवति तथैव सहजप्रतिभायाः परिष्काराय संस्काराय च व्युत्पत्त्यभ्यासयोरावश्यकता भवत्येवेति नात्र सन्देहः । विषयेऽस्मिन् आचार्यानन्दवर्धनोऽगादीत् यत् यदि कविः प्रतिभावान् भवेत् तदा प्राचीनकविभिर्वर्णितेषु विषयेष्वप्यसौ नवनवोन्मेषमुत्पादयितुं क्षमः । ध्वन्यालोकस्यैव तृतीयोद्योते आनन्दवर्धनेन –

अव्युत्पत्तिकृतो दोषः शक्त्या संग्रियते कवेः ।

यस्त्वशक्तिकृतस्तस्य स झटित्यवभासते ॥¹⁰

इत्युक्त्या व्युत्पत्त्यपेक्षया शक्तेरत्यधिकं महत्त्वं स्वीकुर्वता व्यङ्ग्यान्तरेण प्रतिभैव संस्तुता । उक्तं च यत् शक्त्या (प्रतिभाया) अव्युत्पत्तिजन्यानां दोषाणां निराकरणमपि सरलतया कर्तुं शक्यते इति ।

आलङ्कारिकशेखरेण राजशेखरेणापि काव्यमीमांसायां मनोज्ञपद्धत्यां काव्यकारणविषये विस्तरेण विवेचितम् । राजशेखरेणोट्टङ्कितं काव्यमीमांसायां यत् – काव्यनिर्माणे कवेः समाधिरुत्कृष्टो व्यापार इति श्यामदेवस्य मतम् । मनस एकाग्रतैव समाधिरित्युच्यते । समाहितस्वान्त एव कविर्विवक्षितार्थान् पश्यति । उक्तञ्च –

सारस्यतं किमपि तत्सुमहारहस्यं यद्गोचरं च विदुषां निपुणैकसेव्यम् ।

तत्सिद्धये परमयं परमोभ्युपायो यच्चेतसो विदितवेद्यविधेः समाधिः ॥¹¹

आचार्यमङ्गलमते काव्यनिर्माणे अभ्यासः सिद्धेश्वरमोपायः । निरन्तरमनुशीलनमेवाभ्यास इति कथ्यते । स च सर्वगामी सर्वत्र चातिशयेन नैपुण्यं जनयति । राजशेखरमते समाधिः खल्वान्तरो यत्र परमभ्यासो बाह्यः । इमावुभावपि सम्भूय शक्तिमुद्भासयतः । सैव शक्तिः काव्ये हेतुः । शक्ति स्तावत् प्रतिभाव्युत्पत्तिभ्यां भिन्ना । सा च शक्ति व्युत्पत्त्योत्पादिका । शक्त्या सम्पन्न एव जनः प्रतिभावान् व्युत्पन्नश्च भवति । राजशेखरेण पुनरग्रे प्रतिभाया लक्षणमेवमुक्तम् – या शब्दग्राममर्थसामर्थ्यमलङ्कारतन्त्रमुक्तिमार्गमन्यदपि तथा विधमधिहृदयं प्रतिभासयति सा प्रतिभा । प्रतिभाहीनस्य पुरः स्थितोऽपि पदार्थसमूहः परोक्ष इव प्रतीयते, प्रतिभावतश्च जनस्य पुनरपश्यतोऽपि पुरः प्रत्यक्ष इव सकलोऽपि पदार्थसार्थः परिस्फुरति । अतएव मेधाविरुद्रकुमारदासादयो जन्मान्धाः कवयः श्रूयन्ते । किञ्चेहास्थिता महाकवयोऽपि देशद्वीपान्तरकथादीनां वर्णने समर्था भवन्ति । निरन्तरं काव्याभ्यासरतानां नैकशास्त्रव्यवहारदिनिपुणानां प्रतिभावतां कवीनां कृत् सकलमपि वर्णयवस्तु हस्तामलकवदक्ष्णोः समक्षमेव परिस्फुरति । यत्र रवेरपि गतिर्न भवति रससिद्धो महाकविः समाधि मग्नेन मनसा



तत्रापि गच्छति । अतएव लोके जनाः कथयन्ति - “जहाँ न जाय रवि वहाँ पहुँचे कवि” । तत्र देशान्तरव्यवहारस्योदाहरणं यथा -

प्राणानामनिलेन वृतिरुचिता सत्कल्पवृक्षे वने

तोये काञ्चनपद्मरेण कपिशे पुण्याभिषेकक्रिया ।

ध्यानं रत्नशिलागृहेषु विबुधस्त्रीसन्निधौ संयमो

यत्काङ्क्षन्ति तपोभिरन्यमुनयस्तस्मिंस्तपस्यन्त्यमी ॥¹²

शाकुन्तलस्य पद्येऽस्मिन् इहलोकस्थितेनापि कविकुलगुरुणा कालिदासेन अदृष्टानामपि स्वर्गीयपदार्थानां तथा वर्णनमकारि यथा ते सर्वेऽपि पदार्थाः पूर्वं प्रत्यक्षदृष्टाः स्युः । इत्थं प्रतिभाप्रकर्षात् द्वीपान्तरकथापुरुषव्यवहारादिविषयकं वर्णनमपि साक्षात् प्रत्यक्षीकृतमिव कर्तुं क्षमाः सन्ति कवीन्द्रा इत्यत्र नास्ति सन्देहावसरः ।

अथ राजशेखरगोक्तं यत् - सा प्रतिभा द्विधा - कारयित्री भावयित्री चेति । तत्र कारयित्री प्रतिभा कवेः काव्यनिर्माणशक्त्या साकं सम्बद्धाऽस्ति भावयित्री पद्धाऽस्ति भावयित्री प्रतिभा च सहृदयस्योद्भावनशक्त्या सह । काव्यमीमांसा कारेण द्विविधयोरपि प्रतिभयोर्महत्त्वमुपादेयत्वं च प्रदर्शितम् । अनयोर्द्वयोरपि प्रतिभयोः कवेः प्रज्ञा नूनमन्तर्निहिता भवति । वस्तुतस्तु प्रज्ञयैव प्रतिभा परिचीयते । राजशेखरमते बुद्धिस्त्रिधा - स्मृतिः, मतिः प्रज्ञा चेति । तत्रातिक्रान्तस्यार्थस्य स्मर्त्री स्मृतिः, वर्तमानस्य मन्त्री मतिरनागतस्य (भविष्यत्कालिकार्थस्य) च प्रज्ञात्री बुद्धिः प्रज्ञेत्युच्यते । बुद्धेः त्रिष्वप्येसेषु रूपेषु भूतवर्तमानभविष्यत्कालानामुद्बोधनस्य शक्तिर्विद्यते । यद्यपि राजशेखरेण प्रज्ञायाः सम्बन्धः केवलमनागतयुगेन सह संस्थापितः परं काव्यप्रकाशस्य प्रसिद्धटीकाकारेण विद्याधरचक्रवर्तिमहोदयेन सा त्रैकालिकीत्वे - नाङ्गीकृता । तत्कथनस्यायमाशयो यत् - स्मृतिरतीतेन, मतिरनागतेन, बुद्धिर्वर्तमानेन प्रज्ञा च त्रिभिरपि कालैः सह सम्बद्धा भवताति । इत्थं प्रतिभायाः विशालसाम्राज्ये प्रज्ञाया अप्यधिकं महत्त्वं स्वीक्रियत एव । अतएव प्रज्ञाप्रतिभयोरभेद इव व्यवहारोऽपि कावचित्-विद्वत्सु संलक्ष्यते ।

प्रतिभातारतम्येन कविभेदाः

राजशेखरमते कारयित्री प्रतिभाऽपि त्रिधा भवति - सहजा, आहार्या, औपदेशिकी चेति । तत्र जन्मान्धरसंस्कारापेक्षिणी प्रतिभा सहजा कथ्यते यत् इयं जन्मान्धरसंस्कारादुत्पद्यते । अनया भूषितः कविः सारस्वतः कथ्यते । आहार्या प्रतिभा चेतज्जन्मसम्बद्धात् संस्कारादुत्पद्यते । अनया युक्तः कविः आभ्यासिक उच्यते । मन्त्रतन्त्राद्युपदेशेभ्यः समुत्पन्ना प्रतिभा औपदेशिकीत्युच्यते । अनया प्रतिभया च समलङ्कृतः कविर्भवत्यौपदेशिकः । तत्र सारस्वतानाम् आभ्यासिकानां च कवीनां वामी मृद्वीकेव निसर्गतो मधुरा भवति, अतस्तदर्थं तन्त्रमन्त्रादि फाणित संस्कारा नापेक्षन्ते । उपर्युक्तेषु त्रिष्वपि कविषु आभ्यासिक कवेः काव्यनिर्माणं मितं भवति । औपदेशिककवे रचना मनोहारिण्यपि कदाचिदसारा जायते । किन्तु सारस्वतकवे रचना सर्वथा पूर्णा स्वतन्त्रा ह्यया च भवति । अतएव सारस्वतः कविः सर्वोत्तमो मन्यते । उक्तं च काव्यमीमांसायाम् -

सारस्वतः स्वतन्त्रः स्याद् भवेदाभ्यासिको मितः ।

औपदेशिकविस्त्वत्र वल्गु फल्गु च जल्पति ॥¹³

आचार्यैः काव्यगौरवस्य परसारदृष्ट्याऽपि कवीनां श्रेणयो निर्धारिताः सन्ति । तथाहि केषाञ्चित् कवीनां स्वकाव्यप्रसारक्षेत्रं निजावासपर्यन्तमेव भवति । अन्येषां कवीनां प्रसार क्षेत्रं सुहृद्गोष्ठीपर्यन्तं भवति । परमेतादृशाः कवयो विरला एव भवन्ति येषां काव्यरचना श्रवणानन्तरमेव सकलान् अपि श्रोतुं सहृदयान् झटित्यानन्दसागरे निमज्जयति । सत्यमेवोक्तं केनचित् -

एकस्य तिष्ठति कवेर्गृह एव काव्य

मन्यस्य गच्छति सुहृद्गवनानि यावत् ।



न्यस्याविदग्धवदनेषु पदानि शश्वत्

कस्यापि सञ्चरति विश्वकुतूहलीव ॥¹⁴

अतः समस्तकाव्याङ्गनिष्णाता विलक्षणप्रतिभावन्तो लब्धवाग्देवताप्रसादाः केचन एव भवन्ति रससिद्धाः कविराजभाजो मनीषिणः ।

असाधारणपाण्डित्यमण्डितेन पण्डितराजजगन्नाथेन तु काव्य कारणप्रसङ्गे सोद्वोषमिदं निरगादि रसगङ्गाधरे यत् – “तस्य च कारणं कविगता केवला प्रतिभा, सा च काव्यघटनानुकूल शब्दार्थोपस्थितिः” । काव्यरचनाया अनुकूलयोः शब्दार्थयोर्झटिति स्फूर्तिर्यया जायते सा प्रतिभेति । प्रतिभायां विद्यमानः प्रतिभात्वधर्मस्तु तन्मते जातिविशेषो यस्य सिद्धिरनुमानेन भवति। स्वविषयकज्ञानसमवायित्वसम्बन्धेन काव्यं प्रति समवायेन प्रतिभाकारणमिति कार्यकारण- भावात्मकानुकूलतर्कमूलकात् स्वविषयकज्ञानसमवायित्वसम्बन्धावच्छिन्ना काव्यत्वावच्छिन्नकार्यतानिरूपिता समवायसम्बन्धावच्छिन्ना प्रतिभानिष्ठा कारणता किञ्चिद्धर्मावच्छिन्ना कारणत्वात्, घटनिष्ठकार्यतानिरूपित- दण्डनिष्ठकारमतावत्, इत्यनुमानेन प्रमाणितः, नित्यत्वे सत्यनेकसमवेतत्वम् इति जातिलक्षमसमन्वयाच्च जातिविशेषः । उपाधित्वस्य त्यागे जातित्वस्य च स्वीकारे तत्र बीजानुपलम्भात्, नीलघटत्ववत् स्वखण्डोपाधिरूपं वा प्रतिभात्वम् ।

पण्डितराजमते काव्यकारणीभूतायाः प्रतिभाया अपि कारणद्वयमस्ति – क्वचिद् देवतामहापुरुष प्रसादादिजन्यमदृष्टम्, क्वचिच्च विलक्षणव्युत्पत्तिकाव्यकारणाभ्यासौ। क्वचिद्देवतादि प्रसादजन्यादृष्टेनैव तु क्वचिद् व्युत्पत्त्यभ्यासाभ्यामेवोत्पादिता प्रतिभा काव्यं जनयतीत्यर्थः। पण्डितराजमते प्रतिभात्वावच्छिन्नं प्रत्यदृष्टस्य व्युत्पत्त्यभ्यासयोश्च तृणारणिमणिन्यायेनैव कारणता अन्यथा कर्णपूरप्रभृतीनां बाल्य एव व्युत्पत्त्यभ्यासवैधुर्येऽपि प्रतिभोत्पत्तेर्दर्शनाद् व्यभिचारः स्यात् ।

ननु तादृशस्थलेषु जन्मान्तरीयव्युत्पत्त्यभ्यासयोः कल्पनमुचितमिति चेन्न, गौरवात् । किञ्च नेयं कारणता वेदेषु प्रतिपादिता येन व्यभिचारावसरे जन्मान्तरीयं तत्कल्प्येव। अस्मादत्र मानाभावः । न च केवलमदृष्टेनापि काव्योल्लासदर्शनात् कार्यस्यान्यथोपपत्तिरपि दुर्निवारेति वाच्यम्। क्वचित् व्युत्पत्त्यभ्यासाभ्यामेव प्रतिभोत्पत्तिदर्शनात्। अपि च यदि केवलमदृष्टमेव काव्योत्पत्तौ कारणं स्यात् तदा व्युत्पत्त्यभ्यासोत्पत्तेः प्रागपि कदाचित् प्रतिभा प्रादुर्भूय काव्यं जनयेत् ।

॥ तत्त्वसूची ॥

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|------------------------------------|----------------------------------|
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| 5.काव्यप्रकाशः – 1.3 . | 6.वाग्भटालंकारः – 1.3 . |
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| 13.काव्यमीमांसा – | 14.काव्यमीमांसा – |

॥ सहायकग्रन्थसूची ॥

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मेहेर चन्द लछमनदास, दिल्ली- 1973

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कालिदासः

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कृष्णदास अकादमी, वाराणसी- 2002.



A HEART DISEASE PREDICTION USING DIFFERENT CLASSIFICATION ALGORITHMS- A SURVEY

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Abstract:

Heart disease is known as cardiovascular disease which can affect the function of heart. Various factors are making impact for this heart diseases occurrence. Data mining methods are mostly used to handle the huge amount of data and extract the useful patterns from that data. Classification methods are powerful which supports various algorithms to classify the records based on the class labels. This paper shows that various classification models involving in the prediction of heart disease. The data mining methods are used in healthcare for predictive medicine, customer relationship management and measuring the effectiveness of treatment. This work reviewed different classification methods used for prediction of heart disease.

Keywords: Data Mining, Healthcare, Classification, Decision Tree, Naïve Bayes, Random Forest, Heart Disease

1. Introduction:

Data mining provides an effective service in healthcare industry to enhance the health care system for providing improved results. This supports the identification process and analytical process by using medical records to provide intelligent results. The use of data mining techniques can reduce the cost. Experts reported that the use of data mining methods in healthcare can reduce the healthcare spending cost up to 30%. There are two different data mining models are used such as predictive model and descriptive model. The predictive model supports the supervised learning methods which require pre-training for prediction and classification. The descriptive model supports the unsupervised models which can handle real-time data effectively. The healthcare industry includes diagnosis of diseases, affected level of diseases, treatment and prevention for diseases and other related process. The healthcare industry stores massive amount of data which contains number of electronic medical records, reports of administration and other benchmark findings. The survey report of PubMed highlights the importance of data mining in healthcare industry. The data mining models are handling the huge amount of medical records in an efficient manner. By adapting the data mining models for medical industry, there are lot of benefits provided to the patients. With the help of data mining techniques, the effectiveness of treatment is evaluated. This can save the life of patients and provides suggestions for medical treatment. The techniques are effective in managing healthcare at different levels, managing customer relationship, detection of waste and fraud.



2. Working Process of Data mining in Healthcare

The data mining methods are used to extract the useful and hidden patterns from the large datasets. This is the part of Knowledge Discovery in Databases (KDD) process. There are five main stages involved in the data mining process in healthcare industry. The initial stage is selection of data. This specifies the target dataset selection for prediction and classification process. Pre-processing of Data is the second stage in KDD process. This includes the cleaning process of data which are selected for data mining process. This pre-processing method is used to handle the missing data. This missing data can affect accuracy of results. So, these pre-processing methods are essential. Data transformation is the next stage. This is used to project the data and find the invariant aspects using transformation techniques. The fourth stage is applying data mining algorithms. This is used to extract the useful patterns from the data and provide the output. The final stage of KDD process is data interpretation. This is used to evaluate the outcomes and extracted knowledge.

3. Data mining methods in Healthcare

Data mining provides various methods for prediction of diseases in healthcare industry. The popular methods are sequential analysis, classification and clustering.

Sequential Analysis:

This sequential analysis is used to find the statistical relevant patterns between data examples. The finding values are provided in a sequential manner.

Classification:

The classification methods are used to assign the data values based on the class labels. The main objectives of using the classification methods are accurately predict the class label for each data. There are different classifications models are used in various sectors. The famous classification models for healthcare sectors are decision tree, Naïve Bayes, K-Nearest Neighbour and Random tree. (P. D. K Thenmozhi 2014)

Clustering:

Clustering is used to find the group of data which are similar to each other. The same category data can be formed as a group.

4. Heart Disease Prediction Using Classification

Heart diseases are one of the deadly diseases which can affect the human life. Medical Researchers are producing the well-formed data for better prediction of heart disease. Cardiovascular diseases are known as heart attacks which stops the blood circulation of heart. According to the World Health Organization Report, cardiovascular diseases are the number one cause of death. This report also highlights that the CVD is the reason for 31% of global deaths in the year 2016. This CVD can be identified by some essential features called attributes. For making research, the benchmark dataset are used by various researchers. The behavioral features are also impact this cardiovascular disease (S. S. P Deepika 2016). Apart from the fixed attributes some other behavioral attributes are playing major role in the cause of heart disease such as tobacco use, the harmful use of alcohol unhealthy diet, obesity and poor physical inactivity (P. V. P Deepika 2015).

The early detection methods can be useful for people who are suffering from these heart diseases.

4.1 Different types of Heart Diseases

The disorder of heart and blood vessels specifies the cardiovascular diseases. There are different types in this disease.

- Coronary Heart Disease
- Cerebrovascular Disease
- Peripheral Arterial Disease
- Rheumatic heart Disease
- Congenital heart Disease

All these types of heart diseases are dangerous that can be predicted using medical tests. The existing methods requires lab test for predicting the heart disease. With the help of data mining, the heart disease can be identified with the attribute values. (P. D. K Thenmozhi 2014)

4.2 Attributes for Heart Disease Dataset

There are 13 attributes used in dataset for the prediction of heart disease. This dataset can be retrieved from UCI repositories which contains benchmark datasets.

S.No	Attribute	Description
1.	age	Age in years
2.	sex	Male or female
3.	cp	Chest pain type
4.	threstbps	Resting blood pressure
5.	chol	Serum Cholesterol
6.	restecg	Resting electrographic results
7.	fbs	Fasting Blood Sugar
8.	thalach	Max. heart rate
9.	exang	Exercise include angina
10.	oldpeak	ST depression induced by exercise relative to rest
11.	slope	Slope of the peak exercise ST segment
12.	ca	No. of major vessels colored
13.	Thal	Defect type

Table:1 Attributes in heart disease dataset

These 13 attributes are used for prediction and classification of heart disease using data mining methods.

5. Literature Survey

Anna Karen Garate-Escamila et al presented the classification models for prediction of heart diseases. They also used feature selection and Principal Component Analysis (PCA) for the improved classification results (Karen Garate-Escamilla 2020). For their research work they collected dataset form UCI repository. The collected dataset contained 74 features and then the data mining classifier methods are executed. They used Chi-square with PCA to improve the predictions using machine learning



techniques. Their proposed method produced 98.7% accuracy using Cleveland dataset. This method is also effective in using Hungarian dataset which produced 99.0% accuracy.

Maheswari et al proposed the decision tree model for the prediction of heart disease. The intelligent prediction system is developed using decision tree classifier model. For this research work, the ID3 decision tree model is used. The benchmark dataset is used for this process. The Naïve Bayes model was used for making performance comparison with decision tree model. The evaluation results showed that the decision tree model produced 95.5% of accuracy. This was higher than naïve Bayes model. They used WEKA environment for execution. (Subburaj Maheswari. 2019).

Atul Kumar Pandey et al developed a prediction model for heart disease identification that can be used for clinical assistance for early detection. For this research work, the Cleveland dataset was used. This dataset contains 13 attributes with one class label. They used J48 decision tree model for prediction of heart disease. They also used feature selection method for finding the most essential attribute for prediction of heart disease. They also used pruned and unpruned methods for evaluating the effectiveness of used classifier. From this work, they highlighted that the fasting blood sugar is the important attribute which produce highest accuracy of heart disease prediction than the other attributes. (Atul Kumar Pandey 2013).

Fatma Zahra Abdeldjouad et al presented a hybrid approach for the prediction of heart disease with the help of Machine learning methods. They used different machine learning approaches such as logistic Regression, Adaptive Boosting, Multi-Objective Evolutionary Fuzzy Classifier and Fuzzy Hybrid Genetic Based Machine Learning for the prediction of cardio vascular diseases. The WEKA tool is used for execution support. Cleveland dataset is used for this research work. This dataset contains 303 records with 13 attributes and one class label. The performance efficiency is analyzed using confusion matrix formula. The performance comparison for these algorithms are measured with accuracy, sensitivity and specificity values which also contains error rate by using KEEL and WEKA tools. (Fatma Zahra Abdeldjouad. 2020)

Benjamin Fredrick David et al presented the research work which focus the prediction methods for heart disease using classification methods. This prediction system includes Decision Tree classifiers, Random Forest classifier and Naïve Bayes classifier. In this research work, the benchmark dataset is used. This dataset is collected from UCI repository. This research work highlights the process of training phase and testing phase. The results showed that the Random Forest classifier produced High accuracy.

Conclusion

In this paper, the importance of data mining in healthcare is discussed. The support of different data mining models for healthcare analysis is reviewed. The effect of cardiovascular disease and the attributes for prediction is also presented. From the literature review, we can find that different classifiers are used for prediction of Heart disease. Most of this researchers used WEKA environment for execution support.



Decision tree classifiers, random forest Tree, and Naïve Bayes Classifier models are popular methods which are used for prediction of heart diseases. In future work of this research will focus the feature selection methods to produce the higher accuracy than the existing system using Decision tree classifier models.

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A REVIEW ON HEPATOPROTECTIVE ACTIVITY AND ANTIOXIDANT ACTIVITY OF VARIOUS NATURAL PRODUCTS

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Abstract:

The liver is a vital organ and one of the essential organs of the body. It plays an essential role in different vital functions such as metabolism, secretion and storage. The liver is affected by numerous chemical agents like (paracetamol, Carbon tetrachloride, thioacetamide) and various drugs, which ultimately leads to hepatocytosis due to the accumulation of hepatotoxins. Product of natural origin has fewer side-effects, which enhances their efficacy and popularity. The natural product has been used in liver disease and liver injury for a more extended period. Various natural products are known to treat liver disease. The present review paper highlights the collection of data from various repositories focusing on hepatoprotective activity and antioxidant activity that is beneficial for the treatment of liver injury and other liver diseases.

Keywords: Liver disease, Hepatocytosis, Hepatotoxins, Hepatoprotective activity, Antioxidant activity.

Introduction:

The liver is a vital organ of the body. It plays a vital role in various vital functions such as metabolism, secretion and storage. Liver disease and liver injury are significant problems in the present scenario. A high amount of alcohol consumption and abuse of drugs are two responsible factors for liver injury (Sehrawat, Khan, Prasad, & Sultana, 2006). Many Liver diseases such as (cirrhosis, necrosis, jaundice) are the main threat to public health and widely spread throughout the world (Adewusi & Afolayan, 2010) (Asha & Pushpangadan, 1998). It helps to regulate and maintain the homeostasis pathway of the body. Various types of biochemical pathways are to be involved, like growth, resistance to disease, energy provision and reproduction (Ward & Daly, 1999). The liver is responsible for regulating many metabolic functions such as metabolism of carbohydrates, protein, fat, secretion of bile and storage of vitamin (Ahsan, et al. 2009). Due to these metabolic functions, hepatic diseases are a severe health problem worldwide (Adewusi & Afolayan, 2010) (Asha & Pushpangadan, 1998). The damage of liver and hepatic disease to the induction of various biological factors and chemical factors such as (bacteria, virus, parasites) and autoimmune disease (immune hepatitis, cirrhosis) and chemical inducing drug (high dose of acetaminophen, a higher dose of paracetamol PCM) toxic compounds like carbon tetrachloride CCl₄, thioacetamide,



dimethylnitrosamine DMN, Lipopolysaccharide LPS and excessive intake of alcohol(Morencose, Puente, & Romero, 2008) (Deshwal, Sharma, & Sharma, 2011).

The history reveals that- the ancient Ayurveda, Siddha and Unani are the traditional medicines used in India,exploiting various plant and plant material. Usually, the herbal drug is used as a lead for various diseasesbecause of its safety, efficacy and cost-effectiveness. Plant products of natural origin have various biological activities, out of which hepatoprotective activity is most relevant and researched (Agarwal, 2001). In the Indian market, many formulations containing herbal extract are available to treat liver disorders. However,the management of liver disorder is still a significant problem. In the traditional system of medicine, many Indian medicinal plants have been used, but few plants are found to have potent antioxidant activity(Achuthan, Babu, & Padikkala, 2003) (Gupta, Chitme, Dass, & Mishra 2006).

Oxidative stress plays a vital role in liver disease (Ajith, Hema, & Aswathy 2007). An imbalance between reactive oxygen species causes the production of oxidative stress, and antioxidant protective mechanism (Galicia-Moreno & Gutierrez-Reyes, 2014) that leads tothe damage in DNA, cell membrane, protein, and consequently induces their degeneration, destruction. Nowadays, many synthetic antioxidant drugs are being used in drug composition. Nevertheless, it causes many side-effects that can be lead to various health problems.

Liver toxicity and hepatotoxicity play a challenging role in health care professionals, pharmaceutical companies and drug regulatory agencies (Ajith & Janaedhanan, 2002).Thus, the activity of hepatoprotective agents by the application of plant products bearing radical scavenging activity (Mohamed Saleem, et al. 2008).

Methodology: For the literature search was done using Elsevier-Science direct, Springer link, PubMed, Google Scholar and Google search. Different strategies to study the antioxidant and hepatoprotective activities of various natural plant products including the following keywords-“plant,” “natural plant,”plant extract” for determination of “antioxidant activity” and “hepatoprotective activity.”

Hepatotoxic Agents:

Different types of chemicals are responsible for inducing hepatotoxicity like Carbon tetrachloride(CCl_4),Lipopolysachalaride, thioacetamide, paracetamol, dimethylnitrosamine, alcohol etc. are the chemically inducing hepatotoxic drugs.

Carbon tetrachloride(CCl_4):Chemically inducing (CCl_4) in rats causes liver injury was first reported in the year of 1936 (Cameron, Thomas, & Karunarathe,1936). Which is widely and successfully used by many investigators (Handa & Sharma, 1990) and (Shirwaikar, Sreenivasan, Krishnanand, & Kumar 1996). The metabolism of CCl_4 has been investigated by cytochrome P-450 in endoplasmic reticulum and mitochondria, which result in the formation of $\text{CCl}_3\text{O}^\cdot$, oxidative free radicals and induces lipid peroxidation (Zimmerman & Hayman, 1984) and (Agarwal & Mehendale, 1983). CCl_4 in a single dose is administered to rat produces centrilobular necrosis and fatty changes within 24 hours. Moreover, within 3hours, the poison is to be reached into its maximum concentration. After 24 hours, the level becomes falls, and there is no CCl_4 is left in the liver (Dawkins, 1963).

Thioacetamide: Thioacetamide is metabolized by a hepatic injury that interferes with the movement of RNA from the nucleus to the cytoplasm. It is responsible for



decreasing the number of hepatocellular cells, the rate of oxygen consumption rate and the volume of bile and content like bile salt, deoxycholic acid and cholic acid (Binduja, et al. 1996).

Paracetamol: It is also known as acetaminophen and used worldwide for antipyretic and analgesic effects. The toxicity of chemical drug causes several organ injuries, but the organ-like gastrointestinal tract and kidneys are well-known for injury to the system. Administration of a high dose of analgesic/antipyretic acetaminophen in centrilobular hepatic necrosis(Walker, 1997). N-acetyl benzoquinoneimine an oxidative product of paracetamol bind to the sulphhydryl group of protein to form lipid peroxidative degrade the level of glutathione and cause cell necrosis in the liver.

Drug-induce liver disease

According to its chemical and pathological pattern, in the latency period, various drugs that induce liver disease to have characteristics signature is shown in Table1. (Kaplowitz, 2001)

All drugs are not shown a single specific signature reaction, but some of the drugs are augmentin that is used in the treatment of infection shows more than one. The latency period of liver disease induced by drugs can short (hours to days), intermediate (1-8weeks) as well as long (1-12 months). However, in some cases like (augmentin or erythromycin), it shows a slow reaction; that can leads after the medication is withdrawn. According to recent studies, the signature reaction is the gene-expression profile that can use to identify a specific signature reaction of gene expression for hepatotoxins, which will be able to understand the mechanism of unpredictable reaction (Ulrich & Friend, 2002).

Risk factors: Various risk factors are responsible for developing hepatotoxicity, which plays an intermediate role in genetic and environmental factors shown in Table 2. (Kaplowitz, 2001) (Chitturi & George, 2002).

Nevertheless, the recent aspects reveal that increase liver disease induced by drugs in a patient, causing HIV, Hepatitis B virus, Hepatitis C virus infection. The cytokine imbalance among these patients is also an essential factor of these diseases, in the case of genetic factors, including genes that are responsible for controlling the handling of drugs (metabolism, detoxification & transport), which leads to developing cell injury & repair. Several of the sequences have genetic polymorphisms with useful effects that encode a drug-metabolizing protein and drug transporters (Loeper, et al. 1990).

Assessment of clinical drug-induced liver disease

The occurrence of liver disease induced by drugs is unpredictable, and the symptom occurs due to its latency period. The mechanism of the unpredictable reaction, low frequency, involves immune-mediated hypersensitivity or idiosyncratic, which often to bear a high incidence of mild, asymptomatic and transit liver injury (Kaplowitz, 2001). Therefore, a physician has able to evaluate the risk of liver disease induced by drugs including a signature of disease, its latency period according to days, hour, weeks and also some concomitant drugs



Table:1

List Following Signature disease and its characteristics:

Signature disease	Drug causing the feature
Acute hepatitis	Acetaminophen, Bromfenac, Isoniazide, Nevirapine, Ritonavir
Chronic hepatitis	Dantrolene, Diclofenac, Methyldopa, Minocycline
Acute cholestasis	An angiotensin-converting enzyme inhibitor, Amoxicillin/clavulanic acid, Chlorpromazine, Erythromycin
Mixed pattern or atypical hepatitis	Phenytoin, Sulfonamide
Nonalcoholic steatohepatitis	Amiodarone, Tamoxifen
Fibrosis/ Cirrhosis	Methotrexate
Microvesicular steatosis	Valproic acid
Veno-occlusive disease	Busulfan, Cyclophosphamide

Table: 2

Factors affecting that drug-induced hepatotoxicity:

Name of Drugs	Pattern of liver injury	Risk factors
Diclofenac	Acute hepatitis; rarely chronic hepatitis	Female gender, persons with osteoarthritis may be susceptible
Valproic acid (sodium valproate)	A reversible increase in aminotransferases (10–40%); acute liver failure with microvesicular steatosis; certain groups at high risk	Young age, concurrent use of other anticonvulsants, genetic defects of mitochondrial β -oxidation and respiratory chain enzymes
Isoniazid	Rarely acute liver failure, hepatic necrosis	Hepatitis B infection, hepatitis C infection, HIV infection, alcohol abuse, older age, Women, slow acetylator phenotype
Paracetamol (acetaminophen)	Granulomatous hepatitis; cholestasis; acute liver failure	Chronic alcohol abuse, fasting, concurrent use of isoniazid
Methotrexate	Chronic liver injury; progressive fibrosis, cirrhosis and portal hypertension	Chronic alcohol abuse, obesity, diabetes mellitus, chronic hepatitis, psoriasis, Family history of liver disease



Natural source of antioxidants

Natural products are the most abundant source of antioxidants, which reduces the risk of certain diseases (Prior & Cao, 2000). Various plants, including secondary metabolites such as phenolics and flavonoids, have been reported to be a potent free radical scavenger. All parts of the plant such as leaves, fruits, seeds, roots and barks are used (Mathew & Abraham, 2006). However, many synthetic antioxidants are used, including several side effects (Ito, et al. 1983), such as liver damage and carcinogenesis (Gao, Igalashi, & Nukina, 1999). Therefore more effective, less toxic and cost-effective antioxidants needed.

The screening method of antioxidant property:

***In vitro* method**

Antioxidant activity is not only based on a single antioxidant test; many in-vitro test are responsible for evaluating the antioxidant activity according to their sample of interest. The comparison between different in-vitro tests has been done by (Badarinath, et al. 2010). In vitro antioxidant activity is used to perform free radical traps that are relatively straight forward.

Total phenolic content (TPC)

The amount of TPC can be determined by the folin-ciocateau reagent method (McDonald, Prenzler, Antolovich, & Robards, 2001). 0.1 mL of folin-ciocateau reagent is mixed with 0.5mL of plant extract and followed by incubation at room temperature for 15min. After 15 min, 2.5mL saturated sodium carbonate is added and, in addition, incubated for 30 min and absorbance measured at 760 nm. Various compounds such as gallic acid method (McDonald, Prenzler, Antolovich, & Robards, 2001), tannic acid (Wolfe, Wu, & Liu, 2003), quercetin (Singleton & Rossi, 1965), chologenic acid (Singleton, Orthofer, & Lmuela-Raventos 1999), pyrocatechol (Slinkard & Singleton, 1977) are used as a positive control.

Total flavonoid Content (TF)

Several mechanisms are responsible for antioxidant properties of flavonoids such as scavenging of free radical, chelation of metal ion, such as iron & copper, inhibition of enzyme involves free radical generation (Benavente-García, et al. 1997). The amount of Total flavonoid content can be determined by the aluminum chloride method (Chang, Yang, Wen & Chem, 2002). 0.5 mL of aluminum chloride(1.2%) is mixed with 1.0 mL of plant extract, and 0.5 mL of potassium acetate is added and incubated at room temperature, and absorbance is measured at 415 nm. Compounds like quercetin (Ordonez, Gomez, & Vattuone, 2006), catechin (Kim, Jeong, & Lee, 2003) are used as a positive control.

Free radical scavenging assay

α , α -Diphenyl β picryl hydrazyl radical scavenging (DPPH) assay. The DPPH activity is stable free radical and used to evaluate the radical scavenging activity of antioxidant compounds. The DPPH reduction based on the solution of methanol in the presence of hydrogen-donating antioxidants that leads to the formation of nonradical form DPPH-H (Blois, 1958). The result of this transformation is a change of color from purple to yellow, and absorbance is measured at 517nm. The free radical scavenging activity was determined either 2,2 diphenyl-1-picryl-hydrazyl or 1,1 diphenyl-2-picryl-hydrazyl method (McCune & Johns 2002). The 1.0mL of DPPH is added to methanol 0.3nM is



mixed with 1.0 mL of plant extract and 1.0 mL of methanol added and incubated for 10 min. Compounds like ascorbic acid, gallic acid (Blois, 1958), α -tocopherol (Shimada, Fujikawa, Yahara, & Nakamura, 1992), quercetin (Sohn et al. 2003), rutin (Yamasaki et al. 1994), catechin (Astudillo, Schmeda-Hirschmann, Herrera, & Cortes, 2000), glutathione (Kato, Terao, Shimamoto, & Hirata, 1988) are used as a positive control.

The percentage of inhibition can be calculated by using the formula:

$$\text{Inhibition (\%)} = (A_0 - A_1 / A_0) \times 100$$

A_0 = absorbance of control

A_1 = absorbance of the test

Superoxide anion radical scavenging (SOD) assay

The SOD anion is a weak oxidant, but it gives powerful & dangerous hydroxyl radicals as well as singlet oxygen, which are responsible for contributing the oxidative stress (Meyer & Isaken, 1995). The superoxide anion scavenging activity is described by (Robak & Gryglewski, 1988). The superoxide anion radicals are generated in 3.0 mL of tris-HCL buffer (16nM, pH 8.0), containing 0.5mL of NBT (0.3nM), 0.5 mL NADH (0.936nM) solution, 1.0 mL plant extract and 0.5ml tris-HCL buffer (16nM, pH8.0). By using 0.5 mL, PMS solution (0.12nM) is added into the mixture and incubated at 25°C for 5 min, and then absorbance is measured at 560 nm against a blank sample. A compound like gallic acid (Robak & Gryglewski, 1988), quercetin (Beauchamp & Fridovich, 1971) are used as a positive control.

Xanthine oxidase method

The generation of superoxide anion can be dependent upon the xanthine & xanthine oxidase system. The xanthine oxidase method is described by (Noro, et al. 1983). The extract (500ul of 0.1mg/ml) and allopurinol (100ul/mL in methanol) is mixed with 1.3ml phosphate buffer (0.05M, pH7.5). After that, 0.2 mL of 0.2 units/mL xanthine oxidase solution is added and waits for 10 min. After 10 min, incubation at room temperature (25°C). 1.5 mL of 0.15M xanthine substrate solution is added into the mixture, and the mixture is again incubated for 30 min at room temperature (25°C). With the assist of a spectrophotometer, the absorbance is measured at 239nm in opposition to a blank (0.5 mL methanol, 1.3 mL phosphate buffer, 0.2 mL xanthine oxidase) are used as control.

The percentage of inhibition was calculated by using the formula:

$$\% \text{ of inhibition} = [1 - (A_s / A_c)] \times 100$$

A_s & A_c are the absorbance value of the test sample & control. A compound like catechin (Schmeda-Hirschmann, Gutiérrez Loyola, & Zuniga, 1996) is used as a positive control.

Nitric oxide radical scavenging (NO) assay

The solution of NO is prepared by using sodium nitroprusside in aqueous solution, which was measured using the Griess reaction reagent (Green, et al. 1982). 2.0mL of plant extract is mixed into 3.0 mL of 10 mM of sodium nitroprusside in phosphate buffer. Moreover, add reference compounds in different concentrations (20-100ug/ml). The resulting solution is then incubated at (25°C) for 60 min. The same process is



repeated with methanol as blank, which serves as a control. The 5.0 mL of incubated sample & Griess reagent is taken, and absorbance is measured at 540 nm. The percentage of inhibition was determined by comparing it with the absorbance of control and test. A compound like curcumin, caffeic acid, sodium nitrate (Rao, 1997), rutin & ascorbic acid (Jayaprakasha, Rao, & Sakariah, 2004) are used as a positive control.

Hydroxyl radical scavenging (HO) assay

Hydroxyl radical is one of the most potent reactive oxygen species that react with a polyunsaturated fatty acid, which divides into phospholipids membrane and causes cell damage (Halliwell & Gutteridge, 1981). The scavenging activity of hydroxyl radicals is measured by method (Kunchandy & Rao, 1990) The reaction mixture (1.0 mL) is made up of 100 μ l of 2-deoxy-D-ribose (28 mM in 20 mM KH_2PO_4 -KOH buffer, pH 7.4), 500 μ l of the extract taken, 200 μ l EDTA (1.04 mM) and 200 μ M FeCl_3 (1:1 v/v), 100 μ l of H_2O_2 (1.0 mM) and 100 μ l ascorbic acid (1.0 mM) which is incubated at 37°C for 1h. After that, 1.0 mL of thiobarbituric acid (1%) and 1.0 mL of trichloroacetic acid (2.8%) are added and incubated at 100°C for 20 min. After that, cool in room temperature and absorbance is measured at 532 nm against as blank. Compounds like gallic acid, mannitol, catechin (Kunchandy & Rao, 1990), quercetin (Halliwell & Gutteridge, 1981), rutin & ascorbic acid (Jayaprakasha, Rao, & Sakariah, 2004) are used as a positive control.

Ferric thiocyanate (FTC) method

The activity of ferric thiocyanate is measured by method (Kikuzaki, Usunguchi, & Nakatani, 1991). A mixture of 4mg of plant extracts taken as a sample (0.02% w/v) in 4 mL ethanol. Add 4.1 mL of 2.51% linoleic acid in ethanol, 8.0 mL of 0.02M phosphate buffer (pH 7.0) and add 3.9 mL of distilled water, Contained within the screw cap vial placed in the associate setup at 40°C in dark temperature. After that, 0.1 mL of reaction mixture is transferred into test tube and 9.7 mL of 75% (v/v) aqueous ethanol is added, that followed by 0.1 mL of 30% aqueous ammonium thiocyanate & 0.1 mL of 0.02M FeCl_2 in 3.5% hydrochloric acid added. After 3 min for the addition of FeCl_2 , the absorbance of the ensuing mixture (red color) is measured at 500 nm with the help of a spectrophotometer in each 24 until the absorbance of control reached its maximum value.

Thiobarbituric acid (TBA) method

The TBA method is described by (Ottolenghi, 1959). 2 mL of (20%) trichloroacetic acid and 2 mL of (0.67%) of thiobarbituric acid is added into 1 mL of plant extract is taken as a sample. The reaction was put in a water bath and boil for 10 min. After 10 min centrifuge at 3000 rpm for 20 min. The absorbance activity is measured at 552 nm.

Ferric reducing- antioxidant power (FRAP) assay

This methodology relies on the reduction of a complex of ferric iron and 2,3,5-triphenyl-1,3,4-triaza-2-azoniacyclopenta-1,4-diene chloride (TPTZ) to the ferrous at low pH.



The antioxidant activity of FRAP is described by (Benzie & Strain, 1999). In 100 μ L of the diluted sample is mixed with 3 mL of freshly prepared FRAP reagent. The mixture is incubated in (37°C) for 30 min and check the absorbance value at 593 nm.

***In vivo* method**

In the case of the *in vivo* method, laboratory animals (rat, mice) are used where the sample is administered to the tested animals as a specific dose regimen. The animals are usually sacrificed after a certain period, and blood or tissues are separated to determine *in vivo* antioxidant activity.

Glutathione (GSH) estimation

This glutathione plays a crucial role in catalysis, metabolism & transport. It has protecting ability that leads to protection from free radicals, peroxide & other toxic compounds (Sapakal, et al. 2008). It also plays a crucial role in the kidney, whereas reabsorption of amino acid takes place. The antioxidant activity of GSH is described by method (Ellman, 1959). The tissue is homogenized (0.1M phosphate buffer, pH 7.4) and adds an equal volume of 20% trichloroacetic acid TCA and adds 1Mm EDTA. The mixture is incubated for 5 min. After 5 min, centrifuge the mixture and at 2000 rpm for 10 min. The supernatant layer (200 μ L) is transferred into another test tube and add 1.8 ml of Ellman's reagent. After the reaction is completed, solutions are measured at 412 nm against a blank. The absorbance value was determined according to the standard curve generated.

Glutathione peroxidase (GSH Px) estimation

GSHPx is the cytosolic enzyme that catalyzes the reaction of hydroperoxide with reduced glutathione to form glutathione disulfide (GSSG) and reduction. Because of its peroxide activity, it is the reduction product of hydroperoxide. There are four different isoenzymes present in GSHPx, cellular glutathione peroxidase, extracellular glutathione peroxidase, phospholipid hydroperoxide glutathione peroxidase, gastrointestinal glutathione peroxidase. The GSHPx is used to identify for those patients who are under oxidative stress for any reason; the activity of this enzyme is low or reduces when the balance of peroxidant/antioxidant is disturbed (Paglia & Valentine, 1967) and (Yang, et al. 1984). According to (Wood, 1970), GSHPx is assayed via 3mL cuvette containing 2.0 mL of 75 mM/L phosphate buffer (pH 7.0). The following solution 50 μ L of 60mM/L glutathione reductase solution (30u/ml), 50 μ L of 0.12 M/L NaN_3 , 0.10 of 0.15mM/L Na_2EDTA , 100 μ L of 30m/L NADPH are added into it. The 100 μ L of cytosolic fraction obtained after centrifugation at 20,000 rpm for 25 min. The volume is made up of 2.9 mL by the addition of water. The reaction is started by adding 100 μ L of 7.5 mM/L H_2O_2 . Conversion of NADPH to NADP is monitored by continuously checking the recording of absorbance value at 340 nm at 1min interval for 5 min.

Glutathione reductase (GR) assay

The glutathione reductase is a ubiquitous enzyme that is found in most cells, which catalyze the reduction of glutathione disulfide (GSSG) to make glutathione (GSH). Apart from this heat-labile system is one of the methods that have capable of reducing GSSH, which was discovered in the liver.



According to (Kakkar, Das, & Viswanathan, 1984), approx (400g) liver was separated from a killed rat (200-250g). After that liver is cut into small slices and homogenized. The homogenate mixture is centrifuged at 14,000 rpm for 45 min. The pellets are suspended in a small volume of 0.25 M sucrose & centrifuged it. The supernatant layer is mixed with the previous centrifuged. The pooled material is adjusted to pH 5.5 and add 0.2 M acetic acid and centrifuged again at 14000 rpm for 45 min. The mixture comprises the following components 1.0 mM GSSG, 0.1mM NADPH, and 0.5 mM EDTA, 0.10 M sodium phosphate buffer (pH 7.6) & a suitable amount of glutathione reductase sample and gives a change in absorbance value of 0.05-0.03/min.

Catalase (CAT)

According to (Aebi, 1984), 50 ul of cell lysate is added into 2mL of phosphate buffer (pH7.0) & 1 mL of 30 mM H_2O_2 . The absorbance value is measured at 240 nm for 1 min using a spectrophotometer.

Lipid peroxidation (LPO) assay

LPO is a well-established mechanism that is responsible for oxidative degradation of lipid; as a result, cell injury & cell death occurs. It may cause peroxidative tissue damage in inflammation, cancer & toxicity of xenobiotics & aging. Polyunsaturated fatty acid peroxide produces malondialdehyde (MDA) as an end product of this process & the measurement of MDA has been used as an indicator of lipid-peroxidation.

The LPO process is described by (Ohkawa, Ohishi, & Yagi, 1979). At first, tissues are subjected homogenized in phosphate buffer using Teflon glass homogenizer. This process is used to determine by measuring the amount of malondialdehyde (MDA). 0.2 L of tissue homogenate mixture is taken in 8.1% sodium dodecyl sulfate (SDS). Add 1.5 mL of 20% acetic acid and 1.5 mL of 8% TBA into this mixture. Add distilled water, and volume is made upto 4 mL. The mixture is placed on a water bath (95°C) for 60 min using glass balls as a condenser. After 60 min, the tubes are cooled, and the final volume was made 5 mL in each tube. Add 5 mL of ratio mixture of butanol:pyridine (15:1) and centrifuge it for 10 min at 3000 rpm. After centrifugation, the organic layer as a supernatant is collected, and absorbance is measured at 532 nm against an appropriate blank without the sample.

Hepatoprotective natural products: Many plants and formulations are used to treat liver disorders for longer for a length of time. About 160 phytoconstituents from 101 plants have been claimed to show the liver-protecting disorder. More than 87 natural's plants are used in 33 patented in India. Apart from this, many multi ingredients plant formulations are also to be used (Handa, 1986). Various hepatoprotective drugs based on the development of natural products have been given importance in the global market. The objectives of the present review are to be collecting the data from different sources and compile it with the observation that has been tested in the hepatotoxicity model.



Table 3: Plant extract with hepatoprotective and antioxidant activity

Sl No	Plant name	Extraction	Part used	Hepatotoxic agent	Type of study	Animal used	Antioxidant activity	Reference
1.	<i>Acanthus ilicifolius</i>	Alcohol	Leaves	CCl ₄	<i>In vivo</i>	Male Wistar albino rat	Superoxide radical production Hydroxyl radical scavenging activity Lipid peroxidase (LPO) Nitric oxide (NO)	(Babu, Shylesh, & Padikkala, 2001)
2.	<i>Andrographis paniculata</i>	Water	Leaves	CCl ₄	<i>In vivo</i>	Colony bred male albino mice	Glutathione (GSH) Lipid peroxidase (LPO) Gamma-glutamyl transpeptidase Glutathione S-transferase (GST) Glutathione reductase (GSH-R) Glutathione peroxidase (GSH-Px) Superoxide dismutase (SOD) Catalase (CAT)	(Trivedi & Rawal, 2001)
3.	<i>Asteracantholom giffalia</i>	Water	Root	CCl ₄	<i>In vitro</i>	Wistar albino rat	Ferric thiocyanate (FTC) Thiobarbituric acid (TBA)	(Shanmugasundaram & Venkataraman, 2006)
4.	<i>Rhinacanthus ncuta</i>	Methanol	Aerial	PCM	<i>In vitro</i>	Male Wistar albino rat	Hydroxyl radical scavenging activity Lipid peroxidase (LPO) Superoxide radical scavenging	(Suja, Latha, Puspangada n, & Rajasekharan 2004)
5.	<i>Acahopanaxen tieozus</i>	Water	Root and rhizome	CCl ₄ & Acetaminophen	<i>In vitro</i>	Male Wistar albino rat	Lipid peroxidase (LPO) xanthine oxidase inhibitor (XOI) Superoxide radical scavenging Hydroxyl radical scavenging activity	(Lin & Huang, 2000)
6.	<i>Artemisia absinthium L.</i>	Aqueous	Aerial	CCl ₄	<i>In vivo</i>	Male Kumming mice	Superoxide dismutase (SOD) Glutathione peroxidase (GPx)	(Amat, Üpur, Blazekovic, 2010)

							Malondialdehyde (MDA)	
7.	<i>Cichorium dentifolia L.</i>	Ethanol-water	leaves	Acetaminophen	<i>In vivo</i>	Male Wistar albino rat	Scavenging activity of DPPH radical Glutathione (GSH) Glutathione S-transferase (GST) Malondialdehyde (MDA) Catalase (CAT)	(Marzouk, Sayed, & Soliman, 2011)
8.	<i>Bidens pilosa L.</i>	Ethanol-water	Aerial	CCl ₄	<i>In vitro</i>	Male Balb-c mice	Scavenging activity of DPPH radical Hydroxyl radical (OH) Lipid peroxidase (LPO) Ferric reducing/antioxidant powder (FRAP) Glutathione (GSH) Catalase (CAT)	(Kwiecinski et al. 2011)
9.	<i>Crasogeomphalum rebens S.</i>	Ethanol or water	Leaves	Rifampicin, cytochrome-P450	<i>In vitro</i>	Male Swiss mice	Scavenging activity of DPPH radical Proanthocyanidin content Total flavonoid content (TFC) Total phenolic content (TPC)	(Omogegie, Okugbo, Oikah, & Irabor, 2015)
10.	<i>Cuscuta arvensis bayer</i>	Methanol or water	Whole plant	Acetaminophen	<i>In vivo</i>	Sprague Dawley female rat	Catalase (CAT) Glutathione (GSH) Malondialdehyde (MDA) Superoxide dismutase (SOD)	(Koca-Caliskan et al. 2018)
11.	<i>Luffa acutangula</i>	Hydroalcoholic	Whole fruit	Rifampicin & CCl ₄	<i>In vitro</i>	Wistar rats of either sex	Malondialdehyde (MDA) Glutathione (GSH) Catalase (CAT) Superoxide dismutase (SOD)	(Jadhav, et al. 2010)
12.	<i>Peltopharum pterocarpum</i>	Hydroalcoholic	Leaves	PCM	<i>In vivo</i>	Albino rat and albino mice of either sex	Glutathione (GSH) Lipid peroxidase (LPO)	(Biswas, Babaria, & Prabhu, 2010)
13.	<i>Elephantopus</i>	Methanol	Root	CCl ₄	<i>In vitro</i>	Male albino rat	Superoxide radical scavenging	(Sheeba, et al. 2012)



	<i>aber L.</i>				<i>In vivo</i>		Lipid peroxidase(LPO) Hydroxyl radical scavenging activity	
14.	<i>Flaveriatrinervi a</i>	Chloroform	Whole plant	Ethanol	<i>In vitro, In vivo</i>	Female Wistar albino rat	Scavenging activity of DPPH radical Lipid peroxidase(LPO) Catalase(CAT) Superoxide dismutase (SOD)	(Hoskeri, et al. 2012)
15.	<i>Bauhinia racemosa</i>	Methanol	Stem bark	PCM & CCl ₄	<i>In vitro, In vivo</i>	Wistar rats of either sex	Lipid peroxidase(LPO) Catalase(CAT) Superoxide dismutase (SOD) Superoxide radical scavenging Glutathione(GSH)	(Gupta, et al. 2004)
16.	<i>Salacia reticulata</i>	Methanol	Root and Stem	CCl ₄	<i>In vitro</i>	Male ddY Mice	DPPH radical scavenging activity DPPH radical scavenging activity of a phenolic compound	(Yoshikawa, et al. 2002)
17.	<i>Terminalia arjuna</i>	Aqueous	Bark	Cadmium chloride(CdCl ₂)	<i>In vitro</i>	Male albino rat	Malondialdehyde (MDA) Catalase(CAT) Superoxide dismutase (SOD) Glutathione S-transferase (GST)	(Haidry & Malik, 2014)
18.	<i>Ambrosia martima</i>	Aqueous-Methanol	Whole plant	Acetaminophen	<i>In vivo</i>	Male Sprague Dawley rat	Malondialdehyde (MDA) Glutathione(GSH) Glutathione reductase(GSH-R) Glutathione peroxidase (GSH-Px) Glutathione S-transferase (GST)	(Ahmed & Khater, 2001)
19.	<i>Alchornea cordifolia</i>	Methanol	Leaves	CCl ₄	<i>In vitro</i>	Wistar albino rats of different sex	DPPH radical scavenging activity	(Osadebe, et al. 2012)
20.	<i>Croton hypoleucus</i>	Ethanol	Aerial	Thioacetamide(TAA)	<i>In vitro</i>	Wistar rat	Superoxide dismutase (SOD) Catalase(CAT) Nrf2(nuclear factor)	(Urrutia-Hernández, et al. 2019)

21.	<i>Phyllanthus maderaspatensis L.</i>	n-hexane, ethyl alcohol or water	Whole plant	CCl ₄ and thioacetamide	<i>In vivo</i>	Charles Wistar rat	Hydroxyl radical scavenging activity Lipid peroxidase(LPO)	(Asha, Akhila, Wills, & Subramoniam, 2004)
22.	<i>Phyllanthus niruri</i>	Aqueous-Methanol	Leaves and fruits	CCl ₄	<i>In vitro, In vivo</i>	Male rat of Wistar strain	DPPH radical scavenging activity Lipid peroxidase(LPO) Superoxide anion scavenging	(Harish & Shivanandappa, 2006)
23.	<i>Phyllanthus Polyphyllus</i>	Methanol	Leaves	Acetaminophen	<i>In vivo</i>	Male Wistar rat and swiss albino mice	Lipid peroxidase(LPO) Superoxide dismutase (SOD) Catalase(CAT) Glutathione peroxidase (GSH-Px) Glutathione S-transferase (GST)	(Raj Kapoor, et al. 2008)
24.	<i>Phyllanthus reticulata</i>	Ethanol-water	Aerial	PCM	<i>In vivo</i>	Male Wistar rat	DPPH radical scavenging activity Total phenolic content(TPC)	(Dash, Pattanaik, Rout, & Bose, 2015)
25.	<i>Bauhinia variegata L.</i>	Ethanol	Root	CCl ₄	<i>In vitro</i>	Wistar albino rat of either sex	Nitric oxide (NO) scavenging activity DPPH radical scavenging activity	(Prabha, Kamalakannan, Kumar, & Sambathkumar, 2014)
26.	<i>Cajanus cajan L.</i>	Methanol	Leaves	Alcohol	<i>In vitro, In vivo</i>	Adult male albino Sprague Dawley rat	TBARS(thiobarbituric acid reactive substance) Protein carbonyl Glutathione S-transferase (GST) Superoxide dismutase (SOD) Catalase(CAT) Glutathione(GSH)	(Kundu, et al. 2008)
27.	<i>Cassia occidentalis</i>	Ethanol	Leaves	CCl ₄	<i>In vitro</i>	Male Wistar rat	Total reductive capacity Ferric thiocyanate method DPPH radical scavenging activity Hydrogen peroxide scavenging	(Gbadegesin & Odonola, 2013)



							activity	
28.	<i>Fumaria parviflora</i>	Ethanol	Whole plant	CCl ₄	<i>In vitro</i>	Male Sprague Dawley rat	DPPH radical scavenging activity Fe ²⁺ /ferrozine test system for metal chelating Ferric reducing antioxidant power assay (FRAP) Xanthine oxidase (XO) inhibitor assay	(Orhan, Sener, & Musharraf, 2012)
29.	<i>Enicostemma axillare</i>	Ethyl acetate	Whole aerial plant	D-galactosamine	<i>In vitro</i>	Wistar rat of both sex	Catalase(CAT) Superoxide dismutase (SOD) Lipid peroxidase(LPO) Glutathione(GSH)	(Jaishree & Badami, 2010)
30.	<i>Ocimum basilicum</i> L	Ethanol	Leaves	CCl ₄ H ₂ O ₂	<i>In vitro</i>	Goat liver	Catalase(CAT) Superoxide dismutase (SOD) Lipid peroxidase(LPO) Glutathione S-transferase (GST) Superoxide dismutase (SOD) Glutathione peroxidase (GSH-Px) Glutathione reductase (GSH-R) PPO(polyphenol oxidase) Superoxide radical scavenging activity	(Meera, et al. 2009)
31.	<i>Moringa oleifera</i>	Ethanol	Seeds	Ethanol or Alcohol	<i>In vitro</i> , <i>In vivo</i>	Adult male albino Wistar rat	DPPH radical scavenging activity Hydroxyl radical scavenging activity Superoxide radical scavenging activity	(Kumar, et al. 2013)

32.	<i>Careya arborea</i>	Methanol	Stem-bark	CCl ₄	<i>In vivo</i>	Male Wistar albino rat	Lipid peroxidase(LPO) Glutathione(GSH) Malondialdehyde (MDA) Superoxide dismutase (SOD) Catalase(CAT)	(Sambath Kumar, 2005)
33.	<i>Boerhaavia diffusa</i> L.	Ethanol	Leaves	Acetaminophen	<i>In vitro</i>	Adult male albino Wistar rat	Total flavonoid content(TFC) Total phenolic content(TPC) DPPH radical scavenging activity Selenium & zinc content Vit C & Vit E content FeCl ₃ reducing activity	(Olaleye, Akinmoladun, Ogunboye, & Akindahunsi, 2010)
34.	<i>Nymphaea stellata</i> Wild	Alcohol	Flowers	CCl ₄	<i>In vivo</i>	Male Wistar albino rat	Lipid peroxidase(LPO) Glutathione(GSH) Superoxide dismutase (SOD) Catalase(CAT) Glycogen(GLY) Superoxide dismutase (SOD) Catalase(CAT)	(Bhandarkar & Khan, 2004)
35.	<i>Helminthostachys zeylanica</i> L.	Methanol	Rhizomes	CCl ₄	<i>In vivo</i>	Male Wistar albino rat Swiss male albino mice	Lipid peroxidase(LPO) Malondialdehyde (MDA)	(Suja, Latha, Pushpangadan, & Rajasekharan, 2004)
36.	<i>Anoectachilus formosanus</i> Hay.	Methanol and Water	Whole plant	CCl ₄	<i>In vitro</i>	Male wistar albino rat	Ferric chloride FeCl ₃ induced LPO test Inhibition of xanthine oxidase Superoxide radical scavenging activity Hydroxyl radical scavenging activity	(Linn, Huang, & Linn, 2000)



37.	Ziziphus mauritiana L.	Ethanol	Leaves	CCl ₄	<i>In vivo</i>	Male wistar albino rat	Lipid peroxidase(LPO) Glutathione(GSH) Vit E level	(Dahiru, William, & Nardo, 2005)
38.	Hedyotis corymbosa L.	Methanol	Whole plant	D-galactosamine(D-GalN)	<i>In vivo</i>	Wistar rat and Swiss albino mice of either sex	Lipid peroxidase(LPO) Glutathione(GSH) Superoxide dismutase (SOD) Catalase(CAT)	(Gupta, et al. 2012)
39.	Mitracarpus caber	Methanol	Aerial	CCl ₄	<i>In vitro</i> , <i>In vivo</i>	Male Charles river rats	DPPH radical scavenging activity	(Germano, et al. 1999)
40.	Aegle marmelos	Ethanol	Leaves	CCl ₄	<i>In vivo</i>	Swiss albino male mice	Superoxide dismutase (SOD) Catalase(CAT) Glutathione peroxidase (GSH-Px) Malondialdehyde (MDA)	(Sumitha & Thirunalasundari, 2011)
41.	Bacopa monnieri L.	Ethanol	Aerial	Paracetamol (PCM)	<i>In vitro</i> , <i>In vivo</i>	Male wistar albino rat	Nitric oxide(NO) scavenging activity Superoxide radical scavenging activity Lipid peroxidase(LPO) Thiobarbituric acid reactive substance(TBARS) Glutathione(GSH) Superoxide dismutase (SOD) Catalase(CAT)	(Ghosh, et al. 2007)

42.	Picrorrhiza kurroa (Roule) Sans.	Ethanol	Rhizomes and root	D-galactosamine(D-GalN)	<i>In vivo</i>	Male wistar albino rat	Glutathione(GSH) Superoxide dismutase (SOD) Glutathione peroxidase (GSH-Px) Lipid peroxidase(LPO) Catalase(CAT)	(Anandan & Devaki, 1999)
43.	Solanum nigrum	Ethanol	Whole plant	Alcohol	<i>In vitro</i> , <i>In vivo</i>	Adult male Kunming mice	Glutathione(GSH) Superoxide dismutase (SOD) Glutathione peroxidase (GSH-Px) Catalase(CAT) Malondialdehyde (MDA)	(Liu, et al. 2016)
44.	Solanum triobatum L.	Methanol	Whole plant	CCl ₄	<i>In vivo</i>	Wistar albino rat	Glutathione(GSH) Superoxide dismutase (SOD) Glutathione peroxidase (GSH-Px) Lipid peroxidase(LPO) Catalase(CAT)	(Shahjahan, Sabitha, Jainu, & Devi, 2004)
45.	Bupleurum kaioi	Water	Leaves, root	CCl ₄ , Acetaminophen	<i>In vitro</i>	Male Sprague Dawley rat	DPPH radical scavenging activity Lipid peroxidase(LPO) Malondialdehyde (MDA) Inhibitory capacity on superoxide anion formation and superoxide anion scavenging activity	(Liu, et al. 2006)
46.	Daucus carota	Methanol	Seed	Thioacetamide	<i>In vivo</i>	Male wistar albino rat	Lipid peroxidase(LPO) Catalase(CAT) Glutathione(GSH) Superoxide dismutase (SOD) Glutathione peroxidase (GSH-Px)	(Singh, Singh, Chandy, & Manigauha, 2012)



							Glutathione reductase (GRD)	
47.	Rhoccissustridentata	Aqueous	Root	CCl ₄	In vivo	Sprague Dawley rat	Lipid peroxidase(LPO) Malondialdehyde (MDA)	(Opoku,Ndlovu,Tarblanche,& Hutchings, 2007)
48.	Oxalis corniculata L.	Ethanol	Whole plant	Paracetamol (PCM)	In vitro	Male wistar albino rat and male swiss albino mice	DPPH radical scavenging activity Lipid peroxidase(LPO) Malondialdehyde (MDA) Total phenolic content(TPC) Total antioxidant capacity	(Sreejith, et al. 2014)
49.	Lumnitzera racemosa	Ethanol	Leaves	CCl ₄	In vitro	Male Wistar albino rat	DPPH radical scavenging activity Lipid peroxidase(LPO) Nitric oxide(NO) Superoxide dismutase (SOD) Hydroxyl radical scavenging activity Ferric reducing antioxidant power	(Ravikumar&Gnanadesigan, 2011)
50.	Cordia macleodii	Ethanol	Leaves	CCl ₄	In vitro	Wistar albino rat of either sex	DPPH radical scavenging activity Nitric oxide(NO) Iron chelation method Reducing power method	(Qureshi, Kuchekar, Logade, & Haleem 2009)

Conclusion:

The present review indicated the most accurate evidence of hepatoprotective and antioxidant activity of natural products, thus preventing hepatic damage from the toxic effects of various chemical compounds. The article further provided evidence of some phytochemicals with hepatoprotective activity and their respective tests, the antioxidant potential and their mechanism of action. These characteristics should motivate and promote the search for active protective agents that can be evaluated later with clinical and pre-clinical assays resulting in a potential lead with effective antioxidant and hepatoprotective property.

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jlek; .k dky ea i q 'k viuh lRuh ds l g; kx l s g h l e l r ; K l f n / k e Z v u l B l u d j r k g A i q "k v i u s f i r & _ . k j n b & _ . k j _ f 'k & _ . k l s m _ . k g k u s d s J k) ; K , o a v f r f k l R d k j k f n o r k a d h i n r z i R u h d s l g; k x l s g h l k o g A m l d k y e a l a Ø r i f j o k j l z k y h d k i p j F h A i f j o k j d k e f k ; k f i r k g l a c F h A i f j o k j d s v l; l n L; m l d h v k k d k i k y u d j r s F h A ; f i i R u h x g d h l p k f y d k g l a r h F h r F k k x g e a m l d h l U k l l o k f j e k u h x b z F h d l u r q F o j H h o g v i u s i f r d s v / h u g l a r h F h A l a r k d i j e d U o; F h A v i u s e k r k & f i r k d h v k k d k i k y u d j u k a e k r k & f i r k d k i f j o k j e a l e k u L f k u F h A b l h e g l o d s v k / k j i j d s k y; k u s j k e l s d g k F k & "f t l x l s o l s j k t k r i g k j s i i r; g A m l h x l s o l s e a H h i i r; g A v r % e a r i g a e u k d j j g h g u r e o u e r t k v l a % 2

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jke; .k ea d l ; k d s i f r m i f k k & H k o d s 0 ; D r d j u s o k y h m f D r ; k i k l r u g h a g s r h g A l g l n j k u g l s r s g q H h l h r k d k y k y u & i k y u t u d d h i R u h u s l P p s e k r L u g l s f d ; k F k A ¼ 27 % ; g l r d f d , d h / k j . k F k f d d u ; k d h i k l r y e c h r i l ; k l s g l r h g A ¼ 28 % j k e ; .k d k y e a o ; L d d u ; k d s f y , e k r k & f i r k f p l r r g l s r F k A l h r k u s v u l w k l s o ; L d l o L F k e a v i u k f o o k g g l u k c r k ; k g A ¼ 29 % f i r k d h v u e f r v l g L o h d f r e a d l ; k d h H h v r ; f / k d J) k g l r h F k A l h r k d k L o ; o j ; g c r k r k g s f d m l l e ; d l u ; k v a d s v i u s i f r d k p u k o v i u h b P N k d s v u l k j d j u s d k v f / k d j i k l r F k A u k j h i j " k l d k d j u s i j m l i j y x k , x , v k j k i k a l s m l d s R ; k x f n ; k t k r k F k m l s m n k g j . k l h r k v l g v f g Y ; k g A

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PREDICTORS OF VIGOR, DEDICATION AND ABSORPTION AMONG CASUALTY MEDICAL OFFICERS

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Abstract

The work of casualty medical officers is considered to be more stressful work because they are the people who first attend emergency cases, give first aid and save the life of patients. Under such circumstances, their psychological capacities like hope, self-efficacy, resilience and optimism as well as vigor, absorption and dedication towards work play an important role in overcoming negative outcomes related to stress. The present study was planned to find out the predictors of vigor, dedication and absorption among casualty medical officers. The participants of the study were casualty medical officers from both government and private hospitals. The total sample size is 60 in which 30 participants are working in government hospitals and 30 working in private hospitals. The participants were selected from two districts of Kerala (Malappuram and Kannur) using purposive sampling procedure. The measures used for the data collection were Personal Information Schedule, PsyCap scale and Utrecht Work engagement scale. The statistical technique used was multiple regression analysis. The result of the study revealed that resilience predicted vigor and absorption among casualty medical officers. Optimism is the other psychological strength that predicted the dedication of casualty medical officers. The conclusion and suggestion regarding the implications of the findings, limitations of the study and future direction for the researchers are also discussed.

Key Words: Casualty Medical Officers (CMO), Psychological Capital, hope, self-efficacy, resilience, optimism, work engagement, absorption, vigor, dedication

In today's world, the health concern of people is very high. Health is very essential for psychological and physiological wellbeing. In such circumstances, hospitals are one of the most significant social institutions that are primarily concerned with health. A doctor's profession is a career with specialized knowledge to cure and care for the patients. Doctors can offer good service to their patients only when the environment in which they are working is congenial to offer such services. All emergency cases, be it medical or surgical, comes to the casualty of any hospital and casualty medical officer (CMO) is the first doctor to attend the patient, so his first and primary duty is to give first aid and save the life of the patient. Another duty is to do all medico-legal formalities concerned with patients.

Doctors and their services play a vital role in the world's health. The development of the health care system heavily depends on the service provided by



doctors. Casualty medical officers have an important role in the management of casualty and emergency services. Casualty medical officers face many problems like burnout, family maladjustment, occupational stress etc. Such hazards may contribute to many behavioral difficulties including anxiety, depression etc. To avoid such difficulties the health care system has to provide a work environment that helps the doctors to improve the psychological capacity and strength and avoid burnout and occupational stress. The critical situation handled by the casualty medical officers is a common part of their profession. In such circumstances hope, resilience, self-efficacy and optimism play an important role in the increment of work engagement of casualty medical officers.

Luthans, Avolio, Avey, and Norman (2007) developed the concept of psychological capital. They developed the psychological capital theory and studied its relation to employee's attitudes, behaviors and performance (Raina & Sisodia, 2017). According to them, four psychological strengths are hope, self-efficacy, resilience and optimism. These four dimensions together form the higher-order core construct called psychological capital. Hence, psychological capital can be defined as "an individual's positive psychological state of development and is characterized by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals, and when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to attain success" (Luthans, Youssef & Avolio, 2007).

At the point when confronted with issues in work, doctors who are highly resilient, self-efficacious and highly hopeful can get away from them, as the outcome their engagement in the work can be increased as well. The term 'Work engagement' was postulated by Gallup organization and became the most discussed variable related to work settings. Kahn (1990) defined work engagement of employees in terms of "how the psychological experiences of work and work contexts shape the process of people presenting and absenting themselves during task performance". According to Schaufeli, Salanova, Gonzalez-Roma and Bakker (2002) work engagement is defined as "a positive, fulfilling, work-related state of mind that is characterized by Vigor, Dedication, and Absorption" and this is the most recent and popular definition of work engagement. There are three dimensions that determine the nature of "work engagement" of an employee. The first dimension is 'Vigor' and it indicates the vitality level of an employee in his or her work. It includes high levels of energy, strength and mental resilience for an individual while working. The ability to overcome fatigue and challenges with readiness to take effort also determines vigor. The second dimension of work engagement is 'Dedication'. Dedication is characterized by a strong involvement of the person in their work, accompanied by feelings of enthusiasm, a sense of pride and motivation. The last dimension is 'Absorption' which is connected with the interest of an employee towards his or her work and experience discomfort when detached from it. Those who are being characterized by the absorption are fully fascinated and engrossed in their work (Sarath & Manikandan, 2018).

The emergency cases of the hospitals are dealt by casualty medical officers before going to any specialist doctors or residents. The works of casualty medical



officers are hectic in which they have to attend a lot of patients in the casualty before the conditions worsen. They have to spent time in contact with different people, usually patients and their families who are burdened with disease, lack of hope and sorrow. They have to be cautious to tackle troublesome issues in the casualty. A lot of interaction with patients and their families may exhaust the doctors with a heavy emotional load on their back. The coping ability to an adverse situation such as death of a patient needs psychological strength as well as the commitment to their work.

CMO's work engagement and psychological capital are potentially connected with patient care. Improved psychological strength, coping resources, learning opportunities, higher commitment to work etc. in doctors can improve patient care. Without these qualities, the doctors may feel lack of resiliency, vitality and complete exhaustion while treating patients (Leorbroks, Glaser, Vu-Eickmann and Angerer, 2017). Psychological capital and work engagement can act as effective positive resources in alleviating negativity and increase positivity among CMO which in turn helps in pursuing goals in the workplace. This positive state of mind can help the doctors to adapt to changing demands and increase commitment towards the organization they work. CMO with a high level of psychological capital may have stable emotions when faced with difficult situations and low levels can make them vulnerable to stressful symptoms and exhibit unsatisfactory job performance. In such a consequence, their positive psychological state plays a crucial role in dealing with prolonged mental stress. Hence, it is important to identify psychological capital among casualty medical officers pertaining to their work engagement. In our context many of the studies on medical professionals focus on occupational stress, burnout etc. but there are only little studies regarding the casualty medical officers and influences of psychological capital on work engagement of casualty medical officers.

The objective of the study is to find out whether the variable of work engagement namely vigor, dedication and absorption has a predictive relationship with the variable of psychological capital namely hope, self-efficacy, resilience and optimism.

Method

The research design used in the present study is exploratory study. The participants of the study were casualty medical officers from both government and private hospitals. The total sample size is 60 in which 30 participants are working in government hospitals and 30 working in private hospitals. The participants were selected from two district of Kerala (Malappuram and Kannur) using purposive sampling procedure. The statistical technique multiple regression analysis was used to find out the predictors of vigor, dedication and absorption using independent variables hope, resilience, self-efficacy and optimism among casualty medical officers.

The following questionnaires were used to measure the study variables:



Personal data schedule. In addition to regular questionnaires, an attempt was made to collect socio-demographic variables including age, gender, type of organization and area of residence. This will helps to understand the different characteristics of the sample.

PsyCap scale(Manikandan, 2017). This scale is composed of 21 items that measure 4 psychological capital related variables. The variables are hope, self- efficacy, resilience and optimism. Each item is worded positively in the scale. The scale developed with five-point agreement anchors in the Malayalam language (1- strongly disagree to 5- strongly agree) which was used to measure/collect responses from the subjects. The scale is designed in such a way that anyone who can read and write the Malayalam language can respond to it. The answers are marked at the place given for each statement. Instructions are clearly printed at the top of the scale and subjects take less than 10 minutes to answer the statements. Reliability of PsyCap scale is Cronbach's Alpha 0.94. The component wise reliability is also found to be acceptable. The reliability of component resilience is 0.79, Hope is 0.82, Optimism is 0.77 and the Self-efficacy is 0.91.

Utrecht work engagement scale (UWES)(Sarath&Manikandan, 2018). This scale is the Malayalam translation of UWES which was originally developed by Schaufeli, Salanova, González-romá and Bakker (2002). According to them individual employee's work-related state of mind can be measured by the employee's vigor, dedication and absorption to work. This scale consists of 17 items with three dimensions- absorption, vigor and dedication. The dimension vigor is related to an employee's vitality level in performing his or her work. Thus items in this dimension explored the readiness and resiliency of employee. The second dimension dedication is characterized by strong investment and commitment to work. The items of dedication were therefore detects inspiration, motivation, enthusiasm, a sense of pride etc. The third dimension is absorption which is related to an employee's preoccupation and passion with his or her work. The items of absorption therefore measure how the employee is completely immersed into his or her work. The reliability of the scale is Cronbach Alpha 0.92. The authors claim that, the scale has reasonable construct validity.

Procedure

Exploratory research is used to carry out the study. The sample consists of casualty medical officers. The samples were selected using purposive sampling method from various hospitals of Malappuram and Kannur districts of Kerala. The hospital authorities were met and briefed about the study. After taking permission, the participants were met personally. The researcher introduced herself and the purpose of data collection was informed to them. The study was oriented to them and distraction free environment was chosen for administration of the test. After establishing good rapport, questionnaires were administered to them. The questionnaire was distributed to samples in an order of Personal data schedule, PsyCap scale and Utrecht work



engagement scale. The instructions to respond to statements were already printed in the questionnaire and were clarified for them. The questionnaires were collected back and confirmed that all data were filled completely. The participants were conveyed gratitude for their kind co-operation. The questionnaires were screened for any omissions and checked. The questionnaire was scored according to the appropriate scoring procedure of each scale and then taken for the analysis.

Result and Discussion

Multiple regression analysis was used to find out the predictor variables that can predict the vigor, absorption and dedication (work engagement) among casualty medical officers. This method helps to avoid other unnecessary predictor variables that have little impact. The predictor variables used for the present study were hope, self-efficacy, resilience and optimism which are the sub-domains of psychological capital.

Predictor of vigor among casualty medical officers

The predictor of vigor among casualty medical officers was established through multiple regression analysis. The dependent variable is vigor and the independent variables are hope, self-efficacy, resilience and optimism.

Table 1

Multiple regression analysis for the predictor of vigor among casualty medical officers

Multiple Regression analysis for the predictor of Vegetation among causally related effects				
Variables entered		= Resilience		
Correlation (R)		= 0.407		
Proportion of variance (R ²)		= 0.166		
Percentage variation (Adjusted R ₂ × 100)		= 15.1		
Beta (β) = 0.407		B= 0.468		SE _β = 0.138
Constant= 5.037				
Source	df	SS	MSS	F
Total	59	1605.000		
Regression	1	266.181	266.181	11.531
Residual	58	1338.819	23.083	(p< 0.05)

The F value obtained from the above analysis was 11.531. It indicates that predictor variable, resilience has significance ($p < 0.05$) in predicting vigor among casualty medical officers. The coefficient of correlation was 0.407 and the Adjusted $R_2 \times 100$ (shared variance) was 15.1. This means that 15.1 percent of variance can be attributed to resilience. Vigor is defined as the ability to take maximum effort at work which can also increase personal resilience. In order to reduce stress and increase positive state in casualty medical officers resilient environment should be developed and fostered. Xanthopoulou, Demerouti and Schaufeli (2007) found out that work engagement is highly connected to individual's personal resources and engaged workers are able to



encounter adverse conditions with resilience. Thus resilience can predict the effort, vitality, activity and productivity which are a representation of vigor among casualty medical officers.

Predictors of dedication among casualty medical officers

Multiple regression analysis was carried out to find the predictors of dedication among casualty medical officers. The result obtained by the multiple regression analysis with dedication as dependent variable was presented below. The independent variables are hope, self-efficacy, resilience and optimism.

Table 2

Multiple regression analysis for the predictor of dedication among casualty medical officers

Variables entered		=	optimism	
Correlation (R)		=	0.584	
Proportion of variance (R ²)		=	0.341	
Percentage variation (Adjusted R ₂ × 100)		=	33	
Beta (β) = 0.584		B=	0.597	SE _β = 0.109
Constant= 6.96				
Source	df	SS	MSS	F
Total	59	891.250		
Regression	1	303.943	303.943	30.016
Residual	58	587.307	10.126	(p< 0.05)

The optimism is significant ($P < 0.05$) with F value 30.016 in predicting the dependent variable dedication among casualty medical officers. The R value for this variable is 0.584 and the Adjusted $R_2 \times 100$ (shared variance) was 33. This indicates that for resilience 33 percent of variance can be attributed. A similar finding was given by Salminen, Makikangas and Feldt (2014). They conducted the study among Finnish young managers. The result of the study showed that optimism applied a positive effect on three variables of work engagement vigor, dedication, and absorption. According to Bakker and Albrecht (2018) dedicated workers are active. They are skilled, optimistic and have realistic goals. Their high responsibility and commitment towards their work can contribute to their good health and well-being which is associated with work ability. Hence, more than any other psychological capacities optimism predicted dedication in casualty medical officers. In a different study by Bakker, Hakanen, Demerouti and Xanthopoulou (2007) on a sample of school principals, it was found that those with optimism and resilience also attained maximum on work engagement. Thus, resilience and optimism are casualty medical officer's personal resources that enhance work engagement and shows that engaged workforce are successful and fruitful in adapting to shifting conditions.



Predictors of absorption among casualty medical officers

Multiple regression analysis is used to find out the predictor variables of absorption among casualty medical officers. The table 4.6 show the multiple regression analysis of selected predictor variables.

Table 3

Multiple regression analysis for the predictor of absorption among casualty medical officers

Variables entered		=	Resilience	
Correlation (R)		=	0.497	
Proportion of variance (R ²)		=	0.24	
Percentage variation (Adjusted R ₂ × 100)		=	23.4	
Beta (β) = 0.497		B=	0.567	SE _β = 0.13
Constant= 4.432				
Source	df	SS	MSS	F
Total	59	1576.983		
Regression	1	390.091	390.091	19.063
Residual	58	1186.892	20.464	(p< 0.05)

The F value obtained from the above analysis was 19.063. It indicates that predictor variable, resilience has significance ($p < 0.05$) in predicting absorption among casualty medical officers. The coefficient of correlation was 0.497 and the shared variance (Adjusted $R_2 \times 100$) was 23.4. This means that 23.4 percent of variance can be attributed to resilience. The result states that the dependent absorption is only predicted by resilience other than hope, self-efficacy and optimism. A supporting study was conducted by Nishi et al. (2016). The result showed that resilience predicted absorption, dedication and vigor among health professionals. Therefore, the resilience capacity in casualty medical officers can increase their absorption in work. High level of involvement in work and interaction with patient in casualty can cause stress and burnout among casualty medical officers but if they are highly resilient they have the ability to control over their work.

The above findings highlights that the predictors of work engagement are found to be resilience and optimism among casualty medical officers. By comparing the predictors of each variables of work engagement i.e., absorption, vigor and dedication we can come to a conclusion that optimism were the predominant predictor (33%) of dedication than the resilience that predict absorption (23.4%) and vigor (15.1%) among casualty medical officers. Based on the finding it can be concluded that more than hope and self-efficacy among casualty medical officer, optimism and resilience predict the work-related positive state of mind which is characterized by vigor, dedication, and absorption. Here optimism and resilience act as a positive energy to battle intense pressure, adversity and extreme conditions in the hospitals. These individual assets can



help the casualty medical officers to adjust and eventually adapt different conditions confronted by them and think positively about their future. Moreover, it encourages them to lead a healthy physical, mental and emotional life which is opposite to those with negative or pessimistic thought process.

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EFFECT OF PESTICIDE ON FRESHWATER FISH LABEO ROHITA (HAMILTON)

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Abstract

In general, pesticides are used very extensively in agriculture, forestry, public health and veterinary practices and are gaining immense importance due to their ability to control weeds, pests including insects, plant diseases, aquatic weeds and aquatic snails (Naeem *et al*, 2010).. Pesticides have been found to be highly toxic not only for fish but also to the other organisms which constitute the food chain. Agricultural run-off near water bodies is the major cause of deposition of pesticides in aquatic ecosystem. The Indian major carp *Labeorohita*(Hamilton) was exposed to the pesticide Phosalone and 1.5ppm, 2.5ppm and 4.0ppm were determined as sublethal, median lethal and lethal concentrations at 96 hr of exposure. These LC₅₀ values indicate that the Phosalone is highly toxic to fish. The fish were exposed to sub-lethal concentration (1.5ppm) for 4 days and the changes in the biochemical constituents were studied.

Keywords: Pesticide, Labeorohita, Agriculture, Phosalone and Sublethal.

Introduction:

Pesticides are widely used in modern agriculture to aid in the production of high quality food. However, some pesticides have the potential to cause serious health and environmental damage. Though the pesticides are applied to enhance agricultural production while the indiscriminate and contaminate the biota. Subsequent to the translocation of pesticides to aquatic environment the non-targets such as fish are exposed to low concentration over a long period and affect the efficiency of various life parameters and seem to produce many physiological and Biochemical changes in fish. Fish have been valued for many years as excellent indicators of water quality.

In general, pesticides are used very extensively in agriculture, forestry, public health and veterinary practices and are gaining immense importance due to their ability to control weeds, pests including insects, plant diseases, aquatic weeds and aquatic snails (Naeem *et al*, 2010). The major chemical groups of pesticides that are usually being applied in fields are organophosphate, carbamates, organochlorine, pyrethroids, trizole, and necotenoides (Srivastava and Singh, 2014; Sarba and Mehana, 2015). Pesticides have been found to be highly toxic not only for fish but also to the other organisms which constitute the food chain. Agricultural run-off near water bodies is the major cause of deposition of pesticides in aquatic ecosystem. Bioaccumulations of these pesticides threat the long-term survival of fishes by disrupting the ecological relationships between organisms and loss of biodiversity (Abedi *et al*, 2013). Long-term exposure of pesticides induces physiological disturbance, behavioural changes,



histopathological damages, haematological alterations, biochemical changes, immunosuppression, hormone disruption, diminished intelligence, reproductive abnormalities and cancer (Pandey *et al*, 1995) Fishes serve as important bioindicators for aquatic contamination. Recent studies indicated that fishes are quickly becoming scarce owing the increasing use of chemical pesticides in fields. Since fishes are important sources of proteins and lipids, health of fishes is very important for human beings (Srivasatava and Singh, 2013a).

The potential toxic hazards resulting from exposure to different levels of chemical pesticides have been discussed in this communication which may useful in environmental risk assessment of freshwater and marine organisms. Effects of Pesticides on Fishes Acute toxicity caused by the pesticides showed a significant positive correlation between dose and mortality. This trend is also dependent upon several factors such as rate of penetrations, nature of slope, variability and maximal effects of active chemicals. Although it is not most announced method to determine pesticides

toxicity but initial test revealed that the used pesticides could be harmful for environment health (Saravanan *et al*, 2011) Behavioural changes Fish is directly affected by bioaccumulations of different pesticides (Rao and Pillala, 2001). Pesticides induce different types of toxicity in fish, lead changes in fish behaviour such as rendering fish sluggish and alter their swimming ability making them more susceptible to be preyed, reduce their ability to feed, maintain their position and defend their territories (Nagarajuet *al*, 2011; Satyavardhan, 2013; Rani and Kumaraguru, 2014). Behaviour provides a unique perspective linking between physiology and ecology of an organism to its environment (Little and Brewer, 2001; Srivastava and Singh, 2013d). Behaviour allows an organism to adjust to external and internal stimuli in order to adapt environmental variables. Sub-lethal concentrations of pesticides in aquatic environments cause structural and functional changes in aquatic organisms and this is more common than mortality (Srivastava and Singh, 2013c; 2014).

The oxygen consumption (biotic) is a very sensitive physiological process and the change in respiratory activity has been used as an indicator of stress in animals exposed to toxicants. A number of investigations on the effect of pesticides on the Oxygen Consumption of fish have been reported (Ram Nayan Singh *et al*, 2014; Mohammad Illiyas Hussain *et al*, 2015; Sivakumar 2015). Stresses and pollutants generally cause relatively rapid changes in Blood characteristics of fish (Kandeepan 2013; Deshmukh, 2016). A reduction in haemoglobin content and erythrocyte population resulting in anaemia have also been suggested as reason for drop in Oxygen uptake in fish *Channa punctatus* exposed to lethal Concentration of Deltamethrin (Jayaprakash and Shettu, 2013). Though, the biochemical, Physiological and enzymatic parameters are the common biomarkers of exposed fish to toxicity of pollutant.

Since blood glucose level is an important parameter to assess the stress condition of fish by pesticides. Enzymes play a significant role in food Utilization and Metabolism. Phosphatase plays an important role in synthesis and transport of metabolites across the membrane, secretory activity, and protein synthesis and glycogen metabolism. Pesticide pollution also affects the activity of enzymes and produce metabolic changes at cellular levels. The toxic effects of organophosphorous



compounds on the activity of alkaline phosphatase in various tissues of fishes have been worked out by various workers. Dubey et al., (2014) reported significant inhibition of alkaline Phosphatase in liver, intestine and muscle tissues of *Clarias batrachus* when exposed to Dimethoate. The decrease in acid phosphatase in liver suggested the uncoupling of phosphorylation by toxicity. Acid phosphatase were significant decrease in liver tissue when compared to those of muscle and gills in the fish *Labeo rohita* collected from Industrial polluted lake. The effect of Rogor on the activity of alkaline phosphatase was studied by Borah and Yadav (1996).

Materials and Methods:

Commercially valuable and edible fresh water fish *Labeo rohita* used in this experiment. The length and weight of the fishes ranged between 10-15 cm and 25-30 g, respectively, were acclimatized to laboratory conditions for 10 days and separated into groups (10 each). During the acclimatized period fishes were fed ad-libitum with rice bran (or) powdered oil cakes. The median lethal concentration (LC₅₀) and sub lethal concentrations were found out by exposing the fish to different concentrations of Phosalone (1.5, 2, and 2.5 PPM) for 4 days and control group was also maintained separately. Pesticide, represent one of the most widely used classes of pesticide with high potential for human exposure in field of cultivated area. Phosalone (C₁₂H₁₅ClNO₄PS₂) is a broad spectrum organophosphate pesticide widely used to control pests in agricultural crops. It is commercially available organophosphate pesticide and is more toxic to living beings. Before starting the experiment the Oxygen content of water used in the animal chamber was estimated by Winkler's method. Blood sample was collected from the control and experimental fishes by cardinal vein puncture using an insulin syringe containing 0.1ml of 0.2% EDTA of each group at 1st, 2nd, 3rd and 4th day of experiment. Haemoglobin was estimated by Darbkin's method (Suganthi et al. 2015a). The blood sugar was estimated by O -toluidine method. The alkaline phosphatase was estimated by using the method of Bergmeyer (1963) as modified by Butterworth and Probert (1970).

Review of Literature:

Review of selected literature is an essential part of every research process. It helps us to examine and evaluate what has been said earlier on the research subject.

Anoop Kumar Srivastava, Mishra, D, Shrivastava, S, Srivastava, S. K. and Srivastava, A. K. (2010) Evaluation of the acute toxicity of an organophosphate pesticide, dimethoate against the freshwater fish *H. fossilis* was conducted in the laboratory. *H. fossilis* showed behavioural changes against dimethoate intoxication. There were increased opercular movement, sluggish, lethargic and abnormal swimming, loss of buoyancy and muscular tetany. The treated fishes also showed fading of their body colour. The LC₅₀ values of dimethoate to the freshwater catfish.

Deshmukh D. R. (2016) In the present study the fish *Channa striatus* were exposed to 0.0035 ppm concentration of endosulfan pesticide for 96 hours. The haematological parameters such as Red Blood corpuscles (RBC), White Blood corpuscles (WBC),



blood glucose and haemoglobin (Hb) were studied. The parameters such as RBC and Hb were decreased where as WBC and blood glucose increased.

Kandeepan C. (2013) The Indian major carp *Labeorohita* (Hamilton) was exposed to the organophosphate pesticide Phosalone and 1.5ppm, 2.5ppm and 4.0ppm were determined as sublethal, median lethal and lethal concentrations at 96 hr of exposure. These LC_{50} values indicate that the Phosalone is highly toxic to fish. The fish were exposed to sub-lethal concentration (1.5ppm) for 4 days and the changes in the biochemical constituents were studied. Significant changes in Respiratory, haematological, Biochemical and enzymological parameters in fish were observed.

Ram Nayan Singh (2014) Synthetic pesticides are an important group of aquatic pollutants affecting health of fishes. This study is an attempt to assess the sub lethal effects of dimethoate, an organophosphate insecticide on gill morphology, ventilation rate, oxygen consumption and electrolyte levels of common carp (*C. carpio*). Healthy juvenile fishes were exposed to a sub lethal concentration of 0.96 mg/l (60% of 96 h LC_{50}) of dimethoate; and at 24, 48 and 96 h exposure blood and gill tissues were collected, oxygen consumption and ventilation rate was determined. The changes in the gills of exposed fish were characterized by epithelial hyperplasia, lifting and degeneration of respiratory epithelium, lamellar bending and curling, fusion and disintegration of secondary gill lamellae. The degree of damage showed direct correlation with the duration of exposure.

Results and Discussion:

The mortality of fish can be observed that, mortality did not occur at 1.5 PPM concentration of Phosalone for 96 h exposure. The mortality rate increased as concentration of Phosalone increased. The sub lethal concentration is 1.5 PPM, median lethal concentration (LC_{50}) is 2.5PPM and the lethal concentration is 4 PPM for 96 hrs exposure. The LC_{50} value differs from species to species for the same pesticide as well as for different pesticides due to their mode of action on fish. Durairaj and Selvarajan (1991) have estimated LC_{50} value for Quinolphos and Phenthoate and were found to be 7.5 PPM and 2.5 PPM respectively for 96 hours of exposure in *Channa punctatus*. Malathion was found to be highly toxic to minnows (LC_{50} 8.6 ppm) and murrels (LC_{50} 5.93ppm) as summarized by Durkin (2008). The present findings gain support from the work of Anoop et al., (2010) who also recorded LC_{50} values of Dimethoate in *Heteropeunistisfossilis*. The median lethal concentration (LC_{50}) was calculated by means of probit analysis (Finney 1981).

The rate of Oxygen Consumption of *Labeorohita* exposed to 0.5, 1 and 1.5 PPM concentration of Phosalone for a period of 24, 48, 72 and 96 hrs. The fish treated with different concentration of Phosalone consumption at these increasing duration was decreased in the rate of Oxygen Consumption and it's found to be highly significant at $P < 0.01$ Level compare to control fishes. A similar decrease in oxygen uptake has been reported in *Labeorohita* (Sivakumar et al., 2013) due to Monocrotophos exposure. Sublethal concentrations of deltamethrin, a pyrethroid, have decreased oxygen consumption in *O. mossambicus* (NazeemulKhaneet al., 1992). The results of this study



confirm the earlier report (Saradhamani et al., 2009) on oxygen consumption by fish in pesticide mixed water.

Haemoglobin (Hb) content was estimated in the blood of *Labeorohita* exposed to LC50 value of Phosalone concentration and presented in table 2. The Hb content of blood was 8.75 g/dl in control fish and it was decreased (6.30 g/dl) when exposed to LC50 concentration of Phosalone. The Hb content was gradually reducing with increasing exposure period. The decreased haemoglobin concentration represents that the fish power to supply adequate oxygen to the tissues is limited considerably and this will result in decline of physical activities (Nussey et al., 1995). The same trend was obtained *Catlacatla*, sub lethal concentration of lead nitrate and Mercury chloride toxicity was significantly decreased in Hb content when compared to control fish at 96 hrs exposures (Kandeepan 2013). A clearcut evidence of reduction of Hb content has been reported by Bhatkar and Dhande (2000) in *Labeorohita*, when exposed to Furadon. The reduction in Hb content of fish may be due to the effect of pollutant on haemopoietic system. The reduced level of haemoglobin content may be affecting the Oxygen consumption of the fish by way of reduced transportation of Oxygen and this fact can be confirmed in the present study also.

The total blood sugar content increased with increasing concentrations of Phosalone. The blood sugar level which was 54.50 mg/ml in control fish significantly increased to 74.50 mg/ml in LC50 of Phosalone at 96 hrs exposure period. The percentage (36.70) of blood sugar level increase is, as a function of exposure period. Such increase in blood sugar has been probably due to increased rate of utilization of blood sugar to meet the excess energy demands imposed by the severe stress of pesticide on the physiological activity of fish. This increase of blood sugar level i.e. hyperglycaemic condition may be due to conversion of stored glycogen into blood glucose (glycogenolysis) by the inducement of adrenal hormones namely glucocorticoids and Catecholamines by pesticides. Christobher et al. (2016) reported increased level of blood sugar when exposed to 1ppm concentration of Phosphamidon treated *Labeorohita* fishes at 15 days intervals. The present findings were support from the work of Mohammad Illiyas et al., (2015) in Dimethoate- treated *Catlacatla* under insecticide toxicity.

Alkaline Phosphatase is responsible for Phosphorylation, biosynthesis, Secretary Activity, mediation of membrane transport, involvement in active transport and good indicator for stress condition of biological system. Hence, the change in the alkaline Phosphatase activity will affect the Physiological and biochemical pathways of metabolism in *Labeorohita*. In the present study on *Labeorohita*, the alkaline phosphatase activity has been decreased significantly in intestine and liver tissues with increasing sub lethal concentrations of Phosalone at different exposure period from 24 - 96 hours and this decrease may be due to the inhibition of enzyme activity by the pesticide Phosalone. The same result was supported by Saraswati (2015), who observed the significant decrease in the activity of alkaline phosphatase in liver tissue of *Clarias batrachus* exposed Dimethoate pesticide. Baby Shakila et. al., (1993) reported the inhibition of alkaline phosphatase in liver of fish was due to the interaction of chemicals with co-factors and regulators.



Biochemical and Physiological Changes:

Secondary metabolites of pesticides induce severe biochemical and enzymatic changes in aquatic organisms (Rawat *et al*, 2002; Tiwari and Singh, 2009). These metabolites react with oxygen present in water and reduce oxygen consumption to fish species when exposed to different pesticides. Dimethyl parathion disturbs the oxygen consumption in *Labeorohita* (Bengeriet *al*, 1984), DDT induces disturbance in *Lepidocephalichthys thermalis* (Gurusamy and Ramadoss, 2000), dimethoate (Shereena *et al*, 2009) induces toxic effects and reduces in oxygen consumption in *Oreochromis mossambicus* and propiconazole and mancozeb induce toxic effects in *Clarias batrachus* (Srivastava and Singh, 2013a).

Glycogen : It is found in the liver (10%) and skeletal muscles (1-2%). The glycogen in muscle is there to provide a quick source of energy for either aerobic or anaerobic metabolism. Muscle glycogen can be exhausted in less than one hour during vigorous activity *i.e.* in stress conditions. Liver glycogen serves as reservoir of glucose for other tissues when dietary glucose is not available (Kumar *et al*, 2004; Kumar and Pandey, 2014). Liver glycogen can be depleted in 12-24 h. Liver, being a detoxificative organ (Hulterer *et al*, 1969; Tiwari and Singh, 2009), hence it is expected that toxicant could reach there for detoxification and disposal. The fall in glycogen content in the body tissues of the fish indicates its rapid utilization by the respective tissue because of toxic stress of the pesticide.

Protein: It is the alternative source of energy. Reduction in level of protein in experimental fish under

pesticides influence indicates hepatic insufficiency and probably malnutrition. Protein reduction might observe due to high-energy demand in TCA cycle. Decrease in protein content under toxicity stress has already been reported by several workers (Choudhary and Gaur 2001; Khare and Singh 2002; Tripathi and Singh, 2003; Kumar *et al*, 2004; Mishra *et al*, 2005; Muley *et al*, 2007; Tiwari and Singh, 2009). The decrease in total protein level and increase in free amino acids level in both tissue and liver suggest the high protein hydrolytic activity due to elevation of protease activity (Muley *et al*, 2007).

Enzymes: Several enzymatic pathways alterations are also induced by pesticides pollutions in organisms. Torre *et al* (2002) reported that *Cyprinus carpio* and *Cnesterodon decemmaculatus* were highly sensitive to pollutant and showed reduce level of acetyl cholinesterase.

Haematological parameters:

Nitrogen is found in the form of ammonia in fish. Ammonia is toxic for an organism even in trace amount. Pesticides toxicity in fishes 205 Due to the deamination of amino acids such as histidine, serine, asparagine and glutamine emphasized with regard to ammonia production. The functions are associated with transamination and deamination reaction, where the central role, play by the enzyme glutamate dehydrogenase. According to Wood (1993), ammonia represents 92% and urea 8% of the nitrogen excretion products in carp (*Cyprinus carpio*). 88% of ammonia and 7% of urea excreted through the gills and 4% of ammonia and 1% of urea through the kidney. Blood is the indicator of pathological changes induced by the pollutants in fishes. Onset of any environmental toxicity in surrounding water, fish blood shows remarkable pathological changes. Hematological parameters are important for toxicological



research and as indicators of environmental stress and disease in fish (Kumar *et al*, 1999a, b, 2004; Talas and Gulhan, 2009).

Table: 1
The Lc50 value of Phosalone on Labeorohita for 96 hours and Chi - Square for LC50 Value

Concentration PPM	Log conc. (X)	No. of fish es used (n)	Mortality rate (r)	P	Exp. Y	W	X	Y	95% CL	
									Upper	Lower
2.000	0.3008	100	30	0.3000	4.4050	0.559007	0.3010	4.3998	4.6283	4.1713
2.500	0.3979	100	50	0.5000	5.1530	0.631004	0.3979	5.1443	5.2842	5.0045
3.000	0.4771	100	80	0.8000	5.7635	0.513445	0.4771	5.7532	5.9213	5.5847
3.500	0.5441	100	90	0.9000	6.2775	0.343633	0.5441	6.2671	6.5134	6.0214

Log Lc50 = 0.375, LC 50 = 2.394015, Regression Equation $Y = 2.086786 + 7.68401x$, Chi-Square = 2.061623, Tabular Chi - Square at 0.05 = 5.99 - Not significant.

Table: 2
Effect of LC50 2.5PPM of Phosalone on hemoglobin content and Blood glucose level of Labeorohita.

Exposure Time (hr)	Haemoglobin Content g / dl		Blood Sugar level mg/ml	
	Control	Experiment LC50 (2.5 PPM)	Control	Experiment LC50 (2.5 PPM)
24	8.75±0.005	8.01±0.006	55.10±0.15	61.50±0.40
48	8.75±0.006	7.45±0.006	55.25±0.15	65.25±0.17
72	8.70±0.006	6.85±0.006	54.75±0.15	69.75±0.13
96	8.75±0.005	6.30±0.006	54.50±0.15	74.50±0.2

Table: 3
Effect of Phosalone on Intestinal and Liver Alkaline

Concentrations PPM	Alkaline Phosphatase Activity in Intestinal tissue			
	24 hr	48 hr	72 hr	96 hr
Control	605.5±38.45	603.6±35.43	604.2±31.25	602.5±30.20
0.5	565.4±40.10	555.6±52.2	549.3±42.75	537.6±33.15
1.0	520.5±31.45	508.4±43.44	484.3±25.35	457.7±45.15
1.5	470.6±60	448.4±40.22	409.2±20.15	362.5±12.15
Alkaline Phosphatase Activity in Liver tissue				
Control	571.5±50.24	7570.7±52.32	566.2±50.34	563.5±50.25
	536.4±15.25	530.3±10.50	511.3±30.12	503.5±27.62
	451.5±25.01	430.7±22.10	386.4±21.94	338.3±18.22



CONCLUSION:

It is concluded that pesticides of almost all the groups do have acute toxic effects on fish species and capability to change behavioural phenomena in fishes *i.e.* hyper- and hypoactive movement. Most pesticides have capacity to alter biochemical and enzymatic pathways by the alteration in carbohydrate and protein metabolism. Therefore, it is concluded that the extensive use of these pesticides should be avoided near water bodies and the applications should be judicious and rationalized. This study concludes that the exposure of various concentrations (0.5 - 4ppm) Phosalone pesticide is toxic to aquatic organisms and severely affects the function of respiratory system, blood tissues, Liver and intestinal tissue of freshwater fish *Labeorohita* which seriously affects the survival of fish in its habitat. Therefore, it is concluded that Phosalone at sub lethal concentration, can cause considerable deterioration to fish health. For this reason, Phosalone use must be regulated otherwise contaminated runoff from agricultural fields can deteriorate fish health and significantly reduce fish and aquatic organisms productivity of water bodies.

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jke ekgu jk; ½ vk; 2 l ekt ½ l okeh n; kum l j l o r t h ½ f f k; k l k s Q d y l k k b v h j k e d . k f e ' k u ½ l o k e h f o o d k u l n ½ b z o j p n z f o k l k x j ½ l = h & f ' k l ½ e g l r e k T; k f r c k Q y ½ l k f o = h c k b z Q y s ½ n f y r f l = ; k a d h f ' k l ½ v k f n u s v a s t h l j d k j d h l g k; r k l s e f g y k v k a d s f g r e a l r h i f f k d k m l e n y u 1829 ½ k y k M Z f o f y; e c a v d ½ l f g r d b z d k u n h i k o / k k u i k l d j o k u s e a l Q y r k g f l y d h A b r u h i f r d n y i j f l F k f r; k a d s c k o t m b l n k s e a; ½ j k t u h f r l k f g R; j f ' k l k v k s / k e z l s d n l i q f l) f l = ; k a d s u k e m l k j d j l k e u s v k r s g a f t u e a l s j f t; k l ½ r k u ½ n y y h i j ' k k l u d j u s o k y h , d e k = e f g y k l k e k K h ½ x k M d h e g k j k u h & n g k z b r h l f ' k o k t h e g k j k t d h e k r k & t h t k c b z f d r n j d h j k u h & p l u e e k j d u l d d h e g k j k u h & v l c d d k j v o / k d h l g ' k k f l d k c x e g t j r e g y l v k x j k d h u j t g l a r f f k > k d h d h e g k j k u h y e h c k b z d s u k e i e f k g a H k k j r d k i g y k e f g y k e g f o k y; f o f k; u d k y s t 1879 e a l k y k a f t l l s p n e f k h c l j k d n f i c u h x l a g y h v k s v k u n h x k i k y t k s k h u s o ' k z 1886 e a ' k q v k r h { k s k f . k d f m f x z k a i k l r d h A f k h A

; w a r k s i g y s H k h e k r k r i f l o u t h e M e d k e k v k s l j y k n o h t s h d b z Ø k a r d k j h e f g y k; a H k k j r d s j k ' V h; L o r a r k v l a n k y u e a l f Ø; F k h f d U r q x k a k h t h d s v k o k g u d s c k n ; g l a ; k d b z x u k v k s c < + x b A ' k k a r ? k k s k j L e f r p l s k j j c h u k n k l i h f r y r k o k M M d j j c u y r k n k l x k r k j f o t; y (e h i a M r j k t d e k j h v e r v k s j v : . k k v k l Q v y h l p r k d i y k u h l d L r j c k x k a k h n g k z c k b z n d e f k j d s v u y (e h l g x y) r f f k l j k s t u h u k; M q H k k j r d h v k t k n h d s l a k ' z e a ' k k f e y g k u s o k y h i e f k e f g y k; a g a b u d s v f r j D r d b z f o n s k h e f g y k v k a e h j k c u ½ e M y h u L y M ½ l j y k c u ½ d e k j h u e j h g h y e u ½ , u h c d ½ l H k f x u h f u o f n r k v k f n u s H k h b l v l a n k y u e a e g R o i w k z H k f e d k f u H k k b A

v k t k n h d s c k n d s o ' k a e a e f g y k v k a d s f y , l e k u v f / k d j j k T; } k j k d k b z H k n H k k o u g h a d j u s v o l j a d h l e k u r k j l e k u d ; z d s f y , l e k u o r u j v i e k u t u d i f f k v k a d s i f j R; k x d s f y , i a l f r l g k; r k d s f y , t s s v k f n v u s d i k o / k k u H k k j r h; l a o / k k u e a f d , x; A b l d s v f r j D r v u s d 0; k i k j v f / k f u; e 1956 j n g s t i f r " k s k v f / k f u; e 1961 j d h q i c U; k; k y; v f / k f u; e 1984 e f g y k v k a d k v f ' k V : i . k ½ f r " k s k ½ v f / k f u; e 1986 l r h f u " k s k v f / k f u; e 1987 j k ' V h; e f g y k v k; k x v f / k f u; e 1990 j x H k z k j k . k i m y a k p; u j i f r " k s k v f / k f u; e 1994 j k y s w f g a k l s e f g y k v k a d k l j j k . k v f / k f u; e 2005 j c k y f o o k g i f r " k s k v f / k f u; e 2006 j d k; L f k y i j e f g y k v k a d k y l x d m R i h M e u ½ f r " k s k ½ v f / k f u; e 2013 j n . M f o f k ½ a d k s k u ½ 2013 H k k j r h; e f g y k v k a d k s v i j k / k a d s f o :) l j j k i n k u d j u s r f f k m u d h v k f f k z d , o a l k e k f t d n ' k k e a l q k j d j u s d s f y , c u k; s x; s i e f k d k u n h i k o / k k u g a d b z j k T; k a e a x t e o u x j i p k; r k a e a e f g y k v k a d s f y , v k j f k r l h v k a d k i k o / k k u H k h f d; k x; k g a

v k t k n H k k j r e a e f g y k , a f n u i f r f n u v i u h y x u l e g u r , o a l j k g u h; d k; k a j k j k j k ' V h; i V y i j v i u h i g p k u c u k u s e a d k e; k c g l z g a e k s t m k n k s e a e f g y k , a u , H k k j r d s v k x k t d h v g e d M h f n [k j g h g a y a s v j l s d s v f k d i f j J e d s c k n v k t H k k j r h; e f g y k , a l e p s f o ' o e a v i u s i n f p l u g N i M + j g h g a e p s d g u s e a d k b z x j s t u g h a g s f d i q " k i z k u : f < o k n h l e k t e a e f g y k , a f u f ' r : i l s v l x k e h L o f . k e H k k j r d h u h v k s e t o r d j u s d k g j l H k o i z k l d j j g h g a t k s l p e p d k f c y s r k j h Q g a g k a; g t j; g s f d d n l t x g v c H k h e f g y k , a ? j d h p k j n h o k j h e a d h g k d j : f < o k n h i j a j k v k a d k c k s < s j g h g a o t g H k h l k Q g s i q " k i z k u l e k t d k e g t l a d f i p r e k u f l d r k e a c a l s g k u a

f o M e c u k r i s ; g g s f d b r u s l k j s d k u n h i k o / k k u a d s g k u s d s c k o t m n s k e a e f g y k v k a i j g k u s o k y s v R; k p k j k a e a d e h g k u s d h c t k; o f) g k s j g h g a j k ' V h; v i j k / k f j d k M Z ; j k a d h g k f y; k f j i k z d s e r k f c d 2014 e a i f r f n u 100 e f g y k v k a d k c y k R d k j g y k v k s 364 e f g y k; a ; k u m R i h M e u d k f ' k d j g l p A b l o ' z d o y c y k R d k j d s 36735 e k e y s n t z f d , x; s t k s 2012 e a n t z 24923 e k e y k a l s d g h a T; k n k v f / k d F k A ; f u l Q d h f j i k z f g M u b u l y u l k b V d s e r k f c d H k k j r e a 15 l k y l s 19 l k y d h m e z o k y h 344 i f r ' k r f o o k f g r e f g y k , a , d h g a f t l u g k u s v i u s i f r @ l k f h d s g k f k a ; k u f g d k > y h g a b a j u s k y u l a j & f j l p z v l u h o h e s u d s v u d k j H k k j r e a 10 e a l s 6 i q " k a u s d H k h u d H k h i R u h v f k o k i f e d k d s l k f k f g d d 0; o g k j f d; k g a x g e a k y; H k k j r l j d k j j k t k j h v k a d M a d s e r k f c d 2014 l s 2016 d s c h p n s k H k j e a c y k R d k j 1 j 10 j 333 e k e y s n t z f d , x; s F k A , u o l h o v k j O c t 0 d s v u d k j f i N y s 10 o ' k a e a e f g y k v k a d s f o :) g q v R; k p k j k a e a n k s x q s l s T; k n k d h c < k a k j h g l z g a b l l a k e a n s k e a g j ? k a s d j h c 26 v i j k f / k d e k e y s n t z f d , t k r s g a ; g f l F k r c g n g h H k; k o g g a b l d s v f r j D r d b z v l; f p a r k; a H k h t s s L o k L F; j f ' k l k l k e k f t d l j k d k j j ? j d s e g R o i w k z f u . k z y u s e a H k f e d k d h d e h l n g k j k l k e k f t d j o s k j i f ' k l k . k d k v l k o l i q " k a i j v k f f k z d f u l k j r k j x j h c , o a / k k f e d l ' k k f e y g a ; w u M h i h v e k u o f o d k l f j i k s / z 1997 d s v u d k j H k k j r e a 88 i f r ' k r e f g y k; a j D r k V i r k d k f ' k d j F k A H k k j r d s x k e h . k a { k s - k a e a i z t u u { k e r k i j f u; a . k i l u s d s c g r



de mik; iz kx fd; s tkrş gđ ftll s cjk & cjk xHkZkjk.k vlg 'lkjhjd v{kerk ds pyrs dbz idkj dh LokLF; lEl; k, avk; snu nřkus ea vkrh jgrh gđ
gylkd dñ efgyk; a bu l Hkh pñkř; kalsik idkj fořkku {s=ka ea nsk ds lEkuuh; Lrjard Hkh igph gđ ftuea Jherh bñjk xkñh ifřHkřnř fl g ikřVy l Hkh Lojkt fueřk l Ĥrkje. l egřnř oel l Hkřdřkjh pñku] verk Ĥhřl egk'orř nřh yrk eakřdj] vřkk Hkřky J s k ?křky l Ĥuf/k pñku] vřd; křfud l qh ek; křh t; yřyr l eerk cut l eřk ikřdj] v: křh j kř dkpj ĤhVh A"kk l kbuk ugokyl l kř; k fet l l křh eřd Ĥh fl křh fgek nř] > yu xkřokh Leř eřkk l feřkyh jkt] g l u Ĥh dñ] xkr QkřV rřk eřh dñ vřn uke mYyřkuh; gđ

Hkřr t s i q "k iz kku nsk ea 70 dñ n'kd l seřyk l křDrđj.k rřk Qeřute 'kñ idk'k ea vř; A ftuea 1990 ds Hkř.Myřdj.k rřk mñjkřn ds cñ fñřk fuos řjk LFkř xř l j dñh l křBula ds : i ea vřkř Ĥrřh vřB bu l křBula us Hkh eřgykvla dñ tkr dj muds vř/kdjla ds Ĥř pruk fodř r dñs rřk młga l kelftd@vřkřd : i l l 'křr cñkus ea eřh Hkředk vñ dh gđ l kř gh eřlye eřgykvla ea Ĥřyr fudkřgyřk rřk řhu rykd t s i g křu i řh /křfeř eř; křvla ds f[křQ dñuñ yMkř yMkř ea eñn dh gđ gř; k.k jkt LFkř Ĥřph młk Ĥřn vřn ea dñ; k Hkř gř; k dñs jkdj fyak vuřkř ds ?křs Lrj dñ l Ĥřyr dñs rřk f'křk ds {s= ea eřgykvla dh LFkř l křkus ds Ĥe dñ; k u e j [křs gđ dñ l j dñ řjk cñh cřkvla cñh l křvla; křt uk pykř t k jgh gđ rřk ykř l Hkř , oafokř l Hkř ds pñkř ea 33 Ĥř'kr eřyk l Ĥvla ds vřkřk k d k f/kř d yřr gđ

Ĥvř; ; u dñ l eřk %

Hkřr ea eřgykvla dh LFkř l l kř/kr lEl; kvla dh vř eukřkřfudla , oal eřk ořkřfudla dk /; ku vřdř'kr gřk gđ vř bl {s=ka ea vuř vř; ; u fd, x, gđ dñ eřk vř; ; u dñ fořk uřs Ĥřř fd; k t k j gđ gđ

f=onh 2010½ ds vř; ; uka ds vuř kř Hkřrř; eřyk, a t c ?kř l s cğj dk; Z dñs dñ fudyrh gř řs Ĥkřjd fřřřfřřkř e j g s dñ Hkh m l s dbřřj dh ĤřMkřvla , oafg kvla dk l euk dñk Ĥřř gđ eřk , oaf l feLVj 2010½ ds vř; ; uka ds vuř kř eřgykvla ds Ĥř c<řs vřj k ea cřřdñ ds vřkř Ĥř , oaf Ĥřs Ĥřřk řjk řjg & řjg dh ; křk, a nř tkrh gđ bl řjg ds vř; křj fñukřñu c<řk gh t k j gđ gđ

rLeu 2006½ ds vř; ; uka ds vuř kř Hkřr ea eřyk, a vřs vř/kdj ds Ĥř v l t x j g s y x h gřQj Hkh młga řjg & řjg dh ; křk, a nř tkrh gđ rřk l křkřfud vř/kdj la l s Hkh ořř j [kř tkrh gđ

gñ eñ 2003½ ds vř; ; uka ds vuř kř ?kř dh ftEñkřh ds l kř & l kř cPpka ds Ĥy & Ĥkř Hkh eřgykvla dk Ĥy kř nř; Ro l e > tkrh gř rřk vřkř křtu ds fy, Hkh m l s Ĥřř fd; k tkrh gř ft l ds dñk. k eřyk; a geřk ruko ea jgrh gř vř ?kř l s ydj dk; Z LFky řd młga dbř řjg dh ĤřMkřvla dk l euk dñk Ĥřř gđ

vř; ; u dñ mřs ; %

Hkřr ea eřgykvla dh LFkř ds vř; ; u dñ mřs ; fuEřyř[kř rř; kř Ĥř vř/křj gř%

- bl vř; ; u ds vř/kř Ĥř Hkřr ea eřgykvla dh LFkř dk rř; Ĥř fo'yřk kř fd; k x; k gđ
- ořkřu vř; ; u ds vř/kř Ĥř Hkřr ea eřgykvla ds l kř vř; křj dh LFkř dk vřkřu fd; k x; k gđ

vř; ; u Ĥřř %

; g 'křk vřyřk eř; : i l s o. kř , oaf o'yřk. křRed , oaf , řřkř l d vřkřpukřRed vř; ; u Ĥřř Ĥř vř/křj gđ ořkřu vř; ; u Hkřr ea eřgykvla dh LFkř ds fořk Ĥř {kř ds vřkřk. l l kř/kr gř vř%; g 'křk vřyřk eř; : i l s řř; d l kř Ĥř vř/křj gđ bl vř; ; u ds fy, eř vř; ; u l kř Ĥřř = & Ĥřř = dñvř , oaf křkř rřk fořkku vřkř; kř řjk l E křnř Ĥřřdñ řjk fy; k gđ

l křkřfud vř/kdj , oavřkř & Hkřrř; l kř/křu l Hkh Hkřrř; eřgykvla ds l eku vř/kdj] jkt; řjk dñkř HkřHkř uřh dñs vř l j dh l eukř l eku dk; Z ds fy, l eku ořu dh xřjVh nřk gđ bl ds vřkř; g eřgykvla , oaf cPpka ds Ĥř e j kř; řjk fořkř Ĥř/křu cuk, tkrh dh vuřř nřk gđ eřgykvla dh xřjek ds fy, vřkřud Ĥřřkřvla dk Ĥřř; kř dñs vř l kř gh dñ dh mřř , oaf ekuh; Ĥřř LFkř; kř Ĥřř[kř dñs Ĥřř l gř; kř ds fy, jkt; řjk Ĥř/křu dñs řřkř dñs dh vuřř nřk gđ



le; & le; ij efgyk, a viuh cgrjhdj.k grq l f0; rk l s vko kt mBkrh jgh gsf t l dh i n k z i Fkk fo/kok
fookg rhu rykdj gytyk o vl; bl dh cluxh gA vkt l epk Hkkjr gj l Hko rjhds l s l ekt dh l Hk
cguj cSV; ka dh fgOktr pigrk gA , d dne vlx s c<ej Hkkjr ljdkj us l u- 2001 dks efgyk
l 'kDrhdj.k o'kz ?kS'kr fd; k Fkk vlg l 'kDrhdj.k dh jk'Vh; uhr Hk l u-2001 eagh ikfjr dh Fkha

,fmg l d Lo.Mkj %

- vktkn Hkkjr ea l jkStuh uk; Mw l a 0r insk dh igyh efgyk jkT; iky cuhA
- l u 1951 ea MDdu , ; jost dh ie ekFkj i Fke Hkkjr; efgyk 0; ol kf; d ik; yV cuhA
- l u-1959 ea vluk pk.Mh d j y mPp U; k; ky; dh igyh efgyk t t cuhA
- l u-1963 ea l prk di ykuh igyh efgyk eF; ea h mUkj insk dh cuhA
- l u-1966 ea deynsh pdi l /; k; dks l epk; urRo ds fy, jæu ex l s vko MZ fn; k x; ka
- l u-19966 ea bñjk xlkH Hkkjr dh igyh efgyk i /kuea h cuhA
- l u-1972 ea fdj.k onh Hkkjr; i f y l l ok ea Hkrh gkus okyh igyh efgyk cuhA
- l u-1979 ea enj Vj skk ukcy 'kfr i j ldkj i kus okyh igyh efgyk Fkha
- o'kz 1997 ea dYi uk pkoyk igyh efgyk varfj (k ; k=h cuhA
- o'kz 2007 ea i fr Hk nsh fl g i kfVy i Fke efgyk jk'Vfr cuhA
- l ky 2009 ea ehjk dèkj ykd l Hk dh igyh efgyk v/; (k cuhA
- l ky 2017 ea fuey k l h rje.k igyh i m k d kfyd efgyk j (kuea h cuhA

l ekftd l eyyrk grq cnysr Hkkjr ea efgyk vka dh l k jrk nj yxkrkj c<rh tk jgh gS i j r q
i q "k l k jrk nj l s v c Hk de gh gA yMelka dh rgyuk ea cgr de yMfd; kagh l d y ea n k f [kyk ysrh gS
vlg muea l s d b z c h p l s gh viuh i < kbZ N M + n r h gA n l j h r Q j 'kgjh Hkkjr ea ; g v k d M k l a r k s k t u d gA
yMfd; ka f'k {k d s e k y s e a y M e l k a d k s y x l k x c j k c j p y j g h gA , d l c y j k 'V a c u k u s d s f y , e f g y k v k a d h
f'k {k , o a m u d h l f 0 ; H k k x n k j h v f r v k o ' d gS b l f y , g e l c d s e f g y k f'k {k i j f o ' k s / ; k u n s k p k f g , A

Je'kDr ea Hkxh jh %

vke /k j , k k d s f o i j h r e f g y k v k a d k , d c M k r c d k d e d k t h gA 'kgjh Hkkjr ea efgyk Jfedka dh , d c M k
r k n k r e k s t m gA l k Q V o s j m l o x e a 30 Q h l n h e f g y k d e p k j h gA i k f J f e d , o a d k ; L F k y d s e k y s e a
i q "k l g d f e z k a d s l k f k c j k c j h i j gA d f'k , o a l c k / k r { k s k a e a d y e f g y k J f e d k a d k s v f / k d r e 89-50
Q h l n h j s t x k j f n ; k gA O k l Z e x t h u d h l p h e a t x g c u k u s o k y h n l s H k k j r h ; e f g y k y f y r k x l r s v l g
d Y i u k e l j i k f j ; k H k j r d s n l j s l c l s c M a c i d v k b D l h o v k b D l h o v k b D d k s l p k f y r d j r h gA

efgyk vka d s o :) v i j k k %

i f y l f j d k M Z d k s n f k a r k s e f g y k v k a d s f o :) H k k j r e a , d c M k v k d M k f e y r k gS t k s g e l c d k a
f p r u d j u s i j e t c j d j r k gA ; k a m r i h M e u n g s t i r k M e u k c y f o o k g d u ; k H a k g R ; k j x H k k r e f g y k
r l d j h o v l ; m r i h M e u d s v k d M a f n u i f r n u c < f s g q f n [k b z n s j g s gA o'kz 1997 e a l o k ; U ; k ; k y y ; u s
; k a m r i h M e u d s f [k y k Q , d f o l r r f n ' k k f u n k t k j h f d ; k F k k A , d f j i k z d s e p k f c d n f u ; k H k j e a g k u s
o k y s c y f o o k g a d k 40 i f r ' k r v d s y s H k k j r e a g k r k gA H a k g R ; k d s e s t j b l i j i f r c a k y x k u s d k
l j k g u h ; d k ; Z H k k j r l j d k j u s f d ; k v l g ? k j s y w f g d k i j j k d F k k e d s f y , 26 v D V a j 2006 e a e f g y k l j { k . k
, D V H k y k ; k A v H k g y e a g h 22 v x l r 2017 e a l o k ; U ; k ; k y ; d h i k p t t l a o k y a c p u s r h u r y k d
t s h d j h r ; k a i j i f r c a k y x k d j e f l y e l e k t d k s , d u b z f n ' k k i n k u d h A

fu" d " k %

L = h l j { k k v l g l e r k e a m B k ; k x ; k g e l k j i R ; d d n e f d l h u f d l h g n r d f l = ; k a d h n ' k k l a k j u s e a
d k j x j l k f r g l s j g k gS b l e a d k b z n l g k ; u g h f d r q l k e k f t d l a k j d h x f r b r u h / k h e h g s f d b l d s
; F k k s j r i f j . k k e l i " V : i l s l k e u s u g h a v k i k r a g e a v l g H k n r x f r l s b l { k s e a t u & t l x f r v l g f'k {k
i g p k u s d k d k ; Z d j u s d h v k o ' ; d r k gA f'k {k l H k n k l k k a l s N l y d k j k f n y k u s d k v k / k j H a r l k / k u gA , d
f'k {k r L = h u d o y v i u k c f y d i f j o k j d h r h u i h f < + k a d k l o r k k n z d Y ; k k d j l d r h gA b l f y , f'k {k
d k s d h n z c u k d j r F k l e f o r l k / k u v l g d k u u d k i k y u l q h f ' p r d j d s n s k d s e f g y k v i j k k e d r c u k ; k
t k l d r k gA e f g y k v k a d s c g r j h d j . k d s f y , g e l c d s v i u h d r l r , o a : f < o k n h e k u f l d r k l s c k g j
f u d y u k g x x A m l g a l e e k u d s l k f k & l k f f'k {k 0 ; o l k ; j u k d j h o v l ; l H k l F k k u a i j c j k c j h n s k g l o k A



xlg ryc gsf d Hkjr; efgykvl us jk"V" dh ixfr ea viuk vf/kd/fkd ; lxnu ndj jk"V" dks f'k[kj ij
igpkus grq l nð rrij jgh gA l p i nks rks ukjh 'kfr gh l kftd /hjh vlg ge l cdk okLrfod vk/kkj
gA efgykvl dsmRfku ds fy, ljdkj jkjk pykbz tk jgh ufr; ka ea i wZ l g; lx ndj ml dks i fj. kke rd
igpkuk gkxkA ; xuk; d , oajk"V" fuelrk Lokh foodkum th us dgk Flk & tks tkfr ukfj; ka dk l Eeku
djuk ugh tkurh og u rks vrhr ea mlufrr dj l dhj u vxks mlufrr dj l dxkA gea Hkjr; l ukru
l l dfr ds ^ = uk; Lrq i i ; Urrs jellrs r= nork" /kkj.kk dks l kdkj djrs gq efgykvl dks vxks c<us ea
l nð l g; lx djuk pkfg, A

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POLITICS OF DEFECTIONS IN INDIA: LUST FOR POWER AND MONEY

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Abstract

Defection politics is playing havoc with Indian democracy. Elected representatives of the people changed their political parties to topple the government for the lust of power, money, and fame. They join the political party which is in the position to form the government and bargain for ministerial berths in the government if none of the political party gets a clear cut majority in the election. Changing political parties frequently to gain political gains has weakened the Indian democracy. Haryana is an infamous state in the country known for “Aya Ram and Gaya Ram” due to the defections by a legislator three times within fortnight. After the general election in the states in 1967 in some states none of the political party could not muster a clear majority in the elections. Party affiliations were changed frequently leading to the downfall of the Government. This article is an attempt to highlight the meaning and definition of defections. How the governments were toppled by the defectors for the petty gains and the Constitutional measures to contain the defections. The constitutional amendments could not stop effectively the evil of defections.

Key Words:Amendment, Consensus, Democracy, Desertion, Horse trading, Party Splits.

The modern era is an era of democracy. Political parties are indispensable of democracy. In Parliamentary form of government political parties form the government. Political parties encourage defections to form the government or to topple the government to form a government by another political party. Defections or changing the party affiliation for power, money and fame are weakening the democracy. The word defection means ‘desertion’ ‘abandonment’ ‘running away from duty’. According to Merriam-Webster defection means “conscious abandonment of allegiance or duty”¹In Politics defection has many ramifications like ‘Crossing the floor’ ‘Politics of Opportunism’ ‘Political Turn Coatism’ ‘Politics of Instability’ Etc. In the words of Subhash Kashyap:[2]Unless otherwise stated, the term 'defection' in this study should be understood to mean any change of political label and should include all cases such as: (I) to join another party after deserting the party on whose ticket he was elected (ii) to become independent after resigning the party on whose symbol he was elected or (iii) to join the political party after his election as an independent. Legislators who vote against their party in the Legislature on the basic issue without actually resigning from the party should nonetheless be deemed to be defectors.

1. Merriam-Webster dictionary

2.Subhash C. Kashyap, The Politics of defection (Delhi, 1969), pp. 11-12.



'Defection' means deserting one's party on whose ticket he was elected or after his election as an independent joining the political party. To change the party affiliation either from the opposition to the government side or vice versa.

Defections are not new in democracy. Similar is the case of Indian democracy. Defections are as old as the political parties. In British Parliamentary history the political stalwarts like William Gladstone began his career as a member of Conservative political party but crossed over to Liberal political party. Winston Churchill great Prime Minister of Britain also crossed over from Conservative party to the liberal party. Ramsay Macdonald also changed his parent party. In Australia and New Zealand legislator did not hesitate to shift their loyalty from one party to another party to topple the government.

Politics of Defections in the Indian States after 1967.

When India became independent in 1947 there was one political party the Congress party which fought the freedom movement. Congress party was a party consisting of people from all walks of life. It consists of people of all religions Hindus, Muslims, Sikhs, Parsis, Christians, Jains, and Buddhists. It consists of people of all regions, languages, castes, and cultures. In the first three general elections, Congress secured a two-third majority in the Lok Sabha but in the fourth general election though Congress party secured a majority in the Lok Sabha but the discontentment among the people was increasing due to the corruption in the public life and in the administration, successive failure of the crops accelerated the deepening economic crisis. From 1952 to 1967 there was one Party Dominance System. In almost all the states and the Centre Congress party was the ruling party.

But after the fourth general elections in sixteen out of seventeen³ states in which elections were held Congress could secure a majority in half of the states and with thin majority. But in the eight states in which Congress was not in the majority, there was no single political party that could claim a clear majority. In each state assembly, there were independents MLA's who played a crucial role in the formation of the government and leading to the horse-trading.

Horse trading in Haryana Assembly after Fourth general election in 1967.

In Haryana, the Congress Ministry was brought down by the dissidents who managed large scale defections from the Congress party. It was the first state in which Chief Minister Ship was rewarded to a defector."⁴ In Haryana Congress secured 48 seats out of 81 seats at that time and formed the government and Pt. Bhagwat Dayal Sharma was sworn in as Chief Minister. But within a week Bhagwat Dayal Sharma ministry was defeated in assembly when its nominee for the election of Speakership lost the election.

3. In Nagaland election were not held.

4. Subhash C. Kashyap, the Politics of Power (Delhi, 1974), pp. 158-217.

All the dissidents MLAs from the Congress changed their loyalty from the Congress Party and formed a new Political party Haryana Congress. Haryana Congress newly formed party entered into an alliance with opposition groups and formed United Front to form the government with Rao Birender Singh as their leader. The Rao Birender's ministry could not continue because Ch. Devi Lal was expelled from the United Front who has threatened to topple the Rao Birender's government. Ch. Devi Lal entered into



an agreement with the Congress opposition to get their support if he succeeded to topple the Rao Birender's Ministry. It was the worst time of defections in Haryana that an MLA changed the political party thrice within a fortnight and his name was Gaya Lal and a new term was framed for defections 'Aya Ram Gaya Ram.' Governor of Haryana said that there are defection and counter defections in the Haryana leading to instability of government.

Defections in Uttar Pradesh after Fourth General Election; In Uttar Pradesh Congress party secured 200 seats in the assembly out of 400 seats. Congress party formed the government with the support of some defectors. But after 18 days the government headed by Chief Minister C.B. Gupta fell down because Ch.Charan Singh and his faction defected to the opposition. Charan Singh formed a new party called Jana Congress and formed the government with the support of Samyukta Vidhayak Dal and Charan Singh became the Chief Minister of the coalition government. But the coalition government could not survive and Charan Singh is to resign and President Rule was imposed. Midterm elections were held in the state after one year in February 1969 but none of the party got a clear majority in the assembly. Congress party emerged as the single largest party and Bhartiya Kranti Dal led by Charan Singh emerged as the second-largest party. Again C.B.Gupta formed the government with the support of Independent and Swantra Party MLA. But due the split in the Congress Party in 1969 C.B. Gupta's government could not survive and Ch. Charan Singh become the Chief Minister by managing the fresh defections.

Case of Rajasthan: After the fourth general election in Rajasthan Congress party got 89 seats out of 184 seats of the assembly. The Congress party authorized Mohan Lal Sukhadia to admit the MLAs in the Congress party who are willing to join the Congress party by deserting their parent party. Congress party succeeded in alluring the legislators from other parties to achieve the convincing majority in the assembly. Mohan Lal Sukhadia was sworn in as the Chief Minister of Rajasthan. Sukhadia managed defections and raised the strength of the Congress party 110 from 89 in the assembly. The Sukhadia government provided a stable government in the state by managing the defections. Most of the defectors were given a ministerial berth in the government. The big size of the Sukhadia ministry in Rajasthan proved that "more the defectors wider the Cabinet."

Defections in Punjab Assembly after Fourth General Election;

In Punjab Congress party secured 48 seats out of 104 seats of the seats assembly. Congress did not attempt to form the government. Akali Dal and Jana Sangh formed the coalition government with the support of 53 MLA out of 104 MLAs in the assembly and Gurnam Singh sworn in as the Chief Minister of Punjab. But a few days after the ministry was sworn in defection started and defectors from Congress were admitted and the size of the ministry expanded to 20 ministry to award the defectors. But within nine months the government fell down when Gurman Singh Gill left the United Front with sixteen MLAs. Again Gurman Singh Gill government was formed with the support of the Congress but it did not continue and fell down within nine months. President rule



was imposed and assembly was dissolved. In the mid-term poll the Congress party got 38 seats. Akali Dal secured 43 seats and formed the United front government and Gurnamsingh Gill sworn in as Chief Minister. But the ministry was toppled by Parkash Singh Badal and dissidents and a new government was installed and Parkash Singh Badal was sworn in as Chief Minister. Thus the game of defections created instability of the government in the state.

In West Bengal the defections and counter defections created instability and uncertainty of the survival of the government. In the fourth general elections in the state none of the political party could secure clear cut majority not even the Congress. Congress secured only 127 seats out of 280 seats in the assembly. A group of Congress defectors who formed the Bangla Congress secured 34 seats and formed the coalition government with 14 party United Front and Ajoy Mukherjee became the Chief Minister. Soon dissensions appeared and Ajoy Mukherjee government received a deadly blow when Dr. P.C. Ghosh with 16 MLAs defected from the United Front leading to the loss of majority of the Mukherjee government. The Governor imposed the President rule in the State when Ajoy Mukherjee Chief Minister refused to resign or to convene the session of the assembly hence the assembly is to be dissolved.

The above mentioned cases of defections proved that there was instability of the government in the state and unethical means were adopted to persuade the legislators for defections.

Politics of defections After the Fifth, Sixth and Seventh General Elections.

The politics of defections did not stop even after the 1971, general elections of the Lok-Sabha and in 1972 in some of the states in which Mrs. Indira Gandhi's Congress Party got a massive mandate. In 1973 Nandini Satpathy Government was toppled due to the defections by his industry minister and his supporters to Pragti Party of Biju Patnaik. Similar was the position in Manipur where 10 MLAs left the United Legislature Party formed a new group and joined hands with the Congress and CPI party to topple the government. The same scene was witnessed in Bihar in Feb. 1973 where 15 MLAs belonging to the non Congress parties joined the Congress leading to the down fall of the government.

In 1980 elections of Lok Sabha were held in which Mrs. Gandhi's Congress I Party got a massive mandate due to the down fall of the Janata Party government in the Centre. In Haryana Bhajan Lal who was the Chief Minister of Janata party government left the Janata Party and joined the Congress Party enbloc with 35 MLAs.

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In Himachal Pradesh Chief Minister Shanta Kumar's government of Janata Party reduced to a minority due to the defection of Janata Party MLAs who joined the Congress Party of Mrs. Gandhi and formed the government.

The elected representatives of the people never hesitate to desert their parent party and joining the other party to gain ministerial berth or to become the head of the government. The money, personal jealousies, lust for power led to the downfall of many governments. It created instability of government in the states jeopardizing the



development work. The evil of defections was eroding the roots of democracy. So to contain this evil Anti- Defection law was passed in 1985.

Anti-Defection Law: Fifty-Second Amendment Act, 1985. The aim and objective of the Anti- defection law was to prevent the evil of defections by the legislators in Parliament and state assemblies from one political party to another party and toppling the government and creating instability. A new Tenth Schedule was added in the Constitution. “The provisions of the act provides that the seat of the elected member of Parliament and the state Legislature shall fall vacant; (a) If he voluntarily gives up his membership of such party; or (b) if he votes or abstain from voting in the House contrary to any direction issued by political party to which he belongs to with obtaining the prior permission of his party and such an act has not been condoned by the concerned political party within 15 days from the date of such voting; or (c) If an independent member of the house after his election joins any political party or (d) If a nominated member joins any political party after the expiry of six months from the date he took oath as a member of the House.

The above provisions, will not apply in the following three matters:

- (1) If there is Party split in which 1/3 member of the political party defected and formed a group.
- (2) In case of party merger if two or more political parties decide to merge by a 2/3 members of the party in the legislature.
- (3) In case the speaker/ deputy speaker, chairman/ deputy chairman resigns from the party membership and becomes a non-party man after his election.

Regarding the Disqualification of the members of the house will be decided by the Chairman or the Speaker of the House as the case may be, and his decision will be final. The courts will not have any jurisdiction in such matters.”³

However, the Supreme Court in its verdict said that the decision of the Speaker while acting under the 10th schedule is subject to the judicial review. Thus the implications of the judgment in the case KihotaHollohon V/S Zachilhn& others is that the decision of the Speaker or Presiding officer of the house is under the scrutiny of the courts.

The Anti- Defection Law, 1985 proved futile because it could not effectively control the defections as the act allowed bulk defection and declared individual defection as illegal. Therefore the legislators took undue advantage of the term party split by managing 1/3 members of the party to desert their parent party and form a new group to escape from the provisions of defections.

In Nagaland in 1988 the government fell down because the ruling party 1/3 MLAs defected from the party and formed a new group.

5. 52nd Constitutional Amendment Act, 1985.

In Manipur in 1989 Congress secured 26 seats out of 60 seats of the assembly but six non Congress parties formed a United Legislature front and formed the government and R.K.

Ranbir was sworn in as Chief Minister. R.K.Ranbir managed the defection of seven MLAs from Congress party and but they were declared Unattached following an application from the PCC Chief. Seven other MLAs of the Congress party were disqualified by the Speaker who were conspiring to topple the Ranbir Singh government. Subsequently, three other MLAs were disqualified by the Speaker. They



all challenged their disqualification by the Speaker in the courts. The Supreme Court quashed the decision of the Speaker disqualifying the MLAs.

Anti-Defection Amendment Act, 1985 failed to contain the defection which led to the downfall of the governments and creating instability in the states. Hence it was realized to strengthen the Anti- Defection law contained in the Tenth Schedule of the Constitution.

Hence the **Ninety-First Constitution Amendment Act, 2003** was passed to contain the defection effectively which are managed to get the ministerial berths and other benefits. The act amends article 75, 164 and Tenth Schedule of the Constitution.

In article 75 of the Constitution after clause (1), the following clauses were inserted.

“(1A) The total strength of the Council of Minister including the Prime Minister should not exceed 15% of the total strength of the Lower House of Parliament.

(1B) Any member of Parliament of either House to whichever political party he belongs to if disqualified for being a member of that house under paragraph 2 of the Tenth Schedule shall not be eligible to be appointed as a minister under clause (1) for the whole of the period commencing from the date of his ineligibility till the date on which the term of his office expire or till the date on which he re-elected to any House of Parliament or legislature of a State, whichever is earlier.”

Article 164 of the Constitution was amended and after clause (1) the following provisions were included;

“(1A) The total number of Ministers including Chief Minister, in the Council of Minister in a state shall not exceed 15 % of the total number of the Legislative Assembly of that State. However in the state the strength of the council of ministers and the Chief Minister should not exceed twelve.

“(1B) If any member of the legislative assembly of a state or state legislative Council who is disqualified for being a member of that house under paragraph 2 of the Tenth Schedule shall also be ineligible to be appointed as a minister under clause (1) for the whole of the period commencing from the date of his disqualification or until he is re-elected to any House of Parliament or The legislature of a State, whichever is earlier.

In article 361A of the constitution the following provisions were inserted’

361 B. If a member of a house is disqualified to whichever political party he belongs to under paragraph 2 of the Tenth Schedule shall also be disqualified to hold any political post which is remunerative for the whole of the period commencing from the date of his office as such member would expire or till the date he is re-elected to a House, whichever is earlier.”

6. V.N. Shukla, Constitution of India, Easter Book Agency Lucknow PP 1113-1115

Anti- Defection Act, 2003 could not succeed to stop the defection. Defectors started resigning from the membership of the House to escape disqualification. They assumed ministerial berth and holding the positions of parliamentary secretaries in states. The role of the speaker became dubious to help in forming the government or topping the government. The Anti- defection law did not specify the time limit for the Speaker to decide the defection proceedings which was misused by the Speaker. In Haryana, the chief minister Bhupinder Singh Hooda’s government continued (2009 to 2014) with the support of Haryana Jan Hit Congress of Kuldeep Singh Bhisnoi who defected



immediately from the party and supported. The Speaker did not decide the disqualification case and the Court's decision came after the term of Hooda's Government was over.

In *Keisha Meghachandra Singh vs The Hon'ble Speaker of Manipur* case the Supreme Court said that Speaker should decide the disqualification of the defectors under Tenth Schedule within a "reasonable period". The 'reasonable time means three months' time to decide the disqualification petition in normal circumstances unless there were "exceptional circumstances."

Suggestion to contain the Defections in India:

Despite the Anti- Defection Amendment Act, 1985 and subsequently Anti-Defection Amendment Act, 2003 the evil of defections could not be curbed. The role of the Speaker in deciding the disqualification of the defectors remained biased because he is not above the party politics like the speaker of the House of Commons of British Parliament. The Anti – Defection Amendment Act, 2003 must be strengthened to contain the defection.

Parliament can appoint an independent body to decide the disqualification of the defectors to strengthen the anti-defection law within a reasonable time.

The power to decide the disqualification petition of the defectors should be snatched from the Speaker because he belongs to a particular political party and keeps the interest of his party above hence his role remains biased.

Such legislators who have deserted their party for political gains should not be allowed to hold any ministerial or lucrative office until they are re-elected.

Public awareness must be created to defeat such candidates who create instability of the government.

Political parties must develop some code of conduct to harass such legislators who frequently change their party.

The elected representatives must behave with responsibility before changing their party and toppling the government.

Political parties should not crush the worth of their party members which forced them to leave the party.

Political parties must have intra party democracy in place of party dictatorship. These steps would help to contain political defections.

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THEME OF VULNERABILITY IN MANJU KAPUR'S DIFFICULT DAUGHTERS AND A MARRIED WOMAN

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Abstract

In Indian English Literature, there are a number of woman writers who contributed to the literary field. Many women writers have proved their creativity and versatility by their great works of literature in which they have portrayed the reality of women in the family and society. Manju Kapur is one of them. She used literature as a medium to express her thoughts and revolting ideas against the traditional patriarchal norms. She has given her women a new image of boldness. All her female protagonists are the “new women” (Singh, 35) who belong to the middle class, but challenge the existing socio-cultural patriarchal system. The purpose of this study is to analyse all her widely read novels from *Difficult Daughters* to *the immigrant* with a purpose to explore the present scenario of women's status in the changing Indian society. In this chapter we are going to study Kapur's two novels *Difficult Daughters* and *A Married Woman* in the context of identity crisis. In both the novels we will explore that how the protagonists Virmati and Astha rebel against the male dominance and emerge as new women of Kapur.

Keywords: Manju Kapur, Feminism, Consciousness, Patriarchal, Indian Society, Identity Crisis

Introduction

Difficult Daughters by Manju Kapur is a beautiful moving story which narrates the relationship between a daughter and mother. The story mainly revolves around the three women belonging to three generations – Kasturi, Virmati and Ida. The novel came out in 1998 and won the “Commonwealth Writers prize for the first book (Eurasia) and was a number one best seller in India” (Srivastava, 5). In the novel, we encounter the journey and struggle of Virmati, the female protagonist who tried to be different and dared to defy the lines drawn by the patriarchal society and becomes a difficult daughter as she crossed the threshold. And so did the New Generation Woman, Ida, the daughter of Virmati. Ida never wanted to be like her mother:

“The one thing I had wanted was not to be like my mother. Now she was gone and I stared at the fire that rose from her shriveled body, dry-eyed, leaden, half dead myself, while my relatives clustered around the pyre and wept. (*Difficult Daughter*, 1)

Ms. Kapur presents Ida as her revolting new woman who is not ready to sacrifice her life in the name of so called tradition. She never cares for what people say or think about her. She does not listen even to her mother Virmati if the suggestion is related to “What people will say?” She has witnessed her mother craving for love, honour, value



and almost everything that she deserved. Virmati, the protagonist of the novel wanted to shape her life according to her own way. She suffered a lot throughout her life. She revolted against the age-old norms. She went against her family and married an already married man, the professor. She fought a battle for her basic rights all her life. But she could never get what she desired. She finally succumbed. Now, she wants nothing. She expects nothing from anybody. She has adjusted herself according to the situation, according to the norms of society and tradition. We find how Virmati changed herself from the revolting to the submissive one. She tried to live her life on her own condition and became a difficult daughter. Now, she can easily understand why her mother Kasturi wanted Virmati to be meek and obedient. And now Virmati wants her daughter Ida to be the same. But, Ida refutes the very idea of her mother.

Right at the outset of the novel, what we explore is the death of Virmati. That “She was gone”, and standing near the pyre of her mother, Ida “stared at the fire that rose from her shrivelled body” and remember her mother’s wish. Virmati wanted ‘no shor shaar’ after her death. She wished:

When I die,... I want my body donated. My eyes, my heart, my kidneys, any organ that can be of use. That way someone will value me after I have gone. (ibid, 1)

The above pathetic lines clearly show the agony of a woman, who craved for her self-identity, her value, her worth throughout her life. But, nobody was bothered about all these when she was alive. She was overlooked. She was neglected, she was deceived. She married a man of her choice but ironically she could never get the right of a wife by her husband. She silently waited for her husband’s true love and never revolted against him. Her wish could never be fulfilled. Eventually, she died with the deepest desire in her heart to be a real wife.

This is the reason, Ida did not want to be like her mother. She was a modern woman. She was not ready to sacrifice her individuality in the name of patriarchal norms.

The relation between Virmati and Ida was not very good because Virmati did not understand Ida’s feelings and wanted her to be submissive like herself. Here, Virmati stands out as a perfect example of the representative of those strata of women in an orthodox society who want to see in their daughters, nothing but ‘the duplication of the past’ Kasturi had not understood the feelings of Virmati and now Virmati herself does not understand her daughter Ida’s emotions.

Ida is a divorcee woman. She thought divorce to be better than surrendering her individuality for the sake of saving an unsuccessful marriage. But Virmati did not like her decision and always blamed Ida for this. Ida’s relatives always remind her of the wrong step she had taken. But Ida has nothing to do with whatever her relatives think or say about her. Virmati always tries to persuade Ida to make herself fit into the family channel but all her attempts turn to be futile. She (Ida) refuses to show any signs of intellectual brightness and says:

‘There are other things in life’, she (Ida) told her mother.

‘Like What?’ asked Virmati.

‘Like living’.

‘You mean living only for yourself. You are disappointing you father.’



‘Why is it so important to please him?’ Ida protested to her mother. . . She wanted to please herself sometimes, though by the time she grew up she was not sure what self she had to please. (ibid, 279)

The novel describes two types of Indian women: The first are traditional types of women who are firmly adhered to the age old values and want others also to follow the same. Virmati’s mother Kasturi and Harish’s wife Ganga represent the same class. Kasturi is a traditional woman who spent all her life obeying others. She spent her entire life either working in the kitchen or performing religious rites. She feels that it is her duty to serve the family as a wife and a mother. In the joint family of Lala Diwan Chand, Kasturi lives her life as a silent sufferer. Similarly, the Professor’s wife Ganga is also a passive character. She is illiterate and superstitious woman. She always prays to God so that her house remains be free from evil. Even when her husband remarries Virmati, she does not revolt or oppose, but accepts it as her fate.

The other type of women is what Kapur presents as her ‘new women’ such as Virmati (the protagonist), Shakuntala (Virmati’s cousin) and Swarnalata (Virmati’s friend). They are modern women. They challenged the idea of traditional womanhood. They rejected the proposal of arranged marriage and decided to continue their studies Manju Kapur presents yearning for autonomy and separate identity by her women protagonists in this post modern novel in a traditional thread.

The novel *Difficult Daughters* basically depicts the story of three generations of women : Ida, Virmati and Kasturi. This is a story of a daughter’s journey. back into her mother’s painful part. In the beginning of the novel we wonder, why Ida does not want to be like her mother. This is the question whose answer creates the whole plot of the novel.. One more important thing to be noted is that since beginning we notice that there is a lack of understanding between the mother and the daughter. Either we see the case of Kasturi and Virmati that of Virmati and Ida, there is always a kind of tussle between them.

However, after Virmati’s death Ida wants to know the past of Virmati from different points of view. So, Ida’s exploration of her mother’s life begins with her journey to her maternal home in Amritsar, that was the birthplace of both-Virmati and Ida. And What Ida come to know about her mother was that she was the eldest of her ten siblings and took care of her younger ones as well as the whole household. She was so busy in bearing her responsibilities that she gradually lost interest in studies. Ironically, her mother Kasturi never appreciated Virmati for doing or sharing her duties. Virmati always “yearned for affections, for some sign that she was special”. But nobody in the family was bothered about her cravings.

. . . when she put her head next to the youngest baby., feeding in the mother’s arms, Kasturi would get irritated and push her away. ‘Have you seen to their food-milk clothes-studies?’ . . . ‘I’m just going,’ . . . ‘You know they don’t listen to her’. (ibid, 6-7)

Kasturi compelled her :

You are the eldest. If you don’t see to things, who will? . . . Virmati got up to go, she realized her silliness. (ibid, 7)

Virmati was sixteen when her mother Kasturi conceived for the eleventh time, though unwillingly. But she could not go against the family tradition. She was bound to bear



again. And the child was a girl born on a cold December night. Kasturi was so weak that she had no milk to feed her new born child:

The new born sucked with all her feeble might on her mother's dry breasts, hanging milkless and flabby against her little chest. Kasturi got a new silver feeding-bottle, with an English nipple, something the other children had not needed. The baby developed a bad case of colic, and Virmati often came home from college to high-pitched, frantic screaming.

When Kasturi was finally allowed out of bed, she was still bleeding heavily. She would have to wash the stains on her bed-sheet herself, as the dai had stopped coming. She needed plenty of water, and she worked at the pump in the dark and slippery bathroom furiously, shivering in the cold. . . . Though she knew she should hurry out of the bathroom and lie down till the dizziness grew less, rebellion filled her. Why should she look after her body? Hadn't it made her life wretched enough? (ibid, 9) The above heart rending lines clearly show the pathetic plight of Indian women like Kasturi who are supposed to do their duty unquestioningly. The patriarchal norms never allow them to protest. They are always treated as a machine. And surprisingly follow the tradition. Not only that, they want their daughters too, to follow their footsteps. Kasturi, herself, is unknown with the fact that her sufferings, willing or unwilling, have made her cantankerous and sullen. She is left with no life. At that juncture, Virmati is the one who is responsible for all her ten siblings and the household as well. Virmati performs her duty reluctantly without a single drop of love and affection from her mother's side. Her studies and exams are never important than sewing, knitting, cooking etc. Here we find a similarity between Kasturi and Sona (Home). Sona in *Home* also wants her daughter, Nisha, to be skilled in all the homely chores.

One more important thing that we notice in almost all the novels of Kapur is that the mothers of all the protagonists are always concerned for their daughters' marriage. Be it *Difficult Daughters*, *A Married Woman*, *Home* or *The Immigrant*, the mothers want their daughters to be married in proper tender age. So does Kasturi. But destiny wants something else.

A Married Woman

Kapur's feminist concerns are very clearly visible in all her novels. She portrays her women characters in all their vividness and their whole journey is similar to the straining of caterpillar before its metamorphosis into a butterfly. As the seeds germinating inside the earth's surface have the tendency to move out towards sunlight, so does Ashta in *A Married Woman*. Though born in traditional family she always has tendency to move towards the lights of modernity. Though her prop-roots always keep her tied of imagination, thoughts and deeds make her appears touching the sky.

It is not nature that defines women; it is she who defines herself by dealing with nature on her own account in her emotional life. (Simon de Beauvoir)

Manju Kapur in coherence with this pronouncement creates various situation and atmospheres in which she places her women and explores their existential problems with due regard to their total situations. The protagonist Ashta in *A Married Woman* brilliantly attempts to emerge out of the earth's surface like the long awaiting seed desirous to grow, create shadow, make its life meaningful asserting its own identity. She



is the only child of her parents and 'brought up properly as befits a woman with large supplements of fear' (A *Married Woman*, 1). Like other parents Astha's parents too are burdened with the responsibilities of her education, her character, her health and her marriage'. However none of the parents understood their daughter's centre of interest which was "painting" (Laxmiprasad, 2). Brought up in such environment Astha was a revolting child from the beginning. She hated her mother's over protection and her father's over expectation.

After two unsuccessful love affairs Astha finally got married to a man of her parent's choice – Hemant – a foreign return. Appreciation from her husband in the initial days of her marriage for her poems and sketches made Astha hopeful of a good marriage and a very encouraging husband.

Her life was opening up before her in golden vistas... Astha's heart was full of love as the lake was full of water. (AMH-42)

Thinking of finding her soul mate, Astha completely devoted herself to the role of an ideal wife and "ideal daughter-in-law" (Laxmiprasad, 3). Everything went fine. She felt proud to be the vital part of the family to share all its problems and assure the family member of the possible situations. Astha's marital life was unexpectedly good, "full of love and passion" (ibid, 3) and she felt her husband to be the best person in the whole world. She loved and adored him so much that

She longed to dissolve herself in him, longed to be the sips of water he drank; longed to be morsels of food he swallowed. (46)

Here, we find Astha's condition similar to Jaya in *Roots and Shadows* by Shashi Deshpande. The following passage expresses Jaya's feeling beautifully :

When I look at the mirror, I think of Jayant, when I dress, I think of Jayant, when I undress, I think of him. Always what he wants, what he would like, what would please him... Have I become fluid with no shape, no form of my own? (97)

Both the women's (Astha and Jaya) mental status reveal the psychology of a typical Indian girl for whom a happy marriage happens to be the greatest achievement of life.

But unfortunately, this marital bliss of Astha could not endure for long. As the time passes, the passionate relationship of the newlywed couple becomes dull and monotonous. Her mother suggests her to do some job to avoid boredom. So, teaching was decided to be the most befitting job for a woman like Astha.

The hectic work scheduled of Astha was started now. Her life was filled with activities. She had to prove herself in both the roles – as "a teacher and as a housewife" (ibid, 5). Very actively and successfully she involved herself in various responsibilities demanded in her job. Yet she did not leave her duties towards her family especially towards Hemant. Even after day's exhaustion she does not hesitate to take off his shoes when he comes back home in the evening.

Astha knelt to take off his shoes. She unlaced them, and pulled off his socks, gathering the day's dust in her lap. At that moment she loved Hemant so intensely, that every field stale sweaty that came from his foot was a further nail in the armour of her love (49)



Aastha waits for Hemant, wants to share the problems and experiences related to her job with him. Hemant gives no importance to Aastha's discussion., rather he is busy in his own problems in his job. The resultant is :

She felt cold, drcary, and distanced from him. She had been waiting for him all day, thinking of being together, but nothing of this was reciprocated. (50).

However, life was passing quite well. "Aastha's husband Hemant was an ideal man. For her parents too, he had proved himself as a good and dutiful son-in-law. Even after her father's death, Hemant took all the responsibilities in his hand. Aastha is happy that her husband has very helping and caring attitude towards her mother. Hemant has all respect for woman" (Singh, 39). When Aastha conceives, she fills with pride when Hemant demands for a girl child. She admiringly looks at her when she say :

In America there is no difference between boys and girls. How can this country get anywhere if we go on treating our women this way? (57)

Well, with the birth of Anuradha, there was happiness everywhere. Being a modern father, very actively Heman helped Aastha to nurture the baby girl. Ashta's life become more hectic heer home, her job, Anuradha and Heman. She was trying hard to make her life comfortable and well balanced from each side. And she was almost successful and satisfied in her efforts. that is why, she could not believed her ears when one day, suddenly, Hemant demanded for a boy. Aastha was shocked on Hemant's manly declaration wrapped in emotional overtones :

I want to have my son soon,... I want to be as much a part of his life as Papaji is of mine. (61)

What if she could not give birth to a boy? Hemant's suggestion to try again in that case makes Aastha stunned. She cannot understand the reason of sudden change in Hemant which was proved by his desperation to have a boy.

The boy was finally born and Aastha was officially declared the mother of son. Her 'status rose' in the family. All her tension receded and she felt gratitude. The family is complete at last. But there came a drastic change in Hemant's behaviour towards Aastha. But Aastha stayed calm and restrained herself. Hemant started feeling difference between the boy and the girl. More than that he started belittling Aastha's job too.

What is there in teaching? Hardly a serious job, you just go, take to some children about poems and stories, organise a few clubs, and come back. (68)

He even stopped helping Aastha in taking care of the children saying "It's your job" (Srivastava, 48). It was difficult for Aastha to do her job, manage her household work and taking care of the two children properly. But Hemant had nothing to do with Aastha's difficulties. He suggested Aastha :

Hire somebody to help you, or quit your job. (70)

Hemant was always busy in his own work, his business and his lonely tours to foreign countries. Aastha was left alone. Wherever she tried to indicate something to Hemant, he intensively burst out :



Why are you so childish? I work hard all day, and when I come home, I want to relax. If you are feeling something, tell me. I have no time for all these games. (66)

What Astha wants from Hemant, is neither understood by him and what Hemant gives Astha is nor accepted by her. The only reason was the basic difference between lust and love, between ego and emotion, between sound and silence, between man and woman. Ashta had bear it silently. she gradually realizes that success in marriage demanded slavish conformity, even at the cost of annihilating one's self. And 'silence' is the most common strategy accepted by women for their survived.

Conclusion

Manju Kapur explores the inner chambers of her protagonist Astha's mind in the novel and this exploration reveals the landscapes which are mysterious yet awe-inspiring and going through it, the readers have the sensation of crossing the mysterious lands of coleridge's Kubla Khan. Astha in this novel, wishes to live with dignity, Cheris to create their independent, individual identity but never really aspire to disconnect themselves from the bliss of home. the contradictory and paradoxical consciousness is very much similar to the women protagonists of Shashi Deshpande also who accept the social roles imposed upon them by the tips of their fingers, but once threatened to lose their individuality they loosen their grip over the social roles, get themselves liberated. Manju Kapur as a feminist writer honestly presents the predicament of women in the contemporary world wide society where women are still struggling and suffering in the process of their heroic emancipation.

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'k k j f l g

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ekuo l h; r k f o d k l d s 2 f e f y; u o ' k i m z t c e k u o f' k d k f j; k a d s l e g d s: i e a, d f = r g v k l o g h l s ç o k l d h / k j. k k e k u o d s l k f k t m + x; h; s l e g ? k e l l r q f l s f t u d h v k f f i d v l o'; d r i v k a u s m u d k s, d l f k k u l s n i j s l f k k u d h v l g i y k; u d j u s i j f o o' k f d; k a ç o k l d k r i r i; z e k u o l e n k; d s, d H k S k f y d b d k b z l s n i j h H k S k f y d b d k b z e a ç k - f r d l v k f f i d l l k e f t d, o a l k a - f r d v k f n d k j d k a d s d k j. k l f k k u l a r j. k l s g a f t l e s l e; d s l k f k l k f c n y r h r d u d h l l k e f t d l v k f f i d / k k f e d l l k a - f r d, o a i; k b. k h, i f j o r z u a u s c m k H m e d k f u l k k b z g a i y k; u, d f e f j r ? k v u k g s f t l e s d b z v l u; { l s = t s v k f f i d l l k e f t d l H k S k f y d l l k a - f r d l / k k f e d l d k u u h l j k t u h f r d t u l k a; d h v l g e u l o k f r u d ' k f e y g s f d l h, d f u ' p r f l) k l r d h i g p k u d j u k l H k o u g h g s f t l s i y k; u d k d k j d; k i y k; u d s f y, t o k c n g d g k t k; j D; k i d; g c g v k; k e h d k j d k s d k s x g. k f d; s g g g s v l g g j d { l s = f o' k k e a m u e s f o f f k d u r k H k m i y c / k g s, d l e x z f l) k l r, o a - f v d k s d h v l o'; r k v c H k y x r h g s t k f d i y k; u d s l e x z v k; k e d k l e > u e a l k e g k a

e f; 'k n & ç o k l i y k; u l c g v k; k e l l e x a

i l r l o u k

ekuo v i u s l o l l k o l s ? k e l l r i ç o f u k d k j g k g s v f n d k y l s o g H m e v l g l k / k u a d h l k i s t g r q e g k e f j; k b; q l g v r; k p k j l H k S k f y d i f j l f k f r v l a, o a H k n H k o k s v l e k u r k v l g ç k o f r d ? k v u k v l s d s d k j. k v f l o k m u r t h o u d h v k' k f y, d l f k k u l s n i j s l f k k u t k r k j g k g a t u l f; k ç o l u d k b f r g l m r u k g h ç k p h u, o a f o' o d; k i h j g k g s f t r u k d h e k u o l h; r k v k s d k b f r g l A f o' o d s b f r g l ç e k. k n r s g s f d v k; k a u s e /, f' k; k l s H k j r d h v l g i y k; u f d; k r f k k e /; d k y e a b i y S M r f k k q j k a d s f u o k l h v k l v f y; k r f k k m l k j h v e f j d k d h v l g i y k; u f d; k f k l a l k j d s v f / k d k k n s k s d k b f r g l f o f f k u ç d k j d h i y k; u d h ? k v u k v l s l H k j i m k g s 2 0 1 1 o y m c d i s i y k; u f j i k a z d s v u d k j 2 1 - 5 d j k a m + l s v f / k d y l x v i u s t l e l f k k u d s n s k l s c k j j g r s g s N S S O 2 0 1 0 % d s v u d k j H k j r e a v k l r f j d ç o k l h 3 0 9 f e f y; u d s d j h c g s t k f d 2 0 0 1 d h d y ' k g j h t u l f; k d k 3 0 ç f r' k r g s 1 9 5 1 e a H k j r d h ' k g j h t u l f; k e k = 1 7 ç f r' k r f k h f t l d s 2 0 2 5 e a c < d j 4 2 - 5 ç f r' k r g k u s d s v u e k u g s o s' o d f j i k a z 2 0 2 0 d s v u d k j H k j r d s 1 7 - 5 f e f y; u ç o k l h l a l k j d s v y x v y x n s k s e a f u o k l d j j g g s v l g l a l k j d s v y x v y x n s k s e a f u o k l d j j g ç o k l f; k a d h l f; k 2 7 0 f e f y; u g s t k f d l a l k j d h o r e k u t u l f; k d k 3 - 5 ç f r' k r g s f j i k a z d s v u d k j f i N y s, d n' k d l s l a l k j H k j e a y x k r j i y k; u d r k v k a d h l f; k e a o f i g k r s j g h g a

i y k; u v f l o k ç o k l (M i g r a t i o n) :

ç o k l d k r i r i; z e k u o l e n k; d s, d H k S k f y d b d k b z l s n i j h H k S k f y d b d k b z e a ç k - f r d l v k f f i d l l k e f t d, o a l k a - f r d v k f n d k j d k a d s d k j. k l f k k u l a r j. k l s g a f t l e s l e; d s l k f k l k f c n y r h r d u d h l l k e f t d l v k f f i d / k k f e d l l k a - f r d, o a i; k b. k h, i f j o r z u a u s c m k H m e d k f u l k k b z g a e k u o b f r g l d s v /; u l i v d j r s g s f d e k u o l h; r k f o d k l d s 2 f e f y; u o ' k i m z t c e k u o f' k d k f j; k a d s l e g d s: i e a, d f = r g v k l o g h l s ç o k l d h / k j. k k e k u o d s l k f k t m + x; h; s l e g ? k e l l r q f l s f t u d h v k f f i d v l o'; d r i v k a u s m u d k s, d l f k k u l s n i j s l f k k u d h v l g i y k; u d j u s i j f o o' k f d; k t g k i j v l o'; d r k v u q i v u o j r i y k; u, d l k e k u; ? k v u k d h r j g l e n k; d s t h o u d k v f k k u H k x c u k x; h a v x j g e x l g d j s i k, a s f d i f o h i j e k u o b k j ç k f. k; k a d k v f l r o e k u o l s l k h i m z d k g s e x j i f o h i j e k u o d k f t r u k l o k k m f o d, o a m f p r l f k k u l r j. k v f l o k ç o k l o - i y k; u v u k f n d k y l s v k / k u d l e k t r d g v k g s m r u k l e k k o r i f o h i j f d l h v l u; ç k. k h d k u g h g a ç k p h u d k y e a H k v k l r f j d, o a v l r j r' k v h; ç o k l d h ? k v u k; s ? k f v r g l a r h j g h g s f o' o b f r g l e a - f v M k y u s i j i k r s g s f d v k; k a u s e /, f' k; k l s H k j r d h v l g ç o k l e /; d k y e a f c f v' k, o a q j k a l l h c m k l f; k e a H k j r v k l v f y; k, o a m r j h v e f j d k d h v l g x; s v l g i y k; u d k c m k l r j i j ç k j e k v l g k s c h d j. k, o a v k f f i d f o d k l d s l k f k u s; i e a l k e u s v k; k g s x l g d j s n g k a s f d i y k; u l o b k f y d, o a l k o m k e d ç o d; k d h r j g e k u o, o a l e k t d s l k f k t m k g v k g s t k e k u o b f r g l d s ç k j e k l s v u o j r x f r e k u g s v l g l a l k j d s e k u o l h; r k, o a l e k t e a; g i f o h i j e k u o d s v f l r o d s l k f k p y r k j g o k l k e k u; ' k n e a f d l h, d H k S k f y d l l k a - f r d l s l i k r l f k k; h f u x e u d h ç f o d; k d k i y k; u l s l e k k / k r f d; k t k r k g a ç h, M e k l v u, o a e k a / e l b d y l o d h u s i y k; u d s i f j H k k' k r d j r s g g d g l i y k; u l s r i r i; z H k S k f y d, o a l f k k f u d x r; k r e d r k l s g f t l e s 0; f a f o f' k v v i u s e y H k S k f y d { l s = e a v o l f k k f i r v i u s f u o k l l f k k u e a i f j o r z u d j n r k g s i y k; u d k s, d v l g e i f j o r z u l s l e c l u / k r d j r s g o g h l k e f t d x f r' k h y r k d s 0; k o l k f; d c n y l o a d s l u n i k z e a n k r s g t g k e k u o v f l o k e k u o l e u, d l k a - f r d { l s = l s v l u; = n q j s l k a - f r d { l s = e a t k d j 0; w i r e l f k k; h r i g l s f u o k l d j u k g a c d y s u s b l l u n i k z e a m y y ç k f d; k f d t u k i d d h v f / k d r j ' k f a; k / k e h p k y l s c n y l o y k r h g s v l g t u l f; k d h ç - f r



dkl i f j o r n r d j u s e a t u l i d d h d k j d k s d k l e ; y x r k g s e k u o j k j l m l e > f u ; l e . k , o a o ; o f l e k r r f k k f u ; k f r d k s k y s l s g k u s o k y s n y k o l a d h f n ' k k e a i f j o r u l e h k o g l r k g s r f k k b l d h i f j o r u d h n j d k s h h f u ; i = r , o a / h e k f d ; k t k l d r k g s i j l r i y k ; u t u l i d d h d k j d k s d s f o i j n r d k ; l d j r k g s i y k ; u t u l i d d h d h / h e h c f o ; k e a i f j o r u d j v y i l e ; v l r j k y e a g h f o l n r c n y k o d j u s e a l (k e g s d e l s d e l e ; v l r j k y e a g h y k [k a d h l e ; k e a t u l i ; k d k s , d { k s = l s v l ; = { k s = e a c o k f l r d j d s i y k ; u t u l i ; k d s l e k k l ; l o : i , o a t u l i ; k f o r j . k e a r h o i f j o r u d j u s e a l (k e g l r k g a l a e j k v l i a k j k j b l l u n h z e a b c o k l l e k k l ; : i l s f u o k l l f k k u d k s c n y r s g q , d h k s k f y d b d k b z l s v l ; b d k b z d s f y , h k s k f y d x f r ' h y r k d k c r i d g s h k j r d h t u x . k u k e a i y k ; u d k s n k s e f ; v l r j k y l i ' v f d ; k x ; k g s , d t l e d k l f k k u v f k r z ; f n o ; f a d k t l e d k l f k k u x . k u k d s l f k k u l s f o h k u r k j k r k g s n i j k o ; f a d k f u o k l l f k k u v f k r z ; f n o ; f a d s o r e k u f u o k l d k f i n y k l f k k u x . k u k d s l f k k u l s v y x g a i n j u 1958 u s i y k ; u d k s l i ' v d j r s g q d g k f d l o r a c o k l o g g s f t l e s e u t ; v i u h b p n k u j j v i u k e y f u o k l { k s = n k m e j , d v i j f p r { k s = e a t d j f u o k l d j u s d k s v f l k c f j r g l r k g s ; k o g t k f l e y r k g s f d , d t k u h i g p k u h l e k f t d l a k j l s v i f j p r l e k f t d t x r d h v i j x e u d j r k g a b l r j g e k u o i y k ; u d k e f ; l o k g d e k u o g s t k s v l k u d l e k t d k l c l s v f / k d x f r ' h y , o a f o p k j ' h y c k . k h g s f t l d s o ; o g l j e a l f k j r k u g l o j i f j o r u ' h y r k g s c k l k s d h d s f o k l d s l k f k l k f k c o k l e a h h o f f g l r h g a u x j k e a t u l i ; k o f) d k e f ; d k j . k c k - f r d o f) u g h a c f y d c o k l g s f d l h j k v ' d h t u l i ; k d k s c h k k f o r d j u s o k y e f ; r h u r k o g s t s t l e n j e k ; n j , o a i y k ; u ; k f u t u l i d d h - f v d k s l s i y k ; u d k v r ; r e g r o i n l z l f k k u g s d ; k f d i y k ; u f d l h { k s = d h t u l i ; k d s v i d k j l i p u k l f o r j . k , o a l o : i d k s r h o z x f r l s c h k k f o r d j r h g s t l e n j , o a e k ; n j / h e h , o a i m k l e p k u r x f r l s t u l i ; k d k s c h k k f o r d j r h g s t c f d i y k ; u f o h k u { k s = e a v k f k f d l t u l i d d h l e k f t d l k - f r d c n y k o l a d h , d j k y k d h r j g g a

i y k ; u d s f l) u r l e d k f o ' y k k

j o l l v h u u s b l l u n h z e a l i ' v f d ; k v f / k d r j c o k l l u ; u r e n j h d s g l r s g s f t l e s f l = ; k a d h c g y r k , o a d k j . k v k f k i d v i j x e h . k y l o x s e a c o k l d h v f / k d c o f l k g l r h g s o g h r d f u d h f o d k l d s l k f k l k f k e k u o c o k l d h e k = k e a o f) , o a c o k l v k f k i d r f k k v u k f k i d n k u l a y ; k a l s v f l k c f j r g l r s g s f t l e s v k f k i d y ; v f / k d l o k f j g a j o l l v h u d s l k i k u h l p y u e k m y d s v u q i j f d l h h h v r ; f / k d r h o f f o k y s ' k g j d s f y , m l d s v k l i k l d s { k s = d s y l x c g h c f l e c ; l d j r s g s c o k l d h o t g l s f j a ; k a d h i f r z v f / k d n j o r i z { k s = d s f u o k l ; k a l s g l r h g s u x j k e d h v i j i y k ; u d k ; g o e p y r k j g r k g s t c r d ' k g j d h v i d ' k z k ' k f a d b z p j . k a e a { k s = d s n j o r i z x l p , o a { k s = r d u g h i g p t k r h v f k r f d l h { k s = l s t u l i ; k d k i y k ; u i n k u p e d s v u q i v x l j g l r k g s f t l e s m l g l a u s l k r f u ; e l s d k m y y e k f d ; k g s f t l e s i y k ; u d k l o # i & < p k l n j h c o g - / k j k l p j . k c i & o e j c ; l s t u & c j . k l f o ' k r k , o a v k f k i d g a j . ; y h u s c o k l d k ' x q r o & e . m y ' f n ; k r f k ; g c r k ; k f d n j h d k v f / k d g l a u c o k l d k s g r k l k f r d j r k g s m l g l a u s d g k f d n k ' k g j s d s e ; e a o ; f a ; k a d k c o k l m u d s t u l i ; k d s x q k u o y d k l e k u i k r h , o a m u n k u l a d s c h p v l r j k y v f k r n j h d s o x l d k f o i j n r g l o k c o k l d s b l e k m y d s v u q i f d l h h h l f k k u o - { k s = e a y l o x s d k s v i u h r j Q [h u p u s , o a v k d ' k r d j u s d h { k e r k m l d s l o : i l s v u q i v f / k d g l r h g s r f k k m l l s v f / k d v l r j k y , o a n j h c - e u s i j l u ; u g l r h t k r h g l o c f k e l v ; m v l j k j c o k l d s x # r o k d ' k z k f u ; u d h r j Q / ; k u v k d ' k r f d ; k f t l u s i y k ; u d s x # r o k d ' k z k e k m y d k s , d f n ' k n h a t s d s f t Q u s 1940 e a u ; u r e c k ; u d h r j Q l l r e a d g k n k u l a { k s = d s e e ; v l r j k y f t r u k v f / k d g l o k y l o x s d k s c o k l d s f y , m r u s v f / k d c ; R u d j u s g l a s t c f d e k u o l o h k o l s d e l s d e c ; k l e a l o k e i k u k p g r k g s v f k r n k s { k s = d s e e ; i y k ; u d h e k = k n k u l a { k s = d s v l r j k y d k i f j . k e g n k u l a { k s = d s e e ; v l r j k y f t r u k v f / k d g l o k m r u h v f / k d p u l k r ; k i j d j u s e a m r u k g h v f / k d c ; R u d j u k g l o k f t l l s i y k ; u d h e k m r u h d h d g l a h a l v i m o j 1960 u s b l l u n h z e a e ; o r i z v o l j f l i d r f t l e s c o k l d s c j f e h k d f o l n q , o a y ; f o l n q d s e ; f d l h v l ; d n d s c h k k o l s g s d ; k f d ; f n c h p e a d k b z , d k l f k k u m i y o k g l o t g l c o k l d h l h h v k o ; d r k , a , o a v i d k k k , a c k l r g l s t k ; j b u i f j i ' f k r ; k a e a k u o v l o x o k y d k a e a d h r j Q u g h t k ; x k b l f y , c o t u l e k f t d , o a v f u o k ; l s f t l e s l e k f t d l a b u t l e y r s g a v f k r c o k l f u / k j . k e a j f k h ; v l r j k y d k { k s = h ; i f j l f k r ; k a d h v i f k e g r o l u ; u g l r k g a g s l v m 1967 e k u o i f j l p j . k d s l u n h z e a { k s = h ; v l r f d z k e . m y o ; f a f o ' k s k d k s v l k j e k u r h g s f t l e s m l g l a u s c r k ; k t u l i ; k , d v l k r k ; e y f o l n q / k e a f o h k k f r g l r h g s f t l s d a e v f k o k u h l d g k t k r k g s t k f d v k l e a , d n j l s l s t l e g l r s g s r f k k b u e s v k l l h l p j . k e k s t n j g r k g s i y k ; u d s b l e . m y d s v l r x r e k u o d s x r ; k f e d c o f r d h l e h k o u k d s v u q i g j d o ; f a f o ' k s k d k y ; { k s = o a i f j i ; v y x v y x g l r k g s i j l r d n t u l i ; k l e g l a e a l p j . k d h , d i r k o - f u ; f e r r k g l r h g s f t l l s o ; f a ; k a d s , d f u f ' p r l e ; l e k e a l p u k v l a d i a y s k . d s e k ; e l s , d v k l r l p u k { k s = [k s t k t k l d r k g a

e l c k i t s u s 1970 e a d g k f d , d h k x d h ? v u k l f k r n j j s h k x d h l f k r ; k a d k s c h k k f o r d j r h g s m l g l a u s v i u s f l i d r d s f y , v y h k d s l e k f t d l v k f k i d j k t u r d , o a c h k s d d i ; k b j . k d s v l r x r l o h ; f o y s t & l h v c o k l c . k k y h d s l i ' v f d ; k i ; k b j . k d k v i j v f / k d l i ' v d j r s g q m l g l a u s d g k f d i ; k b j . k o ; k o l k f ; d l e ' k h u d j . k d h c < f h e k = k l o k f ; , o a f ' k k d s f o d k l d k l d k j h ; l s t u k v s e a i f j o r u l m l k e i f j o g u l k u l a d s i f j o r u l a d k i f j . k e c o k l g s r f k k c . k k y o o ; o l f k k , o a i ; k b j . k v k l r v : i l s , d n j d k s c h k k f o r d j r s g a

' k j e k t i z 1969 j k j i y k ; u d k l p y u { k s = f l i d r f t l s c k n e a t u l i d d h { k s = f l i d r d g k x ; k f t l e s m l g l a u s x f r ' h y r k { k s = d s e f ; 6 v o ; o k d k j [k c f k e l i ' k y ' v l f k r f o ; k f t l e s e f ; : i l s e k u o d k f o h k u { k s = i j c i r x e u l e c l h o ; o g l j g s n i j k r r o m l g l a u s v f l k d r i z e k u g s t k s c i r x e u g l a u s o k y o ; f a g s n i j k i k m t l z g s t k f d

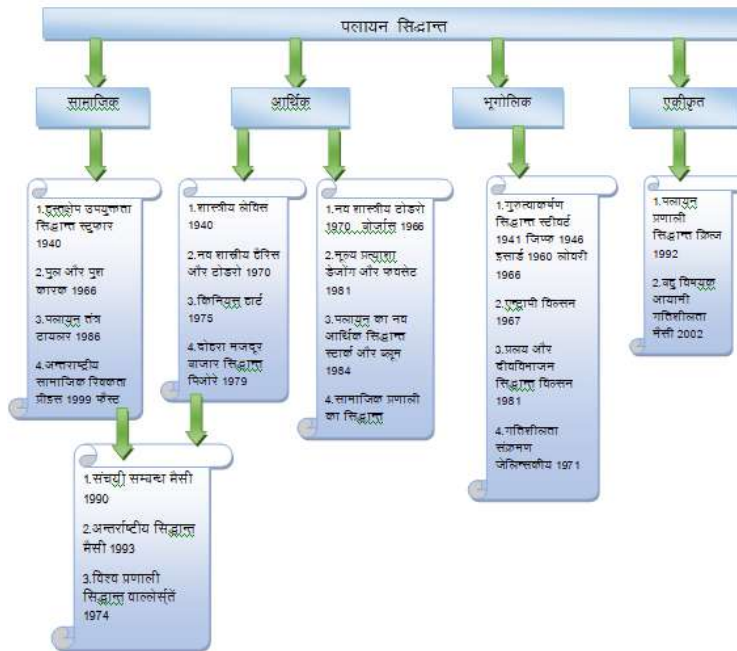


çokl ds fy, mRçjd ,oa0; fä dh vkrfkd jktuhfrd ,oa l kelftd t#jrs dh miyç/krk gspkfk rRo çjd orçh; kfu 0; fä dh vkr; drkvs dh i#z ds fy, fuçr euloKkfud flrfk tks çrxeu ds fy, 0; fä ea {s- dls tkxr djrh gS ipok i {k 'kfä; k; tks LFKuh; l Ecl/ks ea0; fä ds LFKuh; 0; ogkj 'kfä gS; kfu fcl h {s- fo'kK ds l UnHk ea 0; fä ds fo'kV vutko gS vire ,oa NBs rRo ds : i ea ek; e gS vFKkr mRçokl dk ek; e; kfu ifjogu l pjk rfk 0; fä dk thou Lrj vkrk gä yöl 1954 ,oa Obzrfk jöl 1961 us iyk; u dks Li"V djsrq dgk gSfd 1950 ds çln rfk 1960 ds mrjnz ea xteh.k {s-ks l s uxjh {s-ks dh vlg iyk; u dks okNuh; ,oa l dkjRed ?Vuk ds : i ea nç; k x; k gS tkd -f'k etnjk dks vkrfkd {s-ks ea dk; z ds fy, foo'k djrh gä bl h l UnHk ea ,d uo 'kL=h; fl) klr dk tle gvk VMjla 1969 ea iyk; u dsl UnHk ea fl) klr fn; k fti es mlgus Li"V fd; k fd iyk; u dh çf0; k 'kgjh & xteh.k {s-ks ds okLrod ,oa viçkr vk; ds vlür ij fuHj gS iyk; u ds fy, pkj : ila dks çefkr nh gS fti es çfke rRo iyk; u eq; : i l s ykk ,oa ylxr ds vkrfkd /kj.k kkvla l svf/kdre l Ecl/kr gkrk gS exj l kfk ea ; g ,d euKkfud çf0; k Hh gS jnt jk rRo mlgus dgk iyk; u dk fu.kz okLrod xteh.k vk; dh viçkr viçkr vk; ij fuHj djrk gS viçkr vlür nks pjls ds : i ea l Ecl/kr gS okLrod 'kgjh xteh.k vk; dk vlür 'kgjh {s- ea l Qyrkmd jst xkj ds vol j çnku djus dh l Hkkouk ds : i ea mi l Fkr jgrk gS vxj rRo ea gS fd 'kgjs ea jst xkj çlr djus dh l Hkkouk 'kgjh çjst xjh nj ds foijhr jgrh gS pksk rRo gS fd 'kgjs ea jst xkj ds vol j la ds nj ea ofi l su dpy iyk; u cçus dh l Hkkouk gS çfvd 'kgjh xteh.k vk; ds vlür ds : i ea fuçr j l dkjRed gkus dh flFkr ea rdl çr ,oa l Hkfor Hh gä VMjla 'kgjh çjst xjh dks Lohdkj djrk gS rfk Li"V djrk gS fd xteh.k 'kgjh iyk; u dpy mçhn ,oa l Hkko; rk ds vk/kj ij gh ugh gkrk çfvd iyk; udrk dh vlg l s 'kgjs dh flFkr dks vutk dk djus l Hh iyk; u l Hko gS; g fl klr xç vkrfkd iyk; u ds dkj dks vutk dk djrk gä

oViZus 1975 ea iyk; u dk 0; kogkj d eMy dh vo/kj.k dks çfriknr fd; k iyk; u dseut; dh bPNk t: jr ,oa vfkofr dk ifj.kke çrk; k fti es mlgus Li"V fd; k fd ekua dk iyk; u mu rjdhla ea l s ,d gS fti ds jkjk eut; Lo; ds dV; k k %o çibaz dks çlr vfkofr vfkofr djus dk ç; kl djrk gS bl rjg oViZus iyk; u ds fy, ekua ds 0; ogkj dks vfkofr l kfk, ,oa egRo iwk ekua gS os s tul; k ,d çr; Rred rRo gS tks nçk dky ds vut; i çny tkrk gä bl l UnHk ea çk us dgk gS fd çokl l s gh /kjry ij tul; k; k forj.k rf; ijd gS i;k; k gS fti es l kelftd vkrfkd ,oa Hkko çfvd l çBu ekua ds iyk; u dk çfQy gkrk gS ekua jkjk iyk; u ,d çHko 'kryh dkjd ds nç; ij {s- dh tul; k; k of) forj.k ,oa çfQy dks vr; fkd çHko djrk gS iyk; u ,d çgvr; keh ?Vuk gS fti dk ijk, ,oa vijçk çHko vkrfkd fodkl uxjhçj.k tu'kfä forj.k ,oa l kelftd flFkr; ka ,oa mues gkus okys ifjorZla ij iMrk gS ful ung l kelftd vkrfkd vkrfkd ,oa rcfudh fodkl us xteh.k {s-ks dh tul; k; k dks uxjls dh vlg iyk; u djus dks foo'k fd; k gä fQLV vç fQLV 2000 us iyk; u dseut; rhu Hkko l çfç l fclr Lrj ,oa e; e Lrj ea foHkfr D; k gS l çfç Lrj ds iyk; u fl) klr ds vut; k iyk; u dk fu.k; z0; çaxr l UnHk ea tç fd 0; fä dh bPNk vla ,oa vkrfkd vkrfkd ij fuHj djrk gS ogn Lrj ds iyk; u fl) klr ds fu.k; z ds fy, nçk dh vkrfkd l jpuç ,oa ml l s vEcl/kr rRok vç es l s vfkofr e; e Lrj iyk; u ds fl) klr ea ds iyk; u ds fu.k; z nçk Hkko iwk fl) klr l ifjokjd flFkr j l kelftd nk; jk j l kelftd l eç vç i fkd vç l i f; d l epk; ij fuHj djrk gä



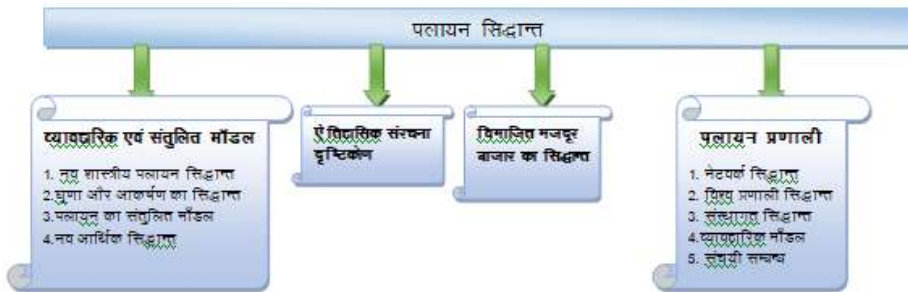
bl ds vyok Hh iyk; u ds dñ fl) krla dk fodkl eq; : i l s vkrfkd l kelftd l kL-frd ,oa Hkko çfvd dkj dks dks /; ku ea j[krsrq gvrk gS; kçd vutkndky l seut; dk ifjoç ml dk vfkdu Hkko jgk gä



गु 2008 }kj k i y k ; u f l) k l r l a d k s n k s m i h k x k l a e a f o h k f t r f d ; k x ; k g s i y k ; u d k c k j e h k v k s i y k ; u d k L F k k ; h d j . k b u f l) l a r k s d k f o ' y s k . k e s h 1993 }kj k f d ; k x ; k ; g f l) k l r c f k e c d k j e a i y k ; u d s d k j d k s i j v k / k f j r g s , o a n d j s c d k j e a l e n k ; d s i y k ; u i j v k / k f j r g A d j d l o k 2011 }kj k e s h d s f l) k l r d s l e k a r j f l) k l r n r s g s d j d l o k e d ; : i l s i y k ; u d s f l) l a r l a d k s n k s o x l a e a j [k r s g s c f k e i y k ; u d s f u / k j d , o a n l j k i y k ; u d k L F k k ; h d j . k A ; g o x h b j . k f o ' k ; d s f o ' y s k . k i j v k / k f j r g s f t l e s u o ' k k L = h ; f l) k l r j e k u o i n t h f l) k l r j u o h u v f k z k k L = h ; f l) k l r j f o ' o 0 ; o L F k k f l) k l r v k s n k j i h e t n j c k t k j o k n f l) k l r i y k ; u d s f u / k j d f l) k l r d s v l r x h o x l a - r g s o g h i y k ; u 0 ; o L F k k f l) k l r v k s v a r j j k ' V h ; i y k ; u j i y k ; u d s L F k k ; h d j . k d k s e k u r s g A



गर्भ 2014 } क्क 210ha l nh ds i yk; u c f0; k ds fof' k'v fl) kark dh vlg /; ku vkdf'k'z fcl; k mlgk'us fl) kark dks
pkj Hkxks ea oxh-r fd; k c fke 0; kogfjd , oalrfyr ijeijlcr} nh jk , krgkfl d l jipuk -f'v dks k} rhl jk [kf. Mr
etnj cktkj fl) klr , oaprfkz i yk; u c. kkyh fl) klr bu fl) kark dks oru v fkok vk; fofklurk} vlrfyr etnj
cktkj elax , oalrfz ds e/; etnjks dh {ks-h; vl keurk} vkfklz} l k-fr} ijeijlcr 0; ol k; } ck; rk} vkfklz
Hkxk} yd j. k vlg 0; faxr dkjd l pkyr d jrs g



i yk; u ds fl) kark dh tc ckr gksgjh gsl Hk fl) klr , d n d j s l f d l h u f d l h : i l s t m s g s , o a v l r j k z v h ; L r j
i j i yk; u ds fl) k l r k e a d b l z , d f u f ' p r : i l s l i " v : i l s i w k z u g h g s f t l o t g l s c o k l d h v o / k j . k , d
t f v y c f 0 ; k c u x ; h g s n i j h v l g i yk; u , d f e f j r ? k v u k g s f t l e s d b z v l ; { k s = t s v k f k l z } l k e k f t d H k k f y d j
l k l - f r d j / k k f e d j d k u u h j k t u h f r d t u l k a [; d h v l g e u k o k k f u d ' k k f e y g s b l r j g f o ' o l r j i j i yk; u d s d b z
f o f k l u c d k j d s l e x z f l) k l r e k s t m g s t k f d f o ' o l r j i j g l u s o k y s c o k l d k l e > u s e a H k e d k j [k r s g a
f u ' d ' v & i yk; u d b l z , d f u f ' p r d k j d v k / k f j r , o a f u f ' p r i f j . k k e v k / k f j r ? k v u k u g h g s c f y d b l e s e k u o t h o u
, o a { k s = l s t m s v u d s f o f k l u i g y q g s f t l e s e k u o t h o u l s t m s d b z v l ; { k s = t s v k f k l z } l k e k f t d H k k f y d j l k l -
f r d j / k k f e d j d k u u h j k t u h f r d t u l k a [; d h v l g e u k o k k f u d H k ' k k f e y g s t k s i yk; u d k t l e n r s g s b l f y , f d l h
, d f u f ' p r f l) k l r d h i g p k u d j u k l H k o u g h g s f t l s i yk; u d k d k j d ; k i yk; u d s f y , t o k c n g d g k t k ; s
D ; k f d ; g c g v k ; k e h d k j d k s x g . k f d ; s g q g s v l g g j d { k s = f o ' k s e a m u e s f o f k l u r k H k m i y c / k g s d n f l) k l r
b l v l g v f k d ' k k k d k s f n ' k f u n k ' k r d j r s g s f d i yk; u d s d k j . k D ; k g s i yk; u g l u s o k y s { k s = e a l q o / k v k s d k s
f l f k f r D ; k g s , o a f o d k l d h f l f k f r D ; k g s t k f g j r l g i j n f k u s d k s f e y r k g s f d i yk; u d s f o f k l u f l) k l r i yk; u d k s
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ROLE OF REVERSE MIGRATION IN PRESENT ECONOMY SHUT DOWN LABOUR DEFICITS - WITH EFFECT TO DOWN WARD ECONOMY

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Abstract:

With the effect of virtual shut down of one of the world's biggest economies and the resulting labour deficits caused due to the quarantine measures, there has been a negative impact on the production and shipping worldwide. Thus, companies are increasingly seeking to identify alternatives and opening up competitive production markets in countries. Startups it seems to be a long road to recovery. Now this startup space is turning out to be one of the major causalities of the pandemic. Start-ups need to go back to the past and strengthen their minimum viable product (MVP) as those with strong MVP will power to survive from this Pandemic Covid 19 and won't rely on only funding which is unnatural. Such crisis tests of these business models, will moreover, revival in investment of mind set in another three months has gone away. Covid is changing the expectation of returns for investors. They think that the cost of production is more than the profit. So this Covid 19 pandemic situation brings in mind that as many companies have shut down due to the scarcity of labourers but this is not only the reason but the scarcity of resources, raw materials, stopping of import has led to shut down process for temporarily or permanently but when we have this severe situation of this effect of down ward economy we have to move or search towards some alternative diversion methods of production, we must try to grab the opportunities which we have, So why can't we adopt the policy of our governments last long announced by our Prime Minister Narendra Modi the concept on Make in India taken into action and thus by this ideology we have to come up with his next continued concept of Start-up India so, in this present scenario, India our country should come up again with Start-up Strategies. Recently already many SME 'S have come up with this start up strategy.

Keywords: Labour deficits, Phases of Lock down, Reverse migration, Economic package, start-ups, Make in India, Recession

INTRODUCTION:

Today with the effect of virtual shut down of one of the world's biggest economies and the resulting labour deficits caused due to the quarantine measures, there has been a negative impact on the production and shipping worldwide. Thus, companies are increasingly seeking to identify the alternatives and opening up competitive production markets in countries like Indonesia, Malaysia, Mexico, and India.



While MSMEs may benefit from the relief package announced by the Finance Minister Nirmala Sitharaman to cope up with Covid impact, for startups it seems to be a long road to recovery. Now this startup space is turning out to be one of the major casualties of the pandemic based report as around 40 per cent of businesses are about to shut down or have already halted their operations temporarily while a whopping 70 per cent have their survival at stake with less than three months of runway left. Moreover, revenues are squeezed for 90 per cent of over 250 start-ups surveyed by Nasscom in the month of April this year.

“Start-ups need to go back to the past and strengthen their minimum viable product (MVP) as those with strong MVP will power to survive from this Pandemic Covid 19 and won't rely on only funding which is unnatural. Such crisis tests of these business models, will moreover, revival in investment of mind set in another three months has gone away. Covid is changing the expectation of returns for investors. They think that the cost of production is more than the profit. The pressure is on investors to pick bests carefully where return of investment is multiple may be very high as their limited partners will chase them for how well they are investing their money, where this was mentioned by Debabrata Mishra, independent start up advisor and former partner at Deloitte India told Financial Express Online. So this Covid 19 pandemic situation brings in mind that as many companies have shut down due to the scarcity of labourers but this is not only the reason but the scarcity of resources, raw materials, stopping of import has led to shut down process for temporarily or permanently but when we have this severe situation of this effect of downward economy we have to move or search towards some alternative diversion methods of production, we must try to grab the opportunities which we have, So why can't we adopt the policy of our governments last long announced by our Prime Minister Narendra Modi the concept of Make in India taken into action and thus by this ideology we have to come up with his next continued concept of Start-up India so, in this present scenario, India our country should come up again with Start-up Strategies. Recently already many SME 'S have come up with this start up strategy. But how many more have been implemented this is our question.

The big cities once an attractive destination for workers from poor rural regions.... have been hit by reverse migration as millions of labourers flee back to their far flung home villages, some uncertain if they will ever return. So because of this condition most of the big industries and factories have been temporarily or permanently gone through the decision of shut down process. The main reason is they are fully dependent on this unorganised sector people or labourers. So this is indirectly got effect to our Indian economic condition. By this we come to know that 90% of our economy is the part of labourers and only 10% is dependent on organised sector. And we have to facilitate those people for their basic needs, mediation, insure and safe security in their life. Counselling their psychology stress emotional we need to create self confidence in them. If we support these labourers then our falling growth of economy may be recovered, through this way of upliftment and encouragement. But this not a simple task, but it is complicated and a risky job too.

Socio-Economic Impacts Already, the global COVID-19 pandemic has led to severe economic and labour market shocks. With an estimated rise between 5.3 and 24.7



million in the number of those unemployed globally, the impact on youth employment is likely to be severe given that youth (15-24) are already 3 times more likely to be unemployed than adults. Furthermore, COVID-19-related shocks to the labour market are likely to impact the quality of jobs for young people, be it in the form of zero-hour contracts, informal employment, etc. Such forms of employment are markedly more common among youth as 77 percent of employed young people hold informal jobs while 126 million are extreme and moderate working poor worldwide. Importantly, the impact on the quality and quantity of jobs will likely disproportionately affect young people engaged in the service sector and/or performing manual routine jobs. Young people with these jobs are also at risk for experiencing heightened health-related hazards because they cannot work remotely.

Another type of reverse migration is that we can stress here is on international migrants also. Their condition is worse compared to internal reverse migration. Area of impact is more on young migrants and refugees. Given 70 percent of all international migrants are below 30 years of age globally and in 2019, 38 million international migrants were below the age of 20 years, epidemics such as COVID-19 are likely to disproportionately affect this population. Furthermore, out of about 100 countries affected by COVID-19, 34 have a refugee population of more than 20,000 who are at very high risk¹¹ as they often live in precarious living conditions. This group gets left behind in the provision of healthcare when national systems' capacities are overstretched due to COVID-19. There is also a risk COVID-19 may further stigmatize migrants and refugees or increase xenophobia and racism, which in turn may further affect the ability of young migrants and refugees to receive healthcare and maintain their livelihoods.

REVIEW OF LITERATURE:

Sanjeev Kharbande, a senior executive with **Aqualite Industries** who owns the footwear in Haryana tells that, “60% of our labourers have gone back. How can we run a production unit with just one third of our workforce?”

He tells that company's sports shoe unit had been sitting idle as there were no skilled workers to operate the high tech machines. He further also tells that by this **reverse migration** of labourers we are running just one shift now. The cost of production has gone up and our profits are going down; he said a conveyor belt carrying semi finished flip-flops running slowly in the background.

In Gujarat state's Surat city where 90 percent of the world's diamond are cut and polishedmany factories have been unable to open after more than two-thirds of worker's fled, **Surat diamond association President Khathuja**, also tells that this pandemic conditions of Covid -19 has created a lot of problems and has given large effect on the Indian Economy.

Meanwhile, the **state's salt refineries** have started doubling salaries to lure staff back. But the experts says that the workers may not return at any time soon.

A lot of the manufacturing industry is actually located in the very states where the pandemic impact has been great (such as) Tamil nadu, Gujarat, Maharashtra, Delhi, “Professor Santhosh Mehrotra at Jawaharlal Nehru University told AFP.

“Now these are the areas where naturally workers have left in large numbers.....they will not return in a hurry”.



There are an estimation that 100 million migrant workersnearly a fifth of the labour force and contributing to an estimated 10 percent of GDP..... across the nation of 1.3 billion people.

Many are employed as cheap labour across a vast range of sectors including textiles, construction, mines and small businesses.

But when the lockdown was suddenly imposed by the Government, many found themselves almost immediately out of a job and unable to pay rent.

Without public transport after interstate trains and buses were halted, some embarked on long journey's home on foot in the scorching heat, with around 200 dying from exhaustion or accidents according to the **Non-Profit Save Life Foundation**. The Government eventually organised special train services to take million standard in cities back to their home states.

Experts say Indian economy... Asia's third-biggest and already stuttering before the pandemic will be badly hit in the short term at a minimum by the lack of workers. According to them it is the economy in forecast to grow at its slowest pace in 11 years, and analysts are bracing for a severe contraction in the current quarter.

The Government has announced a 20 trillion rupee(\$266 Billion) stimulus package but observers do not expect much of a boost, at least not in the short term, while there are fears, the exodus of migrant workers may have set the economy back by 15 years. Their departure itself has been traumatic. They have gone through many indignities said **Mehrotra**.

Some of them may come back, but many of them will look for work not in metro cities but in small towns close by which are less impacted by the virus."

But it is unclear if they will find jobs back home, with the rural economy already in distress owing to low crop prices and yields.

Labourers,

But Mohammed Naseem Aktar, who lost his job as a worker at an export house in New Delhi, told AFP he was willing to take the risk. "I had no work for two months here and I faced a lot of problem," the 21 year old said as he queued upto register for a train seat.

He told, "The disease is showing no sign of a let-up. Now I just want to be with my family in the village."

(a) The scheme for Remission of Duties or Taxes on Export Product (RoDTEP) that which will replace the Merchandise Exports from India Scheme (MEIS) for reimbursement of taxes and duties for export promotion. Accordingly, textiles and all other sectors now which currently enjoy incentives up to 2% over MEIS will transit into RoDTEP. In effect, RoDTEP will get more than adequately incentivize exporters than existing schemes put together, as per the Government.

(b) The SEZ Act has been amended in such a way that any trust or entity notified by the Central Government will be eligible to be considered for grant of permission to set up a unit in SEZ.

(c) RBI's enhanced sanctioned limit will be eligible under priority sector lending norms. The limit has been raised from INR 25 crore to INR 40 crore per borrower. Furthermore,



the existing criterion of 'units having turnover of up to INR 100 crore' has been removed.

(d) Expansion of the scope of the Export Credit Insurance Scheme (ECIS) by the Export Credit Guarantee Corporation (ECGC) to offer higher insurance cover to banks that lend working capital for exports. This will enable a reduction in the overall cost of export credit, including interest rates, especially to MSMEs.

(e) The Government has also approved the Sugar export policy for the evacuation of surplus stocks of sugar during sugar season 2019-20. This move shall involve providing a lump sum export subsidy at the rate of INR 10,448 per Metric Tonne (MT) to sugar mills for the sugar season 2019-20. According to the Survey, the total estimated expenditure of about INR 6,268 crore will be incurred for this purpose.

(f) For enabling the handicrafts industry to harness e-commerce for exports effectively, mass enrolment of artisans across India shall be effected in collaboration with the Ministry of Textiles.

Unfettered by the rising COVID-19 cases in the country, the Cabinet Committee on Economic Affairs has approved the RoDTEP scheme thus, paving the way for introducing the scheme to reimburse taxes, duties, or levies at the Central, State or local level. The export entities are currently not being refunded under any other mechanism but are incurred in the process of manufacture and distribution of exported products. These include, amongst others, VAT on fuel used in transportation, Mandi tax, duty on electricity used during manufacturing, etc. This scheme intends to provide a level playing field to the Indian producers in the international market, thereby giving the much-required impetus to the growth of our domestic industry.

In line with 'Digital India,' refund, as a percentage of the Freight on Board value of exports, would be granted in the form of transferable duty credit or electronic scrip, which would be maintained in an electronic ledger. In this regard, the Government has proposed to amend the provisions of Customs Act 1962 through the Finance Bill 2020. As per the said amendment, duty credit shall be issued –

(i) in lieu of remission of duty or tax or levy chargeable on any material used in the manufacture or processing of goods or for carrying out any operation on such goods in India that are exported; or

(ii) in lieu of such other financial benefit subject to conditions and restrictions as may be specified.

While the manner of issuance of such duty credit shall be notified in due course, the same shall be maintained in the Customs Automated System in the form of an electronic duty credit ledger of the recipient. Such duty credit can be utilized by the person to whom it is issued or to whom it has been transferred, for payment of customs duties.

According to the Clothing Manufacturers' Association of India (CMAI),

China's coronavirus shutdown would also affect the Indian textile and apparel industry. The prevailing situation in China along with the uncertainty of production commencing is posing a major issue for Indian manufacturers who are dependent on supply of raw materials from China. Meanwhile global apparel brands will have to look at alternate manufacturing destinations such as India.

Excess capacity prompts Northern India spinning mills to shut down once a week



Aug 11, 2015.

In this review we come to know that because of this current pandemic situation the Textile spinning mills of the Northern India Textile Mills' Association (NITMA) are considering cutting back production and shutting down their mills once a week against the current trend of operating a mill 24x7.

It also creates a situation of decision making during shut down the decision to take this extreme step has come in the wake of domestic excess spinning capacity in the country and poor demand for yarn from overseas markets leading to accumulation of yarn stocks and poor liquidity. Sharad Jaipuria, President of NITMA, said, "States like Madhya Pradesh, Gujarat, Maharashtra, Rajasthan, Andhra Pradesh and Telangana are attracting new investments in spinning due to their new Textile Policy, which is loaded with incentives and sops and thereby adding more than required capacity in. On the other hand, China which was a major importer of Indian yarns for the past few years, has cut-down imports in the past few months, thus worsening the situation, leading to accumulation of yarn stocks in Indian spinning mills," Jaipuria observed. HS Cheema, Senior Vice President, NITMA, stated, "The spinning industry is under crisis and the situation is moving from bad to worse and spinners are making losses. We are therefore considering various options to reduce our daily production, including closing the plant for one day in a week." Additionally, to add to the woes of the textile mills, TUFS reimbursements are pending for cleared cases from the July-September 2014 quarter. The government has also reduced allocation for TUFS from Rs 1,864 crore to Rs 1,520 crore in the 2015-16 budget.

Sanjay Garg, President, NITMA, said that this looming crisis has come as a double whammy to the already encumbered textiles sector while its cumulative growth in Textiles Production (IIP) for April 2019 - January 2020 was down by (-) 2.1 per cent and Exports of Textiles for April 2019- Feb. 2020 was down by (-) 5.29 per cent.

According to this review of Textile, engineering, leather and infrastructure clusters of Tirupur, Coimbatore, Kanpur and Durgapur are among the top industries pumping additional investments into their businesses by taking advantage of the government's Rs 3 lakh crore Emergency Credit Line Guarantee Scheme (ECLGS) for meeting the liquidity needs of industries during the COVID-19 crisis. Of the Rs 599.12 crore loans disbursed by public sector banks to micro, small and medium enterprises (MSMEs) under the scheme, the four industrial clusters have taken the lions share of the money at about Rs 360 crore.

Another review of mine tells like that coronavirus impact: once pandemic ends, businesses may take 6 months to get up and running normally, says CFO survey published Monday, March 23 2020m, 10:47 am ed updated Mon, Mar 23 2020, 2:31 pm ed

Next one says like this with around 9,300 technology startups, India is home to the third-largest technology start up which come up with ecosystem globally employing around 4 lakh people. However, with this Covid outbreak hurting demand and supply across the markets and industries, comparing startups across different sizes including Zomato, Swiggy, Ola, Paytm, OYO and more have undertaken cost-cutting measures to reorient their strategies for Covid survival and climbing back to pre-Covid levels. This survey titled Reviving the Indian Start up Engine during this Covid-19 suggested that



around 54 per cent of startups looking to pivot the business to new opportunities while about 40 per cent want to diversify into areas such as healthcare to survive the downturn. One more this concept of main play role of Telemedicine has been one of the areas in healthcare that have gained ground amid lockdown as in-person doctor consultation at clinics and hospitals were suspended. Start-ups are also looking to enhance the adoption of deep technology including artificial intelligence, cloud computing and internet of things to streamline operations and boost efficiency.

Scarcity of funding is another major impact area for start-ups as around 65 per cent of respondents claimed significant impact on funding due to the virus outbreak. As a result, 86 per cent of startups are looking for government support or loans from banks and NBFCs to extend their runway to survive.

Nasscom also urged the government to create a Deep Tech Investment Fund for technology start-ups similar to the existing Fund of Funds along with accelerating its disbursement, particularly for early-stage start-ups. Among the fiscal relief measures recommended, by the IT-BPM industry association – Nasscom, were expediting tax refunds, reducing GST, deferring gratuity and provident fund payments, waiving off restrictions for claiming an expense as a deduction under tax laws along with fines and penalties for offences related to procedural matters, delaying property tax payment, relaxing loan interest payment etc.

Leading cement makers have announced production shutdowns in factories across the country as Central and State governments announce lockdown and stringent measures to prevent mass gatherings in the fight against Covid-19.

ACC has temporarily suspended its operations at various locations till March 31, 2020. The company is monitoring the situation closely and will take a call on the resumption of operations based on further directives from the Government

RESEARCH METHODOLOGY:

This study has undertaken mostly based on secondary data and also a part of primary data through observation due to the social distancing of covid we cannot directly contact and interview the people to show the survey report so through secondary data sources of some report on government actions implemented during covid 19 time line and report on undergone different 4 phases the research studies has been done.

We also taken secondary data as newspaper, magazines, media and books for reference.

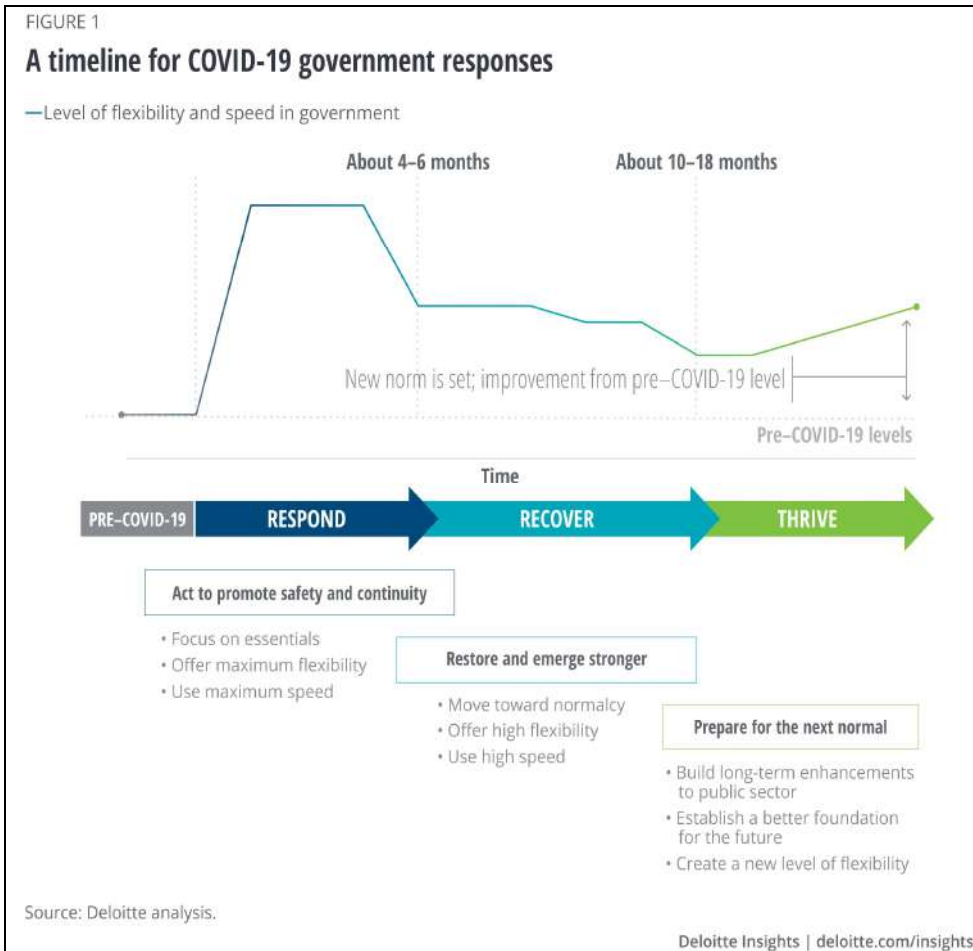
REPORT ON GOVERNMENT ACTIONS IMPLEMENTED DURING COVID-19 TIME LINE (19 MARCH-24 MARCH)

Time line	Task Actions taken	Sectors
19 March 2020	Economic Response Task Force	Implemented to Aviation, hospitality, and MSMEs. Sectors.
21 March 2020	Union Cabinet approved incentives	To the Electronic manufacturing sector
21 March 2020	Announced financial assistance	To Unorganised sector
23 March 2020	Provide rations	To Below Poverty Line
23 March 2020	Assistance of ₹1,000 per week	To Haryana labourers, street vendors and rickshaw pullers
24 March 2020	₹15,000 crore (US\$2.1 billion) fund	To Healthcare sector.

Source:Report on Time Line

Interpretation:

Here , we analyse that from 19 March -24 March , among this Time line government has implemented many actions during Covid -19 during Lock down and has taken many task actions in different sector to avoid this Covid for proper precautions



Source: Report analysis of Time line Government responses

Interpretation:

By analysing the above graph report W we can say that by comparison with pre-Covid -19 the Government responses is having better improvements from that level .But whether it has reached the common people in the same way or not is the result analysis. Here we can forecast that the level of flexibility and speed in government is improved in new norm from respond , recover to thrive.



LOCKDOWN PHASE 1 (25 MARCH – 14 APRIL)

PHASE	TASK	REASON
25 March 2020	food security scheme	Providing ration to the Below poverty line
25 March 2020	banned the manufacture and sale of pan masala,	spitting pan masala can help in spreading Covid-19".
26 March	Pradhan Mantri Garib Kalyan Yojana	with the aim that no one goes hungry amidst the lockdown.
26 March	Pradhan Mantri Ujjwala Yojana	free cylinders for at least three months.
26 March	Virtual participation 'Extraordinary G20 Leaders' Summit'.	develop a vaccine
27 March	500 hunger relief centres	free food to 400,000 every day.
28 March	PM CARES fund	combating coronavirus-like situations
30 March	UP government would transfer ₹611 crore (US\$86 million) to 2,715,000 workers	MNREGA scheme. ¹
1 April	Ways and means advances (WMA)	to provide relief to state governments; exporters have also been granted some relief
2 April	Response and Health Systems Preparedness Project'.	World Bank emergency financing for India to tackle coronavirus
3 April	State Disaster Risk Management Fund.	released ₹17,287 and The Ministry of Home Affairs approved ₹11,092 crore
6 April	Transfer the money, about ₹7,900 crore (US\$1.1 billion), into the Consolidated Fund of India. ^[63]	30% salary cut for one year was announced for the President, Vice President, Prime Minister, Governors, Members of Parliament and Ministers and also decided to suspend the MPLADS for two years.
8 April	PM Garib Kalyan Yojana	20 million workers engaged in construction work by the various states and UTs. To provide relief to tax payers amid the COVID-19 crisis, the government decided to release ₹18,000 crore (US\$2.5 billion).
10 April	Asian Development Bank (ADB) assured India of ₹15,800 crore	assistance in the COVID-19 pandemic fight.

Source: Report on Lockdown phase1.

Interpretation:

This was taken action, If there are no new cases for a week, and there isn't an increase of more than 10% in the number of people under home surveillance, and more importantly, no hotspots was there. In Phase 1, no one can step out without masks, one person per household will be allowed out, that too for not more than three hours. By this there came lot of control and seriously every one followed. It is most probably due to some wanted to come out of work and both mental stress also. And many were happy of spending their times with the family members. And other reason also for the security and self-protection.



LOCKDOWN PHASE 2 (15 APRIL – 4 MAY)

15 April	Ministry of Home Affairs (MHA)	Agricultural and horticultural activities
17 April	RBI announced more measures to counter the economic impact of the pandemic including ₹50,000 crore	special finance to NABARD, SIDBI, and NHB. Providing more relief to state governments, WMA limits have been increased by 60 per cent
18 April	Opportunistic acquisitions	FDI policy to protect Indian companies
20 April	Limited economic activity is expected to resume outside of the COVID-19 containment zones.	<ul style="list-style-type: none">During this selective relaxation of restrictions, numerous activities will remain prohibited such as educational institutions, passenger movement by trains, cinema halls, malls, shopping complexes and gymnasiums.Telangana was the first state to extend the lockdown to 7 May, beyond the national lockdown date of 3 May.
21 April	The Technology Information, Forecasting and Assessment Council" (TIFAC)	mandate to think for the future
24 April	Shanghai Cooperation Organisation (SCO), or Shanghai Pact	joint roadmap for economic recovery
25 April	Ministry of Home Affairs (MHA)	<ul style="list-style-type: none">re-opening of some shops under certain restrictionsliquor and other shops would remain closed.do not apply to hotspots
28 April	Asian Development Bank (ADB)	<ul style="list-style-type: none">approved a ₹10,500 crore (US\$1.5 billion) loan to India to combat the pandemic.
4 May	Third stage of lockdown.	<ul style="list-style-type: none">The country was divided into various zones (green, orange, red, containment) and as per the zone the economy has been opened up.

Source: Report on Lock down Phase 2

Interpretation:

The second Phase 2 has implemented like no new cases in two weeks means qualifying for the next stage, plus they told that there has to be no more than a 5% increase in home surveillance. Morning walks were allowed, autos could ply - with only three people - and so can buses. But two three days everything went right but many local buses filled the passengers more in number and there caused more in number increase in effected corona cases.



LOCKDOWN PHASE 3 (5–17 MAY)

PHASE	TASK	REASON
5 th May	Maharashtra put a hold on capital works till March next year	imposed a 67% cut in development spend for 2020–21
7 th May	Indian External Affairs Minister	requested cooperation for the resumption of activities by Japanese companies in India."
11 th May	Prime Minister emphasized the need to start reopening the economy,	Chief Ministers, asked the Minister's to each come up with a plan for resuming activity following the third extension of the lockdown on 17 May.

Source: lockdown phase 3

Interpretation:

On 1 May, the Ministry of Home Affairs (MHA) and the Government of India (GoI) and it was further extended to the lockdown period for two weeks beyond 4 May, with some relaxations. The country was been split into 3 zones: red zones (130 districts), orange zones (284 districts) and green zones (319 districts). Red zones are those with high coronavirus cases and a high doubling rate, orange zones are those with comparatively fewer cases and green zones are those without any cases in the past 21 days. Normal movement is permitted in green zones with buses limited to 50 percent capacity. Orange zones would allow only private and hired vehicles but no public transportation. It was told that the red zones would remain under lockdown and zone classification would be revised once a week.

Here from this self-prepared table we get the information about different task undertaken by the government which have been undertaken under several reason mentioned on 5th May Maharashtra put a hold on capital works till March next year and on 7 th May Indian External Affairs Minister held a task by requesting cooperation for the resumption of activities by Japanese companies in India and on 11 th May Prime Minister emphasized the need to start reopening the economy with regard to this chief Ministers asked the minister's to each come up with a plan for resuming activity following the third extension lock down on 17 th May.

This lock down phase came up from 25th March to 14 April came up with various task force to undertake the variety of reason like food security scheme to provide ration to below poverty line and banned pan masala in some places to stop spreading the diseases and then led to the Pradhan manthri yojanas to meet the hunger and providing free cylinders. Providing PM Care fund for combating corona virus ,Ways and means advances (WMA) to provide relief to state governments; exporters have also been granted some relief , transfer ₹611 crore (US\$86 million) to 2,715,000 workers MNREGA scheme. Response and Health Systems Preparedness Project which was funded by world Bank to our country. State Disaster Risk Management Fund have



released crores of money for this situation and even Asian Development Bank also contributed crores of money during this pandemic fight and also Prime minister and other minister's salary was decided to cut around 30% salary.

These Food delivery services were banned by several state governments despite the central government's approval. Thousands of people emigrated out of major Indian cities, as they became jobless after the lockdown. And there appeared situation by following the lockdown, India's electricity demand fell down to a five there are no new cases for a week, and there isn't an increase of more than 10% in the number of people under home surveillance, and more importantly, no hotspots. In Phase 1, no one can step out without masks, one person per household will be allowed out, that too for not more than three hours.e-month low on 28 March. The lockdown broke the supply chain of narcotics in Punjab. Many states were keen on opening up liquor shops during the lockdown which was finally allowed in the 3rd phase beginning on May 4. Reports of a surge in illicit liquor sales and most importantly, drying up of revenue from liquor sale was the main stimulation.

It was like that if all the above criteria are fulfilled and there is also a reduction in home quarantine, Phase 3 comes into play; where inter-district bus transport is allowed with 2/3rd capacity, domestic flights will operate at 50% and all new entrants to the state will have to be in a 14-day home quarantine.

ECONOMIC PACKAGE ANNOUNCEMENTS (12–17 MAY)

PERIOD	ECONOMIC PACKAGE	INCLUSION
12 May	The Prime Minister announced an overall economic package worth ₹20 lakh crore (US\$280 billion),	Includes the previous government packages (Rs. 1.7 lakh crore) as well as the RBI decisions (Rs 5-6 lakh crore). They should make up about 40% of the package
13 May	The Finance Minister, Nirmala Sitharaman, and the Minister of State for Finance and Corporate Affairs, Anurag Thakur, elaborated on the financial package that was announced by the Prime Minister the day before.	This which allows more companies to avail the benefits of MSME schemes. This announcements on the first day also included collateral free loans and bank guarantees that would allow resumption of work for many MSMEs. For the non-bank lenders a liquidity scheme and partial credit guarantee scheme was adopted. The Tax deadlines were extended.
14 May	"One Nation One Ration Card" scheme and continued announcing the details of the economic package.	Migrants, farmers, street vendors among others were covered in the package and the "One Nation One Ration Card" scheme was emphasized.
15 May	<ul style="list-style-type: none">for the third day, continued the announcement of the economic package andOperation Greens	<ul style="list-style-type: none">was extended from tomatoes, onion and potatoes (TOP) to all fruits and vegetables.



	<ul style="list-style-type: none"> proposed Amendment in Essential Commodities Act (1958). Matsya Sampada Yojana Agri-infrastructure fund, agricultural marketing reforms 	<ul style="list-style-type: none"> Cereals, edible oils, oil seeds, potato and onion were deregulated (except in exceptional circumstances) and no stock limit shall apply for storage announced for fisheries and animal husbandry infrastructure fund was announced. for farmers and fair price legal framework support for farmers were among other things covered.
16 May	For the fourth day, continued the announcement of the economic package. A fund for farm-gate infrastructure was announced,	Amendments to the Essential Commodities Act, as well as the opening up of the defence sector, power sector and space sector for privatization was brought up.
17 May	The Finance Minister concluded the announcement of the economic package.	

Source: Report on economic package announcements

LOCKDOWN PHASE 4 (18–31 MAY)

PHASE	TASK	ACTION
20 May	Cabinet of India	cleared some proposals of the economic package, including a free food grain package and collateral free credit for MSMEs
22 May	<ul style="list-style-type: none"> RBI Governor held an unannounced press conference cut repo and reverse repo rates among other things. nation of fiscal, monetary and administrative measures 	<ul style="list-style-type: none"> in which he extended the moratorium on loans will create conditions that will enable a gradual economic revival going forward."
22 May	<ul style="list-style-type: none"> RBI also allocated funds for Exim Banks and an extension to SIDBI. 	
25 May	domestic flights	resumed with limited operations.
30 May	new lockdown guidelines were announced by the Ministry of Home Affairs	which would come into effect in a phased manner from 1 June onwards. Many of the new guidelines "have an economic focus".

Source: Report on lockdown phase 4

Interpretation:

On 17 May, the National Disaster Management Authority (NDMA) and the Ministry of Home Affairs (MHA) extended the lockdown for a period for two weeks beyond 18 May, with the additional relaxations. So, unlike the previous extensions, states were given a larger say in the demarcation of Green, Orange and Red zones and the implementation roadmap. Red zones were further divided into to containment and buffer zones. The local bodies were given the authority to demarcate containment and buffer zones.

FIGURE 3

Government activities through the phases

	RESPOND	RECOVER	THRIVE
 Health care	<ul style="list-style-type: none"> • Flatten the curve (social distancing, etc.) • Boost health care system capacity • Test and trace • Overcome critical shortages (testing kits, masks, respirators, beds) • Provide information and guidance • Relax regulations to increase medical system capacity (telehealth, drugs, equipment, etc.) 	<ul style="list-style-type: none"> • Monitor for "second wave" • Support (with payment policy, review, triage) administration of vaccines and other treatments • Assess financial status of hospitals, health plans, and governments to stabilize health system with a view to future cost control • Support health care workforce postcrisis 	<ul style="list-style-type: none"> • Review and update health regulations • Implement new screening measures, such as smart security at airports • Put in place data infrastructure to track infectious diseases • Expand usage of behavioral insights to prepare for disasters and pandemics • Support future vaccination efforts
 Economy	<ul style="list-style-type: none"> • Provide emergency financial support for individuals and businesses • Enhance unemployment benefits • Mandate industrial actions (closures, repurposing, hotels, and airlines) 	<ul style="list-style-type: none"> • Continue support for individuals, businesses, and government • Bail out or enhance support for particular industries (airlines, etc.) • Start stimulus spending • Initiate tax changes 	<ul style="list-style-type: none"> • Diversify supply chains • Implement new government-business protocols for strategic supply chains • Review strategic national stockpile • Target economic relief based on economic vulnerability indices
 Business of government	<ul style="list-style-type: none"> • Surge capacity (due to increased demand for unemployment and social assistance) • Close offices/telework • Ensure public workforce safety (first responders, transit, IT, infrastructure) • Bolster IT and cybersecurity • Extend deadlines (tax, census, etc.) 	<ul style="list-style-type: none"> • Track and disburse recovery funds • Partially restart certain institutions • Address backlogs 	<ul style="list-style-type: none"> • Accelerate digital government • Implement universal digital ID • Enhance telework capability and define work rules • Improve social care • Improve data and anticipatory capabilities • Design systems for resilience

Source: Deloitte analysis.

Deloitte Insights | deloitte.com/insights

Source: Report on Government activities through phases



REPORT ON THE ACTIONS AFTER UNLOCK :

PERIOD	TASK	REASON RELATED IF ANY
June1	Delhi allowed all industries and markets to reopen including barber shops and saloons	
June1	curfew time changed to 9pm to 5am while educational institutes were to remain closed.	
June1	The numerous public utilities, businesses and activities such as gymnasiums, cinema halls and the Delhi Metro to remain closed.	
June2	The mobile manufacturing incentives were offered by the government to mobile manufacturers.	This included a ₹50,000 crore (US\$7.0 billion) production-linked incentive on goods made locally in India. Five Indian firms would also be selected for the scheme.
8 June	The religious places, malls and restaurants were permitted to open all over India, except in the containment zones.	
20June	The Garib Kalyan RojgarAbhiyaan	It was launched to tackle the impact of COVID-19 on migrant workers in India. It is a rural public works scheme with an initial funding of ₹50,000 crore (US\$7.0 billion) covering 116 districts in 6 states.

Source: Report on the actions after unlock

OTHER GOVERNMENT ACTIONS:

Economic package:

During this Covid Lockdown Phase ,The Finance Minister, for five days, between 13 and 17 May, held press conferences in which the details of the economic package was explained.It was announced about 20 Lakh crore (US\$280 billion). Though it was previously announced by RBI announcements included around ₹8 lakh crore (US\$110 billion) liquidity. The economic package also included the Finance Minister announcement of a package totaling ₹170,000 crore (US\$24 billion)which was adopted on 26 March.And also the strategy of combining fiscal and monetary, liquidity measures was defended by the government. Sitharaman explained that other countries had also done the same.Estimates of the size of India's fiscal stimulus as a percentage of GDP varied between 0.75% to 1.3%.The economic package consisted of a mix of reforms, infrastructure building, support to stressed businesses and a certain amount of direct cash support.The "collateral-free loans" that the package provided aimed to "resume business activity and safeguard jobs".Changes in FDI policy, privatization of the power sector, provident fund contribution and ease of doing business measures were also



announced. Land reforms at the state level which were not mentioned in the economic package are also part of the overall changes.

Due to the lockdown, more than 350 deaths were reported as of 10 May, with reasons ranging from starvation, suicides exhaustion, road and rail accidents police brutality and denial of timely medical care. Among the reported deaths, most were among the marginalised migrants and labourers.

OBSERVATION DATA COLLECTION:

Many places we can see that though Government has provided Ration facilities like Grocery Kit (Including Basic Facility of Food) for people below Poverty Line, we find by observation that its benefit is taken by other levels of people. Some are taking this Kit and selling or making use by taking three to four Kit together, when we ask they tell that they take it to help and provide them to poor. But there is a question whether it is true or it is misused? So there should be proper strict should be taken.

And other side we can observe that Covid facilities of Government Policies is given but poor and rich can survive but the people in middle level income is suffering a lot because the poor people can gain some how benefits and Rich people have enough of money but the middle class level citizen suffers a lot. This is how you might be having question but has there is a policy of deducting 30% of salary and the issues regarding Provident fund every thing when we see like this we find these people suffer a lot because they cannot survive either by leaving job or in secure in job too. It is not only by providing mask, sanitizer etc., to stay away from Covid 19 but there need to create trust, faith and security in implementation of policy.

Coming to the topic we can see that most of them lost job due to shut down of the factory, but the reason resulted is due to Reverse migration. But why this happened? Because of insecurity they feel about their job, Health, food and shelter. So due to all labourers migrated to their places and they explained it has shut down is due to the labour deficit.

FINDINGS:

- There is a need for useful implementation of Government policies
- If employees who lose their jobs are treated impersonally, unfairly, or without respect, the productivity and loyalty of their remaining colleagues will suffer
- Recruiting new talent will be more difficult.
- customers and suppliers that feel burned by a shutdown may retaliate against the rest of the company by diverting business to competitors.
- Facility to food, medication or shelter is worsened.

SUGGESTIONS:

- Economic packages should reach to the right person, right place in right time.
- Proper medication and facilities should reach to each and every citizen
- Feel of secure in job, Health, food and shelter
- To provide convenient proper salary and allowances should provide equally to all section of people.
- By providing the basic food supplies at well-managed distribution points



- By ensuring that all families have enough to eat until this crisis is over
- Once again make them to able to engage in India's vibrant informal economy

CONCLUSIONS:

We can here conclude that even the government as taken various right action at the right time immediately before rushing up of Covid 19 coronavirus this was not followed up by the citizens of India .The first Phase was strictly some how controlled at the fresh beginning of the implementation by the people in fear and sincerely but later after followed by the different phases second , third and fourth phase it was going on worse day by day and mostly the middle class level suffered a lot .The facilities did not reach the remote person .So like this even after unlock , it was went on worsening day by day and now presently it is more and more in number. So I like to say what will be the condition and effect of this after six months .So our government has to still chalk out the problem in better to best way to bring up not only our downward economy but also to give protection or strict security to control, the health of our common people. So now this concept of **“Health is wealth”** suits correctly in this present scenario of world. **Stay home, Stay safe.**

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E-LEARNING IN VOCATIONAL EDUCATION: VISION OR FICTION

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Abstract

The COVID-19 pandemic has brought unprecedented changes in the way our world has been functioning. But Life has always found out its course over years in the face of many such severe crises. In the education sector, the government resorted to e-learning for uninterrupted quality learning. This study was conducted to find out the status of e-learning in vocational education and the challenges being faced by the vocational teachers to deliver online lessons in the government senior secondary schools in the state of Haryana, India as it is the first state to implement the pilot project on vocational education under National Vocational Education Qualifications Framework. A semi-structured interview schedule was developed by the researcher to elicit information from the twenty-five vocational teachers from sixteen schools in eight districts of Haryana were selected through simple random sampling which formed the sample of the study. The findings of the study reveal that teaching and learning process is taking place through social media platform as most of the students do not have computers at their home. The study concludes by suggesting measures for effective implementation of e-learning in vocational education.

Key Words: E-learning, Vocational education, National Vocational Education Qualifications Framework

Introduction

The COVID -19 pandemic has had a global impact on nearly 1.6 billion learners in more than 190 countries and all continents from pre-primary to tertiary and technical and vocational education and training institutions (United Nations, 2020). Governments in most of the countries immediately switched to digital solutions to accelerate the teaching and learning process through distance learning. But this quick response came with its own challenge. The universal learning disruptions have aggravated the pre-existing educational disparities by depriving the vulnerable learners and the teaching profession in general from the favourable environment of teaching and learning.

In India, the Centrally Sponsored Scheme of Vocationalisation of Secondary Education was launched in 1988 in which vocational subject was offered at senior secondary stage along with academic subjects in schools. The scheme was revised as Centrally Sponsored Scheme of Vocationalisation of Secondary and Higher Secondary Education and aligned with National Vocational Education Qualifications Framework(NVEQF), a competency based framework with clear progression of learning pathways, in 2012. A pilot project on vocational education under NVEQF was launched with four trades



namely IT/ITeS, Retail, Automotive and Security were introduced from class IX to class XII in forty senior secondary government schools in eight districts in Haryana. The scheme of Information and Communication Technology in Schools (ICT@School) was launched in 2004 and revised in 2010 to provide opportunities to students at secondary level to enhance their productivity and promote equitable access to education for all. In 2013, both the schemes were subsumed under Rashtriya Madhyamik Shiksha Abhiyan (RMSA). RMSA was launched in March, 2009 to enhance the quality and access to secondary education.

The teachers were at the frontier to ensure learning continuity through e-learning. E-learning is the acquisition of knowledge through electronic media where students can access their learning materials on the Internet and teachers can take online classes. The vocational teachers with more of industry experience than knowledge on online vocational pedagogy relied on the e-textbooks and e-learning materials on job roles related to different trades offered in schools developed by Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent of National Council of Educational Research and Training (NCERT), Bhopal for online delivery of lessons in this time of pandemic. But one of the issues still persist in most of the government schools that is lack of virtual labs to conduct practical classes, simulations as vocational subjects are skill based which need hands on training to become competent in the particular job role. Video lectures and virtual labs are mandatory for the transaction of the curriculum of the vocational subjects. Against this backdrop, this study was carried out to find out the status of e-learning in vocational education in the government senior secondary schools of Haryana and identify the challenges being faced by the vocational teachers to adapt to the 'new normal'.

Literature Review

Bliuc, A., Bachfischer, A. & Goodyear, P. (2012) explores the experiences of teachers from a Australian Vocational Education provider entailed in designing and teaching using blended learning in vocational education. The findings of the study illustrates that teachers have different ideas about blended learning and qualitatively different conceptions and approaches towards teaching and design of blended learning in vocational education.

Triyono, M.B. (2014) found the draft model of instructional design in e-learning in vocational high schools in Indonesia. Focus group discussion was conducted among five experts from five universities and five professional from Information and Communication Technology. The four aspects of the model are (a) need analysis (b) selection and order of competence (c) instructional development and (d) learning evaluation. Each of these four aspects has five indicators of instructional design. The instructional design for e-learning should be well prepared by the teachers in vocational high school to deliver the content of the subjects.

Aydin, S., Akkan, Y., Arpaz, E. & Koparan, B. (2015) conducted a qualitative study on students' perceptions and practices of online learning in vocational schools in Turkey. The findings of the study reveal that communication between teachers and students have an impact on forming perceptions about online learning and also have negative ideas regarding implementation of technology in lectures. The planning of



course content, curriculum and assessment play a role in student's concentration and successful implementation of online learning in vocational schools.

Belaya, V. (2018) closely examines the use of e-learning in vocational education and training in Germany by conducting literature review. It was found that there are disagreement in the literature review on the pros and cons of using e-learning in VET. The learners benefit in different ways from e-learning but there are risks involved in it which can be reduced by a combination of face to face and online events could be used and pedagogical concepts designed and developed for e-learning.

Therefore, it can be concluded from the review of related literature that relatively few countries have conducted studies on e-learning in vocational education as this field is in its nascent stage in most of the developing countries. There is an immense need to study the role of e-learning in vocational education keeping in view the impact of Covid 19 on the modality of our education system. The researcher was unable to find any study on e-learning in TVET system of our country though it can be attributed as one of the limitation of this study due to time constraint and restriction of movement. The researcher entirely relied on internet for conducting literature review for this study.

Research Questions

- 1) What is the status of e-learning in vocational education introduced under National Vocational Education Qualifications Framework in the government senior secondary schools of Haryana during Covid 19 pandemic?
- 2) How are online classes conducted in vocational subjects aligned with National Skills Qualification Framework in government senior secondary schools?
- 3) What challenges are being faced by the vocational teachers in conducting online classes?

Objectives of the study

The objectives of the study are as follows-

- 1) To find out the status of e-learning in vocational education at secondary level in government senior secondary schools
- 2) To identify the challenges being faced by the vocational teachers in transaction of curriculum of the vocational subjects
- 3) To suggest measures for effective delivery of e-learning in vocational education

Methodology

The purpose of this study was to find out the present status of e-learning in vocational education at government senior secondary schools of Haryana. Haryana is the first state to launch the pilot project on vocational education under National Vocational Education Qualifications Framework (NVEQF) in 2012. The challenges of e-learning in vocational education during Covid 19 pandemic need to be identified and addressed for quality skill based education and competencies in the students.

A qualitative approach using survey method was adopted for this study because it allows the participants to express their thoughts in their own words instead of binding them into pre-set categories determined by the researcher.

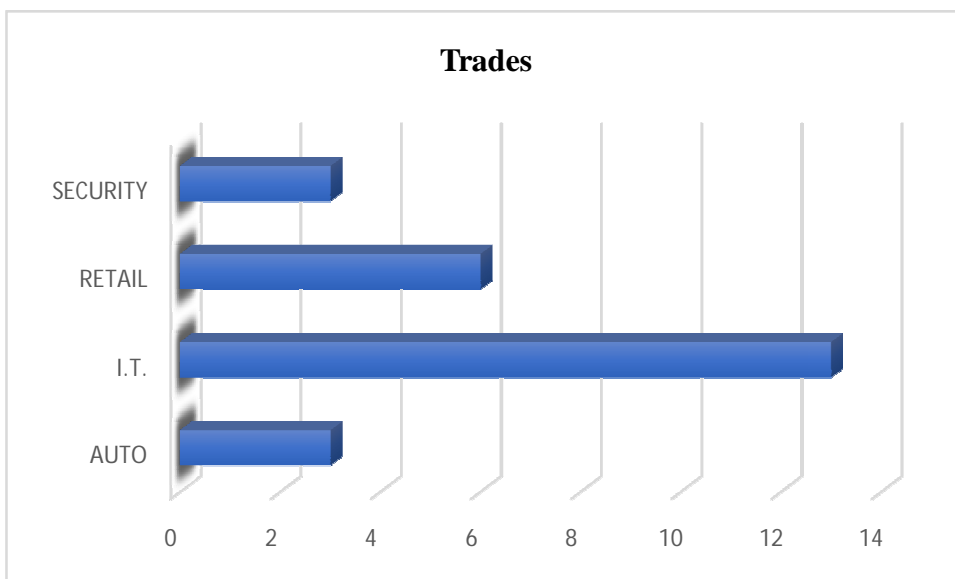
Population



The population of the study is the 40 schools in 8 districts of Haryana namely Gurgaon, Faridabad, Mewat, Palwal, Jhajjar, Rohtak, Ambala and Yamuna Nagar in which a pilot project on vocational education under NVEQF has been launched.

Sample

Out of five schools in eight districts, two schools from each district were randomly selected as sample of the study. Therefore, sixteen schools were taken as sample for the study. Out of the four trades introduced IT/ITeS is common in all the schools and the other trade along with it can be Retail, Automotive and Security. Each school has two vocational subjects and one vocational teacher for each vocational subject. 25 vocational teachers from the four trades were randomly selected as sample for the study. (N=25). The figure given below show the distribution of the trades (vocational subjects) in the schools selected for the study.



Tool

A semi-structured interview schedule was developed for the vocational teachers to elicit information related to the present status of e-learning in vocational education in schools and challenges they face while transacting the curriculum of the vocational courses in online mode while teaching and vocational education in general. The researcher conducted telephonic interview with the vocational teachers of both the vocational subjects.



Data Analysis

The data collected through telephonic interview were categorized by selecting the recurrent responses and then tabulated item-wise in the form of frequencies and then converted into percentage and presented in charts using SPSS.

Results and Discussion

Status of e-learning in vocational education at secondary level in government senior secondary schools

The status of e-learning in vocational education at secondary level in government senior secondary schools have been divided into three broad categories to present the holistic picture of the online transaction of the curriculum of the vocational subjects. The three broad categories are: (1) usefulness of e-learning (2) pedagogical strategies (3) assessment of students learning outcomes.

Table 1.1 Responses of vocational teachers on the platform being used for online teaching and learning of the vocational subjects.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid WhatsApp	25	100.0	100.0	100.0

Table 1.1 indicates that all the vocational teachers are using social media platform to deliver the course content to the students. Class wise students groups of related vocational subjects have been made and the teacher monitors the group activities. Mobile learning appears to be pervading in reaching out to the students for imparting online instruction in the absence of classroom interaction during Covid 19 pandemic.

Responses of vocational teachers on the resources being used to deliver the course materials to the students through e-learning

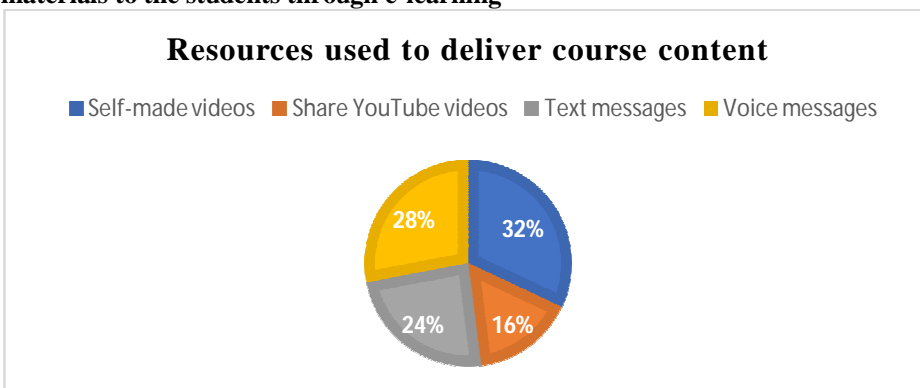


Figure 1.2



Figure 1.2 specifies that majority of vocational teachers (32%) are using self-made videos for enhancing online delivery of the course content to the students. It helps them to explain the topics and demonstrate practical related to the topic as they used to do during classroom instruction. Voice messages are used by 28% of vocational teachers to give instructions on presentations, role-plays and asking probing questions. 24% of respondents indicated that for the theory portion of the syllabus notes and additional reading materials like e-text books, power point presentations from PSSCIVE website are provided through text messages. 16% of vocational teachers share YouTube videos from NCERT Official YouTube channel and other relevant sources as additional support for students understanding of a particular topic. It shows that vocational teachers are taking efforts to develop and provide all kinds of e-content and uninterrupted educational services to the students.

Responses of vocational teachers on the ways adopted for clarification of doubts related to the subject matter of the students

Figure 1.3 reveals that most of the vocational teachers (48%) adopt the common way of interacting with individual students over phone to clarify their doubts. 28% of vocational teachers share additional reading materials to enhance the understanding of the students on the related topic. 24% of vocational teachers share YouTube videos to enhance the understanding of the content matter of the students. It shows that the vocational teachers are adopting all the possible ways to clarify the doubts of the students.

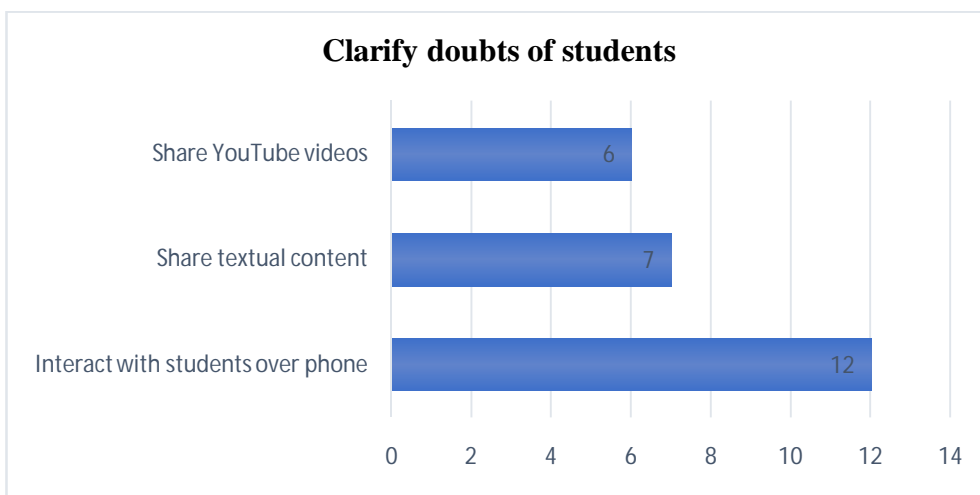


Figure 1.3

Responses of vocational teachers on the online assessment procedure of the students learning outcomes

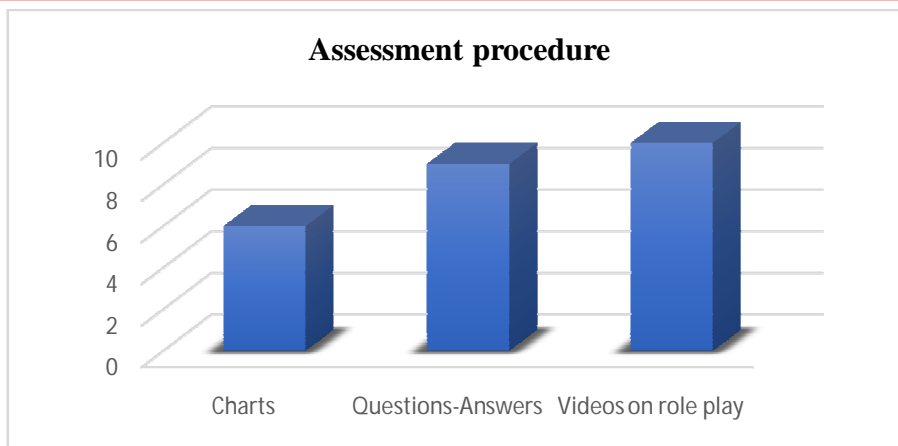


Figure 1.4

Figure 1.4 shows that most of the vocational teachers (40%) ask the students to make videos on role plays to assess the practical part of the vocational subjects. 36% of the vocational teachers replied that they give questions on WhatsApp to evaluate the theory part of the chapters of the related vocational subjects. The students are asked to write the answers and click photos and send it to the teachers for checking. 24% of vocational teachers give the task to make charts on a related topic to evaluate students learning outcomes. It shows that in the absence of a proper online assessment system the vocational teachers are unable to conduct fair exams which leads to imperfect assessment of the students learning outcomes. It is an important factor for imparting quality vocational education and training and thereby producing skilled workforce.

Responses of the vocational teachers on the usefulness of e-learning in vocational education for the students

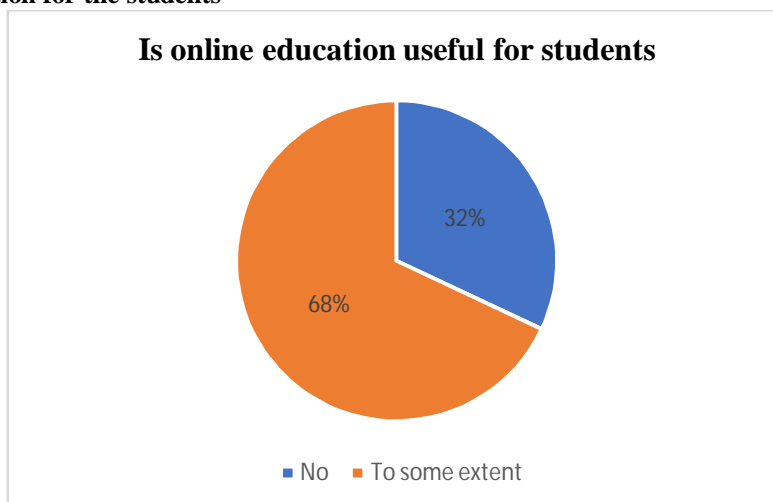


Figure 1.5

Figure 1.5 puts forth that majority of the vocational teachers (68%) opines that e-learning in vocational education is to some extent useful for the students. The online classes through social media platforms are keeping the students engaged and involved in various activities during this lockdown period. The making of videos has increased students confidence and creativity which lay dormant in offline mode during classroom instruction. 32% of the vocational teachers opines that e-learning is not useful for students having vocational subjects as students who are in need of electronic devices like smart phone or those who are below poverty level are unable to get the benefits of online education. Students are unable to do the practical classes in online mode but the fact is that vocational subjects are skill based which need constant practice and hands-on training. There are students who lose interest in online classes in absence of fixed rules on attending classes set by the schools.

Challenges being faced by the vocational teachers in transaction of curriculum of the vocational subjects

The challenges faced by the vocational teachers have been presented in online teaching in particular and in vocational education at large. This gives us the comprehensive view of the plethora of problems in implementing e-learning in vocational education in government schools.

Responses of vocational teachers on the challenges being faced by them in online teaching

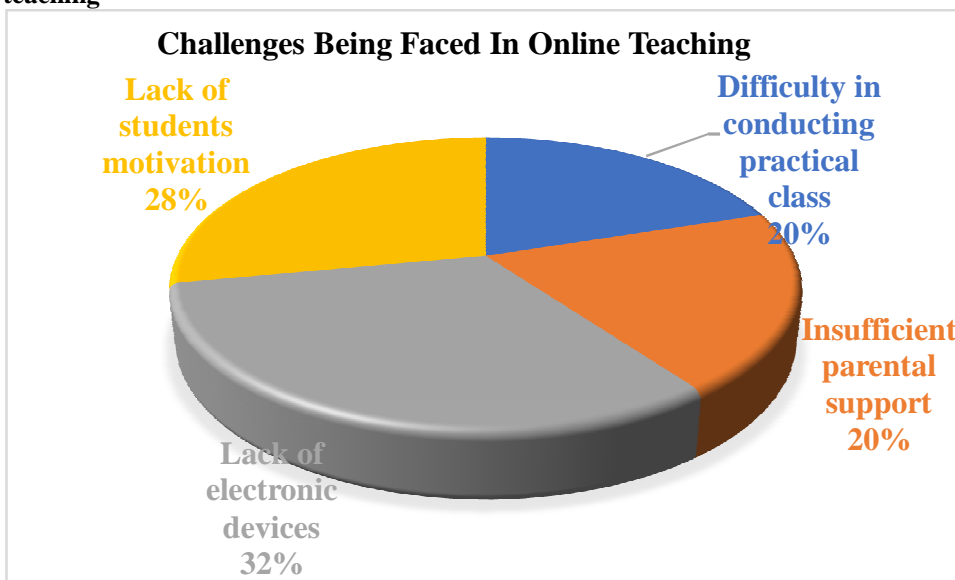


Figure 2.1

Figure 2.1 reveals that most of the vocational teachers (32%) face challenges in online teaching due to lack of electronic devices with the students. Most of the students in government senior secondary schools learn the practical part of the vocational subjects in schools. They do not have computers or laptops at their home. Most of the students have only one smart phone at their home. Few students do not have smart phones at



their home so they miss attending the classes. Vocational teachers resort to interact with them over phone so that they do not get excluded. 28% of vocational teachers replied that in absence of necessary facilities with the students, gradually the students started losing interest and lacking motivation to continue their studies. This can have grave consequences in the long term as it may be difficult to bring them back into schools which may increase the drop-out rates. 20% of vocational teachers find it difficult in conducting practical classes online. This shows the structural weakness of the vocationalisation of education at the school level. Government schools do not have adequate infrastructure to impart quality vocational education and training. Virtual labs are the need of the hour to conduct practical classes in vocational subjects where through simulation students can develop their competence in their job role of the related trade. 20% of the vocational teachers find insufficient parental support to be a challenge in delivering online education. Parents take their phone to office which hinders in the students online learning. Girls are often made to do household works which prevents them to attend group discussion or complete assignments or prepare presentations. Other siblings of the students also need the smart phone for attending classes or prepare videos which make it difficult for the students to keep the pace with the online classes. Parental support and home environment play an important role for the students in getting uninterrupted quality education during this lockdown period. Counselling of parents along with the students should be looked into as parents are also struggling hard to make both ends meet.

Responses of vocational teachers on the challenges being faced to deliver vocational education through online mode

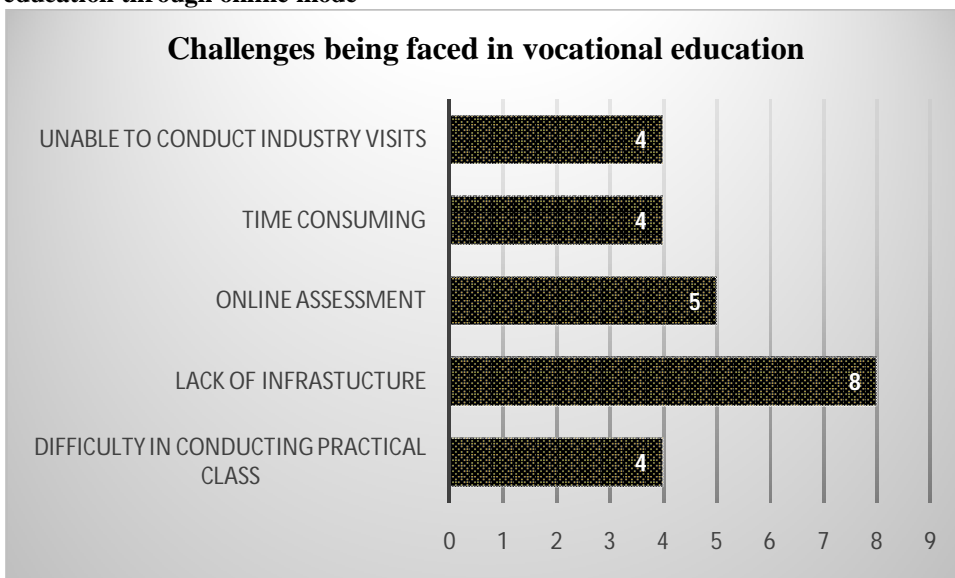


Figure 2.2

Figure 2.2 represents that most of the vocational teachers (32%) are facing difficulty in conducting online classes due to lack of infrastructure. The lack of electronic devices,



network connectivity in rural areas, electricity, charging of mobile phones give rise to challenges in imparting online education. 20% of vocational teachers are facing difficulty in conducting online assessment. 16% of vocational teachers replied that in online classes students are missing out in a major component of their curriculum of the vocational subjects because they are unable to conduct industry visits. 16% of vocational teachers are of the opinion that due to lack of infrastructure and reduced motivation of the students e-learning in vocational education has become a time consuming process. They have to reach out to each and every student and their parents for follow-up activities. The vocational teachers are putting extra effort to give individualized instruction and attention to each and every student so that no one gets left behind.

Suggestions

Mobile phone surveys, tracking apps and learning platforms are used to diminish and examine the learning gaps during the time of COVID-19 pandemic. But inequitable access to mobile devices poses a challenge to this solution. The following measures can be taken into consideration by the school authorities and vocational teachers to mitigate the problem.

- Strong collaboration between the different stakeholders –industries, IT companies, telecom providers, district coordinators, school heads, vocational teachers, parents-and active engagement is needed for effective implementation of online education for the marginalized students.
- Low-tech approaches like DTH educational television channels, having vocational education classes, Swayam Prabha, an initiative of Ministry of Human Resource and Development under National Mission on Education through ICT, should be promoted. DTH providers like Airtel, Tata Sky have been offering these 32 channels on curriculum based course content on various disciplines.
- Motivation plays a major role in e-learning therefore students should be kept engaged with fun activities, assignments and projects to develop critical thinking and problem solving of the students, educational games which would enhance their skills in their trades as well.
- Government need to strengthen the support system for the vocational teachers for successful implementation of the digital solutions which would help in providing supportive learning environment to the students.
- Online training, webinars should be conducted for the vocational teachers on innovative pedagogical strategies to be used in digital teaching and learning. Online discussion forum for collaboration of the vocational teachers in the state should be developed so that they can share information and deliberate on the issues being faced by them during this period.
- The funds provided for vocational education in schools should be utilized to bridge the digital divide and remove technological barriers by investing it to arrange low cost devices and connectivity for the underprivileged students.

Conclusion

COVID-19 pandemic brought an unprecedented change in every sphere of life all over the world especially in the healthcare and education sector. With the launch of National



Education Policy, 2020 giving special focus on vocational education from class VI to class XII in schools calls for immediate redressal of the lacunas and structural weaknesses of the TVET system of our country. Vocationalisation of education at secondary level in schools has always been neglected but the global health crisis has highlighted the importance of skill based education as a life skill for individuals and its contribution to the socio-economic development of our nation.

With the closure of the educational institutions along with the “Stay home, stay safe” instruction from the government, e-learning has become the ‘new normal’ at every level of the education system to address learning disruption. In the present situation, it is the need of the hour to ensure that learners in straitened circumstances have adequate resources for online learning, better internet access, strong parental support and constant monitoring by vocational teachers of their schools to enable them to get maximum benefits from e-learning. The vision to transmit equitable, inclusive, universal and quality education would remain a fiction unless the fundamental deficiencies such as bandwidth, limited digital access in rural areas, lack of resources and a general inhibition to adopt digital learning because of exposure to multitude of e-content and health hazards are taken care of.

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नवयज्ञविचारःगोभिलमतेन

-गोविन्द सरकार(शोधच्छात्रः)

संस्कृत विभागः

रायगञ्ज युनिवर्सिटी

नवयज्ञो नवान्नपार्वणमितिलोके प्रसिद्धम्। स च नवयज्ञो नित्यः गौतमधर्मसूत्रेन नवयज्ञस्य नित्यसंस्कारमध्ये पठितत्वादस्य नित्यत्वमित्यवगम्यते। स नवान्नयज्ञो पार्वणवानूतनव्रीहिभिः कर्तव्यः। नवयज्ञ इति अन्वर्थसंज्ञाकरणात्। नवयज्ञस्य प्रथमार्म्भेनान्दीमुखश्चाद्धकर्तव्यं भवति। ततः प्राणानां नवयज्ञसंस्कारार्थं नवयज्ञं करिष्ये इति संकल्पवाक्ये योज्यम्। ततोऽग्निमुपसाधाय सर्वपार्वणस्थलीपाकवत्कार्यम्। पात्रासादनकाले प्रकृतिवत्पात्राण्यासाद्य नवान्तण्डुलान्पयसासादयेत्। तत्र-

‘इन्द्राग्नीभ्यां त्वा जुष्टं निर्वपामि’

इति नवान्तण्डुलानां निर्वपः। पयसि च रुश्रपणं भवति। तत्र चात्र प्रमाणं यथा-

“नवयज्ञाधिकारस्थाः श्यामाकाद्रीहयोयवाः।

नाश्रियात्तानहुत्वैव मन्येष्वनियमः स्मृतः॥

ऐश्रवः सर्वशुङ्गाश्च नीवाराश्च णकास्तिलाः।

अकृताग्रयणोऽग्नीयात्तेषां नोक्ताहविर्गुणाः॥”

इति स्मृतिवाक्यप्रमाणत्वात् अकृतनवयज्ञो नाग्नीयुरिति। ततः स्थापितेऽग्नौ आज्यभागान्तं हुत्वानवचरुमादाय जुहोति-’

इन्द्राग्निभ्यां स्वाहा, इदमिन्द्राग्निभ्यां नमः। ततश्च रंहुत्वा शतायुधायेत्येतत्प्रभृतिभिश्च तस्मै आज्याहुतीर्जुहोति। एषां चतुर्णामन्त्राणां प्रजापतिर्ऋषिराद्यस्य पङ्क्तिश्छन्दस्त्रयाणां त्रिष्टुप्छन्दः इन्द्रो देवताग्नीष्मादय इद्वत्सराश्च देवता आज्यहोमे विनियोगः॥”

आहुतिक्रमस्तु-

१. ॐ शतायुधाय शतवीर्याय शतो तयेऽभिमातिषाहे।

शतं योनः शरदो अजीयादिन्द्रो नेषदतिदुरितानि विश्वा॥

इन्द्राय स्वाहा इदमिन्द्राय नमः।

२. ॐ चत्वारः प्रथमो देवयाना अन्तराद्यावापृथिवीवियन्ति।

तेषां यो अज्यनिमजीतिमावहात्तस्मै नो देवाः परिदत्ते ह सर्वे॥

देवेभ्यः स्वाहा इदं देवेभ्यो नमः।

३. ॐ ग्रीष्मो हेमन्त उत नो वसन्तः शरद्वर्षाः सुवितन्नो अस्तु।

तेषां मृतूनां शतशारदानां निवात एषामभये स्याम॥

देवेभ्यः स्वाहा इदं ग्रीष्मादिभ्यः ऋतुभ्यो नमः।

४. ॐ इद्वत्सराय परिवत्सराय संवत्सराय कृणुता बृहन्नमः।

तेषां वयं सुमतौ यज्ञियानां ज्योगीता अहता स्याम॥

इद्वत्सरादिभ्यो देवेभ्यः स्वाहा इदं इद्वत्सरादिभ्यो देवेभ्यो नमः।

मन्त्रार्थस्तु-

‘हेमदीयाः पुत्रादयः ऋत्विजो वायूयमृदवत्सराय परिवत्सराय, संवत्सराय च देवाय बृहत्प्रभूतं नमो नमस्कारं हविर्वाकृणुते कुरुता उक्तत्रयमुद्वत्सरानुवत्सरायोरुपलक्षणम्। चान्दा, प्रभवादिवत्सराः क्रमेण संवत्सरपरिवत्सरोद्वत्सरनाम्ना पुनरावर्तन्ते॥” तथा च वचनं यथा-

“चान्द्राणां प्रभवादीनां पञ्चके पञ्चके युगे।

संपर्युदन्विदित्येतच्छब्दपूर्वास्तुवत्सराः॥”

अत्राहुतौ कृतायां हविरुच्छिष्टशेषं ब्राह्मणान्प्राशयेत्-

“हविरुच्छिष्टशेषं प्राशयेद्वावन्त उपेताः स्युः॥”

यावन्तो ब्राह्मणाः उपसमीपे इतामताः स्युः तावतो हविरुच्छिष्टशेषं प्राशयेत्। ततः शेषं स्वयमपि भूञ्जेत्। तच्च स्वकीयभोजनं ब्राह्मणानां समक्षे कुर्यात्। तथा च प्रमाणम्-



“ब्राह्मणानामसान्निध्येस्वयमेवपृषातकम्।

अवेक्षेद्विषःशेषंनवयज्ञेऽपिभक्षयेत्^{xii}॥”

इतिकर्मप्रदीपवचनात्सूत्रेचउच्छिष्टशेषप्रयोगात्।यदेवोच्छिष्टस एवशेषःतर्हिउभयरूपानप्रयोजनं किम्?इतिजिज्ञासायांहविरुच्छिष्टब्राह्मणान्प्राशयेत्तच्छेषंचस्वयंभुञ्जीतइत्येवमर्थम्।

यदाचचतुराहुतयःसम्पद्यन्तेतदन्तेस्विष्टकृदादिकंकुर्यात्प्राशनकालेयजमानस्त्र्यार्षेयःत्रिप्रवरश्चेत्तदवामहस्तेनदक्षिणहस्तेसकृदुपस्तीर्यमेक्षणेनहविरुच्छिष्टस्यमध्यात्पूर्वाद्धाञ्चअवदायसकृदभिधारयति।यदिवायजमानःपञ्चार्षेयश्चेत्तदासकृदुपस्तीर्यमेक्षणेनहविरुच्छिष्टस्यमध्यात्पूर्वाद्धाञ्चअवदायसकृदभिधारयति।तदुक्तम्-

“सकृदपामुपस्तीर्यद्विश्चरोरवद्यति।त्रिभूङ्गणाम्।अपांचैवोपरिष्ठात्^{xiii}॥”

सकृदेकवारमपामुदकस्यदक्षिणेपाणानुपस्तीर्यकुतः?यत्रोपदिश्यतेकर्मैतिवचनात्।तथाहि-

“यत्रोपदिश्यतेकर्मकर्तुरङ्गनतुच्यते।

दक्षिणस्तत्रविज्ञेयःकर्मणांपारगःकरः^{xiiii}॥”

तत्रद्विःद्विःकृत्वामध्यात्पूर्वाद्धाञ्चमेक्षणेनचरोरवद्यति।भूगुणांपञ्चार्षेयाणांत्रिःकृत्वाअवद्यतिपश्चाद्धादित्यधिकम्।अत्रोपस्तरणाभिधारणमुदकेननतुआज्येनकुर्यात्।एवञ्चअवदत्तंहविःप्राशनकालेअस्यमन्त्रस्यप्रयोगःकर्तव्यः-

“भद्रान्नःश्रेयःसमनैष्टदेवाः

त्वयावसनेसमशीमहित्वा।

सनोमयोभूःपितेवाविशस्व

शंतोकायतन्वैस्योनःस्वाहा^{xv}॥”

मन्त्रार्थस्तु- हेदेवाःयूयंनःअस्माकंभद्रान्कल्याणान्श्रेयःप्रशस्यंधनञ्चसमनैष्टसम्यक्प्रापयत,

ब्रीह्याद्यन्नावसेनत्वयाअवसंपाथेयमन्नंत्वयावसेनहेतुभूतेनतवलाभार्थमित्यर्थः।त्वात्वांसमशीमहिअश्यामअतोहिपितोशरीरस्यपालकाद्भद्रउक्तलक्षणस्त्वंमयोभूःसुखस्यशंतोकायापत्यायतन्वाअस्मच्छरीरायभवसुखकारीभवस्वाहाइदंहविःस्वाहुतमस्तुइत्यर्थः।ततःभूयएवावदाययथेच्छमास्वादयन्भक्षयेत्।तत्रयेब्राह्मणाअन्येऽपिसन्निहिताभवेयुस्तेभ्योऽपिदत्त्वायजमानोभक्षयेत्।तेषामपिपूर्ववद्भक्षणविधिः।परन्तुउपस्तरणावदानाभिधारणानियजमानकर्तृकाणि।तेनैवसर्वेकृताचमनामुखंशिरोऽङ्गानिचातुलोमपृथक्अनेनमन्त्रेणअभिमिशेरन्-

“अमोऽसिप्राणतदृतंब्रवीम्यमाह्यसि सर्वमनुप्रविष्टः।

समेजरारोगमपभृज्यशरीरादपामएधिमामृथा

नइन्द्रस्वाहा^{xvi}॥”इति।

इत्यमेववर्षतौनवानांश्यामाकानामन्नानांपयसिचरंकृत्वापूर्वोक्तनवब्रीहिवत्तवयज्ञःकर्तव्यः।सर्वपूर्ववदेवकार्यम्।तदुक्तंसूत्रकारेण-

“एतयैवावृताश्यामाकयवानाम्^{xvii}॥”

तत्रश्यामाकानांनवयज्ञप्रयोगेहविरुच्छिष्टशेषभक्षणेअस्यमन्त्रस्यप्रयोगोभवति-

“अग्निःपश्चात्प्रथमःसहिवेदयथाहविःशिवा।

अस्मभ्यमोषधिःकृणोतुविश्वचर्षणिःस्वाहा^{xviii}॥”

यवानांनवयज्ञप्रयोगेऽपिभिन्नस्यमन्त्रस्यप्रयोगोभवति।सचमन्त्रः-

“एतमुत्थंमधुनासंयुतंयवं

सरस्वत्याअधिवनावचकृधि।

इन्द्रासीत्सीरपतिशतक्रतुः

कीनाशाआसन्मरुतःसुदानवःस्वाहा^{xix}॥”

तदुक्तंसूत्रकारेण- “एतमुत्थंमधुनासंयुतंयवमितियवानाम्^{xx}॥”

वाजसनेयिनस्तुपारस्करगृह्यानुसारेणनवयज्ञप्रयोगंकुर्वन्ति।तत्रतु- “अनाहिताग्नेर्नवप्राशनम्^{xx}”

इत्युक्त्वासमभिःसूत्रैःनवयज्ञःप्रतिपादितः।तत्रापिनवयज्ञस्यशरदिवसन्तेवर्षर्तौचप्रयोगोविहितः-



“नवयज्ञाधिकारस्थाःश्यामाकात्रीहयोयवाः।

नाश्रीयात्तानहुत्वैवमन्येऽवनियमःस्मृतः॥

ऐक्षवःसर्वशुङ्गाश्चनीवाराश्चणकास्तिलाः।

अकृताग्रयणोऽश्रीयात्तेषांनोक्ताहविर्गुणाःxxi॥”

एतेनत्रयाणामन्नानामुत्पत्तौनवयज्ञःकार्यः।किन्तुईक्षुशुङ्गयुतान्ननीवारचणकतिलानांकृतेननवयज्ञोभवति।

गो.गृ.४२२पृ.

iiपा.गृ.३७४पृ.

iiiगो.गृ.४२२पृ.

ivम.ब्रा.२.१.९

vम.ब्रा.२.१.१०

viम.ब्रा.२.१.११

viiम.ब्रा.२.१.१२

viiiगो.गृ.४१८पृ.

ixतत्रैव

xगो.गृ.३प्र.८क.१२सू.

xiक.प्र.३.९.९

xiiगो.गृ.३प्र.८क.१३-१५सू.

xiiiक.प्र.१.१.८

xivम.ब्रा.२.१.१३

xvम.ब्रा.२.१.१४

xviगो.गृ.३प्र.८क.२२सू.

xviiम.ब्रा.२.१.१५

xviiiम.ब्रा.२.१.१६

xixगो.गृ.३प्र.८क.२४सू.

xxपा.गृ.३का.१क.१सू.

xxiपा.गृ.३७४पृ.

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BODO WOMEN AND ECONOMIC ACTIVITIES: A STUDY IN HISTORICAL PERSPECTIVE

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Abstract

Women have been made significant contributors towards the growth, development and sustainability of human society as a whole. Women constitute half of the population in the world. In every society from ancient to modern times, women are considered less competent with men in all the aspects of socio-cultural and economic life. So to say in the Economic aspects the position of women always plays a significant role in the society. Assam is a land of numerous tribes having different ethnic and linguistic background since the time immemorial. Among them, the Bodo/Boro are numerically and sociologically one of the most aboriginal tribes in Assam. Role of Bodo women in economic activities is not much discussed in her society and there is a lacking space to deal it. Therefore this paper is made a humble attempt to highlight the importance of Bodo women in the economic activities or their normal position in the field of socio-economic perceptions in the society, traditionally and the way forward.

Key words: Bodo, Women, Status, Social, Agriculture, Economic, Rights, Position, Role, Domestic.

Introduction

Women constitute an integral part of the society and actively participate in the socio-economic development and process of the society. It is very difficult to determine the economic contribution of women towards household activities. There are problems delineating works done by a woman as economic activity from the overall household activities. A household activity like cooking, fetching water or firewood collection or even caring of babies is the most common work to be done by the women in a family. Here the question arises whether these are economic activities or not? Similarly, the women's contribution to the normal economic activities of the family like cultivation, artisan works, family farming or even family business may not be recognized as women's economic activities while calculating or recognizing the economic role of women. The situation is, the women are performing economic activities and yet they are counted as non-performer. In addition to the absence of a clear-cut distinction between the household works and economic activities of women, there is no sufficient economic data about the women work participation to arrive at a conclusion about the economic activities of women are at par with the man. Under the household activities like cooking, washing or looking after children, we can consider it in terms of time spent by the women but in any case it cannot be measured or even taken seriously as an economic activity. Then again, the contribution of women as workforce in the family



agricultural activities is always remaining unrecognized although it contributes in a big way towards the total productivity of the family and national productivity.ⁱ

In such an instance since Assam is a land of numerous tribes having different ethnic and linguistic background since the time immemorial. Among them, the Bodo/Boro are numerically and sociologically one of the most important aboriginal tribes in Assam.ⁱⁱ Role of Bodo women were confined to her being a wife and a mother as has been depicted in the inscriptions. Yet the historiography on that period confined the study the role of Bodo women in her society in a various areas particularly in economic activities is so accountable.ⁱⁱⁱ The paper is made a humble attempt to highlight the importance of various economic activities of Bodo women on their normal position in the Bodo society traditionally.

Discussion

In a traditional Bodo family live stock includes the domestic animals, which are useful for the family, be it as a tool for the work force for domestic activities or as food item. Thus, in every family cattle, pigs and poultry are the most, common domesticated livestock found.^{iv} As family property, the Bodo women look after these animals and birds. At the same time, these were hardly considered as a way of income generation by itself but only as tools of agricultural activities or food item for the family. Rearing of pig by the Bodo women in every Bodo family is a common structure. Mostly the responsibility of taking care or rearing of animals in the family is done by the womenfolk. The pigs were mostly rear for two purposed that is for meat as and rearing of babies for commercial. Male pig for meat commercial and female pig for productions of babies for commercial purposed. But in a changing perspective of the family economy, the women have started these traditional activities in a commercial manner so that they achieve financial gains for the family and can get rid of dependency factor. A single woman use to rear up to 1or 2 pigs within the family, which is disposed off after 10 to 12 months, this does not require much of labour as the pigs are kept within the household and the waste of rice beer, food wastes, chaff are kept and used as food for the pigs. During the survey, it is also observed that the families, which have commercial approach in pig rearing, have equally the practice of rice beer business. The reason behind is the wastes of rice beer are used as food for the pigs.^v Only a very few families in the eastern part of the village have pigs for commercial purpose. At the same time poultry farming such as chicken, duck, etc were also found that looking after these animals were also taken cared by the womenfolk. It is used as a delicacy in different occasions and also used in various socio-religious functions. But in recent times, they have taken up poultry farming as a commercial venture as because there is a good market of chicken and eggs and at the same time it is not very time consuming activity. They use to build up poultry farming within the family without disturbing the daily routine work of the family life. Rearing of poultry was also a common activity of the Bodo women since the time immemorial.^{vi} Each and every female child in the family use to be a part of the owner of the chicken, here also the women took all the necessity measures and responsibility in looking after the rearing of chicken, specially in olden times it was basically done by the women folk in the family for two purposed that is to served guest whenever they come and another is for commercial mean so that a girl child can earn some money in order to buy her needs specially ornaments.^{vii} So to say



while rearing a cow suppose a family has a good number of cows, a girl or women in the family take the responsibility to look after the cattle. The cow sometimes is considered as an honour that belongs to the girl child in the family. One thing it is significant to say that in rearing of all these domestic animals whatever it may be the maximum responsibility and authority upon such animals lies on them that is why, the prior concern and permission is required from them.^{viii}

Agricultural activities and others

In an agriculture activities the role of Bodo women include a huge part, since the Bodo society is a purely an agrarian society, in an agricultural activities that the women involve right from the beginning of cultivation of the rice till harvesting time. The women sing lullaby carrying babies on their back and managing all the food arrangements to the male folk who are in work. The whole plantation of paddy is done by them.^{ix} Cultivation like vegetable, food crops are also partly handled by them. And perhaps if a particular family is very poor who doesn't have cultivation land nor bullocks to cultivate, the Bodo women doesn't sit idle, she will go to the others family where she can get a daily labour wages and feed her family. The Bodo women is also seen fetching water from far off distance for drinking purposes since there was no available tube water nor well found available. So in a free off time she will accompany with her husband sometimes and collect fire wood from the jungles.^x

It is known that the Bodo people are also fond of fishing, here in conducting fishing operations the leading part is taken by the women. They greatly take part in the fishing which they use fishing tool called zakkai (in Bodo). Besides this women are also partly involved in the hunting activities for different occasions.^{xi} The women has a great responsibility in the family as well, they have to look after the family, domestic arrangement, children, etc. The grinding of rice has to look after or done by the women. Sometimes collecting of food and firewood are also managed by the women.

Weaving and sericulture

It is an integral part of the women folk of the Bodo community. Every young woman knows the art of weaving, which they learn from the early childhood within the family. Traditionally, they weave all the required cloths for the family members, which include, 'dokhona', 'aronai', 'gamocha', 'erichadar', 'sii-maa' (bed-sheet) etc. The 'eri' and 'muga' cloths produced by the Bodo women are very popular amongst the non-Bodos also. It is one of the chief industries amongst the Bodo culture, to work with such patience and intensively the Bodo women involved her to look after this *Eri* Cocoons which takes nearly 15-20 days to get the cocoons.^{xii} It is said that a Bodo girl finds it difficult to get married if she does not know the art of weaving. It is also mentioned that Bodo women if not greatly or frequently interrupted in her work can weave about half yard each day.^{xiii} The weaving activities is a great art of the Bodo women, the actual work is always carried out either by the lady of the house or by one of the grown up daughter. Indeed the Bodo women working placidly and contentedly at the eri loom singing quietly to herself in sheer happiness of heart. The 'eri' and 'muga' clothe. Even, it has good market, resulting in commercialization of the Bodo products, which is helping the domestic economy of the Bodos in a big way. It was also accepted as one of the way of income for the family and adopted commercial production of cloths. In this process, the women completely do the entire works right from the rearing of the silk



worm at home to the final stage till it gets cocoons. Rarely, they take help from the men folk. Moreover, while doing this they never forget to do their normal household works. The women also have a great interest in rearing a silk erimuga for consumption purposes, as it was considered as one of the good delicacy of the Bodoscusines. It is rightly to say that the Bodo women weave all the dresses and clothes necessary for the family, so in this aspect the burden has been taken by the women and save the economic expenses and also boost the economic credibility of the family. Poor family Sometimes borrow the thread from the others family and weave which is called *Addi*,^{xiv} and in return a women will get some share for weaving, this was also seen major significant in the weaving cultures in the Bodo society. They are very much expert in the art of weaving, their main designed of the different clothes would be like nature related art and even the colours are also been extracted from the different nature plants which give vibrant colours. That's why the Bodo women are positioned in the forefront in the society that shares equity in the family in all aspects.

Production of Rice beer

Besides amongst all the economic activities of the Bodo women the activities of production of 'rice beer' known as (Zou)^{xv} are a normal household work to be done by the women in the family. As per traditional belief, it is the woman who is supposes to prepare the rice beer to meet the family requirement because she only knows the preparation technique. In fact, the Bodos traditionally believe rice beer (Zou) is a beneficial beverages. It is used for worshipping god, for receiving the near and dear ones, for simple merry making and celebration of different social festivals and even used as medicine for treatment of certain very common diseases like abdominal disorder.^{xvi} Thus, it is an indispensable part of the Bodo socio-cultural life. The women who normally prepared rice beer for family consumption have now adopted it as a commercial venture. Of course, the enlightened section of the society is neither engaged in it nor encourages this sort of activity to some extend, but at the same time they are not daring to stop another section of the society from earning from brewing especially where poverty is at large. During the survey it was seen that only the economically weak and educationally backward families are engaged in this activity of selling rice beer at present. During the interview it was revealed that they are aware of the fact that what they are doing is not a socially acceptable one, but they are doing this for securing livelihood. In fact, it has made their life financially comfortable. According to JonakiBoro^{xvii} in her seven-member family her husband the only earner prior to her adoption of this profession, who as a daily wage laborer earns only Rs.70.00, Now she earns daily Rs.100.00 to Rs. 130.00 a day by selling rice beer. Also she is rearing two pigs using the waste of the rice beer within the family. The women have developed a complete professional approach to this trade and improved their family economic condition. Woman like Rambha Boro^{xviii} has acquired landed property in town areas purchased agricultural land in addition to the consumer durable goods like TV, refrigerator, music system, motorbike etc. and has given a different touch to her family. DhireswaryBoro^{xix} opines that she had contributed Rs.25, 000.00 in her daughter's marriage, spent around Rs.36, 000.00for renovation of her residence, purchased bicycles for her school going son and daughter. Thus, out of this income they are not only managing the day-to-day household expenses but also creating permanent assets.



Moreover, they have opened bank account also (Group Recurring Deposit scheme) where they deposit a fixed amount monthly. In the process, they themselves collect the raw materials from the market and they themselves also do disposal of finished products. In other words, they are now self- dependent, self-sufficient and no longer confined within the private domain. Rather, they have achieved a position to share in the decision-making process of the household affairs like purchasing land, marriage of family members, construction of house etc. Even, these family decisions, at times influence the social decision at the village level issues. During the survey, it is found that women in Kekohati, Bhatkuchi, Deulkuchi, Dholkuchi and Khundikar^{xx} villages have undertaken this venture but in Jhargaon village it is very rare and in Patkijuli village, it is not found at all. In Jhargaon,^{xxi} it is gathered that that only a very few families practice this trade and that too in a very small scale. During survey, they did not admit their commercial involvement in rice beer trade. The women activities has been seen taking active role in maintain or running her family by involving these activities in the society.

Self Help Group and the Bodo women

So when we talked about women role in the economic prospect the women Empowerment is the vital step to be taken particularly in the context of Indian rural set up. Indian rural women are unorganized and powerless individual with the double burden of being women and also being poor.^{xxii} They do not have access to property in most of the Indian cultural context. Therefore, without a change in these conditions of their life, empowerment of women is not possible in general. Since the early eighties, the Government of India and different NGOs have adopted various programmes towards women's development by eradicating poverty. Its aim is to raise the socio-economic status of women, particularly in the rural areas. In this direction, self help Group has emerged as a very successful strategy to look into the matter that the women are facing in the economic development. Today, SHG movement is being increasingly accepted as a tool for economic development leading to empowerment of women in rural India.^{xxiii} SHGs are voluntary associations of women or men residing in the same locality, formed democratically without any political association or affiliation. It is based on group approach, mutual trust, manageable small homogenous groups; spirit of thrift and need based lending with nominal interest rate, skill training, capacity building and empowerment. In this voluntary association members mutually agree to contribute to a common fund that can be lent to the members on need-based basis for productive purpose. Normally, a group is confined in 10-20 members. They have regular meetings where every member compulsorily remains present. Each group adopts certain activities considering the financial viability aspects. In many occasions one member becomes the member of different SHGs. Thus the SHGs can bring about significant changes in the economic status of the participating members^{xxiv} Moreover, with the changes of economic status, the dependency factor diminishes and they can rise up to a status level of sharing in the decision making process in the family as well as in the society.

SHG activities are found very active in all the villages covered in the present study. The main economic programmes adopted by different SHGs in these areas are weaving and sericulture, poultry farming, pig rearing, honeybee farming and financing small business. But all these activities are not equally popular in all the villages.



Weaving and sericulture is consistently remaining as the most popular way of earnings amongst all the SHGs in different villages whereas poultry and piggery has a low profile acceptance with different SHGs, although it is very commonly found in traditional Bodo society. According to the respondents, it is because of the emergence of these trades amongst the non-Bodo population even in very commercial manner, where small SHGs cannot stand as competitor. Nevertheless, it is an important indicator of economic awareness amongst the Bodo women, who are working as member of different SHGs. so in this new strategy of economic activities the Bodo women found actively involved and have been seen successful in handling this new strategy of economic activities in her society. But in some areas SHG is not found surviving and only the reasons lies behind is that they gave up or some members are shifted to the different places, and also due to the proper communications and dedication. They are conscious about earning of their own so that individual earning bring them an empowered status at per with the man folk in the family as well as social life. This so called new strategy of the Bodo women in the economic activities in which such result is found positive in building the greater economic interest of the Bodo women society.

Male-headed family and the women role

While discussing the economic role of Bodo women in the family life, according to the source, no female-headed family was found.^{xxv} In a traditional Bodo society, the practice of female-headed family is not seen. As the customary law permits widow remarriage either with the brother of the deceased husband or with unmarried or married able person, the situation of a female-headed family normally does not come.^{xxvi} In the light of the changing perspective of economic role and activities of the Bodo women as mentioned, it is observed that the Bodo women have adopted a new role where they have been able to convert some of their traditional productive works to profitable commercial scheme. For this purpose, coming out of the household, they have formed certain socio-economic organization like the Self Help Groups as we have already discuss above, Vegetables vendors, small tea stall, hotel for fooding, meat vendors, sweet vendors etc, which they are actively doing the daily earning and bringing economic stability of the family,^{xxvii} but in doing so they have not disturbed their normal role of housewife but at the same time achieved a new status of earning member of the family. This enhanced them to rely on themselves economically without the support of their male counterpart. These factors have significantly contributed to the empowerment as well as present economic activities of the Bodo women in the society.

Conclusions

Overall analysis of the above discussion in brief shows that the contribution of Bodo women in the process of economic prospect be it a traditional way or the contemporary strategy, has been greatly praiseworthy. The experiences of women and their contribution to the society have been still neglected notable. Women substantially contributed in the building of equal development in the society especially in the economic activities as per the paper is concerned yet their status was not at par with the men in some sort of matter. Even the customary laws did not always conduce to the interest of women, baring a few cases. However, the Bodo society witnessed a process of transition in colonial period effected by various socio-economic forces. To some extent Bodo women became conscious about their capabilities in a various ways which



the major activities regarding the economic prospect which is seen in the Bodo society, and more importantly they became an agent of socio-economic change by involving themselves in exercising various economic activities. But it is notably understood that the Bodo women enjoy some sort of equal status to men folk in all aspects irrespective of in socio-cultural rights and position, in socio-religious position, in socio-economic rights and facilities for which that is why the Bodo women have the maximum activities performed by her in the family and shoulder the various economic prospect to bring a healthy family in traditional way of life. Therefore, the economic activities of the Bodo women cannot be left behind while building the history of Bodo society.

Notes and References

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ⁱⁱ Bhattacharya P. C., *A Descriptive Analysis of the Boro Language*, Guwahati University, 1997, p.16.

ⁱⁱⁱ Khonglah, C., *Women in North-East India*, compiled and edited, Akansha Publishing, Delhi, 2008, article of Binoy Kumar Brahma, p. 21.

^{iv} Interview with Laithi Brahma age-60, Occupation-House wife, Vill- owabari, PO-Dist-Kokrajhar, Assam on 12-01-2020

^v On Observaton by the researcher and since the researcher is also belonging to the same community which has vital knowledge on these issues, personal recorded.

^{vi} Endle.S., *The Kacharis*, Low Price Publications, Delhi, 1997, p.12.

^{vii} Interview with Bisari Muchahary, Age-70, Occupation-Housewife, vill-angtihara, PO-Tetliguri, Dist- Kokrajhar, Assam, on 16-09-2019.

^{viii} *Ibid.*

^{ix} Endle S., *op. cit.*, pp.13-14.

^x Interview with Chidey Basumatary, age- 80, Occupation- Housewife, Vill- Chandana Borigaon, PO- Udaguri, Dist- Udaguri, Assam, on 23-03-2018

^{xi} Endle S., *op. cit.*, p. 16.

^{xii} *Ibid.*, P.19.

^{xiii} *Ibid.*, p.21.

^{xiv} Addi is a Bodo word which means –borrowing anything from someone and returning the same thing as a share with mutual understanding between them.

^{xv} Endle S., *op. cit.*, p. 17.

^{xvi} Narzi Bhaben, Boro kacharini somaj arw Harimu, Chirang Publication Board, Kajalgaon, 2006, p.181.

^{xvii} Interview with Jonaki Boro –age 45, Occupation-House-wife, Vill-Tengapara, PO-& Dist – Kokrajhar, Assam, on 26-10-2018

^{xviii} Interview Rambha Boro, age 50, Occupation- Housewife one who sell Rice beer, Vill- Barama, PO- Barama, Dist- Baksa, Assam on 20-6-2017.

^{xix} Interview Dhireswar Boro, age 40, Occupation- Housewife, Vill-Romanpara, PO-Titiguri, Dist- Kokrajhar, Assam on 23-12-2018



^{xx} These Villages are found in the Baksa district under the Mushalpur sub-Division, Assam , observed and interview on 11-09-2015

^{xxi} This Village is in Parkijuli, District Baksa, Assam observed and Interview on 11-09-2015

^{xxii} Desai A.R.,*Social Background of Indian Nationalism*, Popular Prakashan pvt limited, Mumbai, reprint-2010, pp.256-257.

^{xxiii} Rao D. Pulla., *Gender Inequality and women's Empowerment*, Global research Publication, New Delhi, 2012, pp.254-256.

^{xxiv} Interview with the Group members of the Self Help Group(Nerswn) located in Kokrajhar, Sudempuri, dist – Kokrajhar, Assam on 12-05-2019.

^{xxv} Endle S., op., cit., pp.11-14.

^{xxvi} Ibid., p.22.

^{xxvii} As i interview many vendors especially in the town of Kokrajhar, mostly vegetables vendors are run by the Bodo women.



ANCIENT IDEAS ABOUT THE NUMBER 108 OF INDIAN HINDUS

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INTRODUCTION

Indian Hindus believe that, the number 108 is very important and auspicious in any good deed. For example, in the worldly and otherworldly ceremonies, the number 108 samidha (Sacrificial wood), leaves of Bael tree or wood apple tree (Aegle marmelos), lotus (Nelumbo nucifera) petals, etc. are used in the sacrifice as a part of the worship of Hindu deities. The Hindus believe that the ritualistic sacrifice consisting of 108 specific ingredients would definitely satisfy the deity and bring good sacrificial results. Vaishnavites worship God by chanting with a garland made of 108 berries of Rudraksha tree (Elaeocarpus ganitrus) everyday. According to the story of Ramayana of Krittibas, Rama performed Durga Puja with Ravana for his victory. There too he organized Durga Puja with 108 lotus but when one flower was stolen due to the deception of the goddess, Ravana tried to sacrifice his eyes instead of one lotus. Thus, the number 108 is an indicator of something good in the belief-system of Hindus and has been proved in various ways.

But naturally the question arises, where did the idea of this number come from? Why this particular number is considered as a good number? The answer can be found in the following ways.

- 1) The number **108** is the step to reach **Parabrahma** (Eternal power/God) by giving up the illusion of all things through the five senses, mind, intellect and ego of the human body. Here the number **1** indicates to absolute theory (Parabrahma) as one and unique ("एकमेवाद्वितीयम्") as it is mentioned in Vedanta Philosophy. The absolute theory recognized Brahma as singular eternal power in Vedanta philosophy. This Brahma cannot be separated nationally, temporally and materially, so this Brahma is one and unique. Here, the term "एकम्" signifies the unity of Brahma and the soul, while the term "एव" refers to his predicament and the term "अद्वितीयम्" refers to singularity, so that he appears intact. That is why it has been said in Vedanta to prove the oneness (एकत्व) of Brahma –



“अखण्डसच्चिदानन्दमवाङ्मनसगोचरम्।

आत्मानमखिलाधारमाश्रयेऽभिष्टसिद्धये॥” (वेदान्तसारः -१)

The number “0” indicates “Maya”. This is a technical term of Vedanta philosophy. Vedanta says - everything else in this world except Brahma (Absolute theory) is false and illusory. This number “0” indicates either false or illusory. The theory of Maya or Ignorance has been recognized in this philosophy for proving this falsehood of the world. It is a force of Brahma by which seeker is covered. When there is knowledge of Brahma, this power is restrained and Brahma is revealed to the knower.

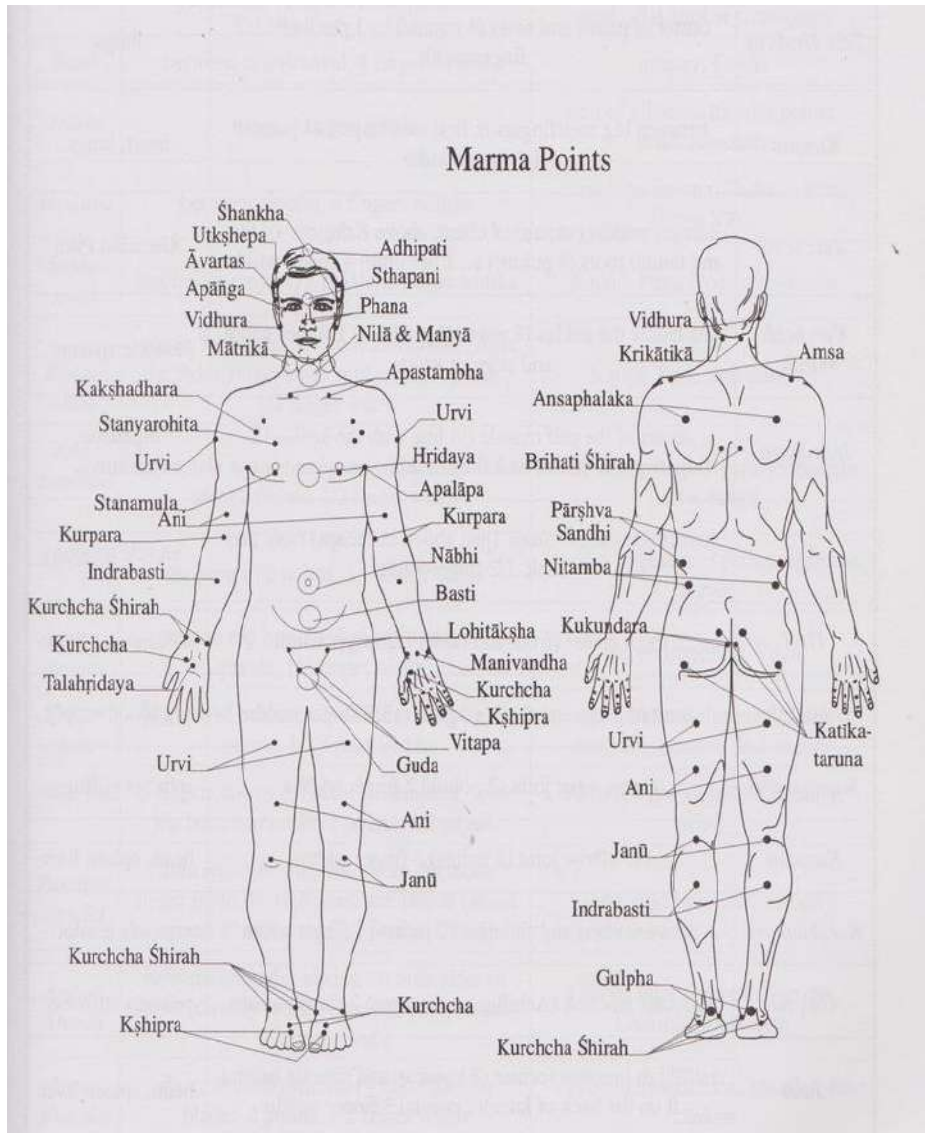
The number “8” includes the five senses along with mind, intellect and ego. In Vedanta philosophy, eyes, ears, nose, tongue and skin are the 5 sense organs of knowledge and mind, intellect and ego are the 3 hearts (Antahkaranam). So according to Vedanta, matter is known only through these 5 senses and 3 hearts.

So it is only by the number 108, as has been understood, one devout seeker can come to the proximity of Brahma by transcending Maya through 5 senses and 3 hearts. So this number is the guide to attain Brahma.

- 2) The sixth chapter of the Sushrutasaṃhitā, entitled "Pratyakṣa māṃsa", mentions 107 (108 in the doctrine) marmasthānas as follows:

“सप्तोत्तरंमर्मशतम्।तानिमर्माणिपञ्चात्मकानि।तद्यथामांसमर्माणि।शिरामर्माणि।
।स्नायुमर्माणि।अस्थिमर्माणि।सन्धिमर्माणिचेति।नखलुमांसशिरास्नायवस्थिसन्धि
व्यतिरेकेणान्यानिमर्माणिभवन्तियस्मान्नोपलभ्यन्ते।(६/२)
तत्रैकादशमांसमर्माणि।एकचत्वारिंशत्शिरामर्माणि।सप्तविंशतिःस्नायुमर्माणि।अष्टाव
स्थिमर्माणि।विंशतिःसन्धिमर्माणि।तदेतत्सप्तोत्तरंमर्मशतम्।” (६/३) ।

Here “Marmas” are the pressure points of human body. Ancient Ayurvedacharya Sushruta says, there are 107 (In Tamil edition 108) pressure points of human body and by putting pressure on them, we can get rid of many diseases. In accordance with the Ayurvedic treatises, it is also recognized in medical science that these parts of the human body are very important. So it can be said that the idea of the number described can also come from the number of these pressure points. These points are one of the means to keep people healthy and physically fit as is essential in all religious activities. If the body is healthy, the mind will also be healthy and concentration will come by the health of the mind, which is essential for human beings.



3) Notice the chart below :

	Moon Miles	Sun Miles
Diameter	2,160	8,64,000
Distance from Earth	2,34,000	9,35,00000
Ratio	108.33	108.22



If we look here, we can see that, the ratio of the circumference of the moon and the distance of the moon from the earth is 108, just as the ratio of the circumference of the sun and the distance of the sun from the earth is also 108. Renowned mathematicians of Vedic culture viewed 108 as a number of the wholeness of existence. This number also connects the Sun, Moon, and Earth: The average distance of the Sun and the Moon to Earth is 108 times their respective diameters. So the number 108 is not just an imaginary number, it is a symbol of a special proportion of the solar system.

- 4) We know that Adideva is Mahadev or Shiva who is known as Nataraja. Natyashastra describes the dance of men and women called Tandab and Lasya. A variety of dance forms (Mudras) are required to perform these dances. The number of Mudras in the Bharatnatyam are 108 as follows .

1) Asamjuktahastah	= 24
2) Samjuktahastah	=13
3) Nrityahastah	=30
4) Karan	=4
5) Bahukarma	= 4
6) Urahkarma	=5
7) Parshakarma	=5
8) Udarkarma	=3
9) Katikarma	=5
10) Urukarma	= 5
11) Janghakarma	=5
12) Padakarma	=5

Total No of Nrityakarma = 108

According to the ninth chapter of the Natyasastra these unconnected (असंयुक्तः) mudras indicate in this manner –

“ पताकस्त्रिपताकश्चतथावैकर्तरीमुखः।
अर्धचन्द्रोद्धारालश्चशुकतुण्डस्तथैवच॥(९/४)
मुष्टिश्चशिखराख्यश्चकपित्थःखटकामुखः।
सुच्यास्यःपद्मकोशश्चतथावैसर्पशीर्षकः॥(९/५)
मृगशीर्षःपरोजेयोहस्ताभिनयोक्तृभिः।
काङ्गुलकोऽलपद्मश्चतुरोद्भ्रमरस्तथा॥(९/६)
हंसास्योहंसपक्षश्चसन्दंशोमुकुलस्तथा।
ऊर्णनाभस्ताम्रचूडश्चतुर्विंशतिरीरिताः॥”(९/७)

Connected Mudras (संयुक्तः) have also been indicated in the ninth chapter of the Natyasastra as follows –



“असंयुताः।संयुताश्चगदतोमेनिबोधत।
अञ्जलिश्चकपोतश्चकर्कटःस्वस्तिकस्तथा॥(९/८)
खटकावर्धमानश्चह्युत्संगोनिषधस्तथा।
दोलःपुष्पपुटश्चैवतथामकरएवच॥(९/९)
गजदन्तोऽवहितश्चवर्धमानस्तथैवच।
एतेतुसंयुताहस्तामयाप्रोक्तास्त्रयोदशः॥(९/१०)”

This is how the hands style for dance (नृतहस्ताः) are described in the ninth chapter of Natyashastra –

“नृतहस्तानतश्चोर्ध्वगदतोमेनिबोधत।
चतुरस्रातथोद्धतौतथातलमुखौस्मृतौ॥(९/११)
स्वस्तिकौविप्रकीर्णौचाप्यारालखटकामुखौ।
आविद्धवक्रौसूच्यास्यौरैचितावर्धरेचितौ॥(९/१२)
उत्तानावज्चितौवापिपल्लवौचतथाकरौ।
नितम्बौचापिविज्ञेयौकेशवन्धौतथैवच॥(९/१३)
सम्प्रक्तौकरिहस्तौचलताख्यौचतथैवच।
पक्षवज्चितौचैवपक्षप्रचोतकौतथा॥(९/१४)
ज्ञेयोगरुडपक्षौचहंसपक्षौतथैवच।
ऊर्ध्वमण्डलिनौचैवपार्श्वमण्डलिनौतथा॥(९/१५)
उरोमण्डलिनौचैवउरःपार्श्वमण्डलौ।
मुष्टिकस्वस्तिकौचापिनलिनीपद्मकोशकौ॥(९/१६)
अलपद्मावुल्वणौचललितौवलितौतथा।
सप्तषष्टिकराद्येतेनामतोऽभिहितामया॥”(९/१७)

These are the 67 performances of hands (हस्तमुद्राः) described in the natyashastra by which Lord Shiva is worshiped . According to the Natyashastra, Karans (Style of hands)are essential for dance. These are the four in number – Apachestita, Udbestita, Byabartita and Paribartita –

“अपचेष्टितमेकमस्यात्उद्देष्टितमथापरम्।
व्यावर्तितंतीयंतुचतुर्थपरिवर्तितम्” ॥(९/२१५)

Four actions of arms are need for this .These are –Tiryak, Anchita, Udbestita and Prsarita –

“तिर्यक्तथोर्ध्वसंस्थोह्यधोमुखश्चाञ्चितोऽपविद्धस्तु।
मण्डलगतिस्तथास्वस्तिकश्चपृष्ठानुसारीच॥(९/२२१)
उद्देष्टितःप्रसारितइत्येतेवैस्मृताःप्रकारास्तु।



बाह्योरितिकरणगताविज्ञेयानित्यंनृत्यप्रयोक्तृभिः”॥(९/२२२) ।

Not only these, five actions of chest are essential for Bharatnatyam. These are – Abhugna, Nirbhugna, Prakampita, Udbahita and Sama –

“आभुग्नमथनिर्भुग्नं तथाचैवप्रकम्पितम्।

उद्बाहितं समंचैव उरःपञ्चविधं स्मृतम्॥” (९/२२४)

Again five actions of side of the body are also required in this dance. These are – Nata, Samunnata, Prasarita, Bibartita and Apasrita –

“नतंसमुन्नतंचैव प्रसारितविवर्तिते।

तथापसृतमेवंतुपार्श्वयोः कर्मपञ्चधा”॥(९/२३६) ।

Three action of belly are also need . These are – Kshamam, Khalvam and Purnam –

“क्षामं खल्वं पूर्णमुदरं स्याच्चतुर्विधम्” (९/२४६) ।

Five actions of waist are also required in this dance . These are –Chinna, Nibritta, Rechita, Kampita, and Udvahita –

“छिन्नाचैव निवृत्ताचरेचिताकम्पिता तथा।

उद्बाहिताचैव कटीनात्येनृतेचपञ्चधा” ॥(९/२४६)

Five actions of heap are need for this dance .These are –Kampanam, Balanam, Stambhanam, Udbartanam and Nibartanma –

“कम्पनं वलनंचैवस्तम्भनोद्धर्तते तथा।

निवर्तनंचपञ्चैतान्यूरूकर्माणिकारयेत्”॥(९/२५२) ।

Five actions of thighs are also need for dance .These are –Abartita, Nata, Kshipta, Udbahita and Paribritta –

“आवर्तितं नतं क्षिप्तमुद्बाहितमथापिच।

परिवृत्तं तथाचैव जङ्घाकर्माणिपञ्चधा” ॥(९/२५९) ।

Five actions of foot are also essential .These are –Udghattita, Sama, Agratalasanchara , Anchita and Kunchita –

“ऊर्ध्वट्टितः समश्चैव तथाग्रतलसञ्चरः।

अञ्चितः कुञ्चितश्चैव पादः पञ्चविधः स्मृतः”॥(९/२६६) ।

So the number 108 is very important in the worship of Nataraja as well as all deities .

5) There are 108 names of Shiva and their different meanings in the Puranas . From these 108 names of Shiva, people can get an idea about this number .Not only that, many deities have 108 names like that of Lord. Krishna, Lord Bishnu, Devi Durga, Devi Laxmi, Saraswati ,Gayatri, Ganesha, Skanda, Tulasi, Radhika, Chaitanya, Rama, Brihaspati, Buddha, Sukracharya, Shanideva, Rahu, Ketu etc . Since most of the gods and goddesses have 108 names and most of the cosmic asteroids in the solar system have 108 names in various Puranas and also other ancient Vedic Sanskrit literatures, later worshippers seem to have used this number in their worship.



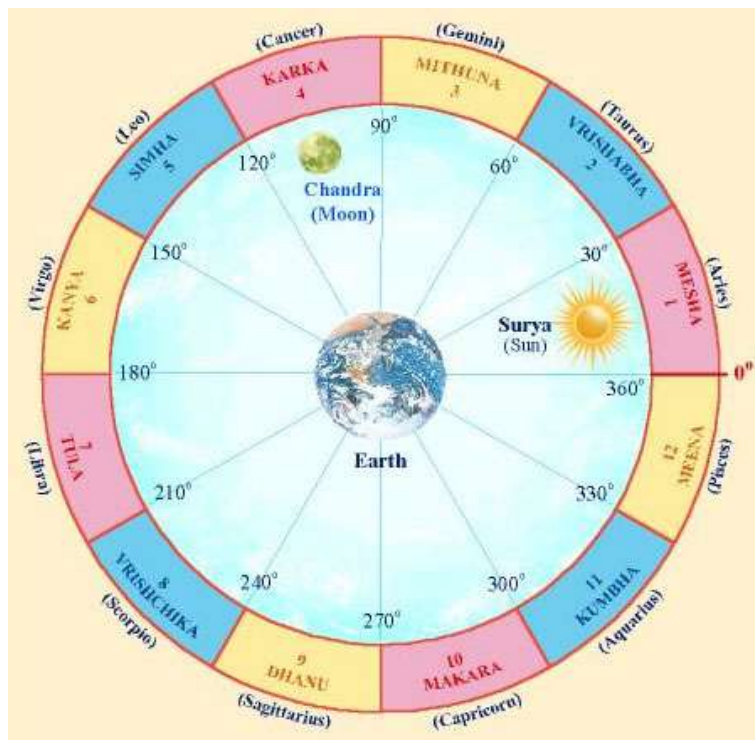
6) There are 108 Upanishads (a collection of Indian religious and philosophical texts from as early as 800 BCE) and 108 Puranas (Sanskrit sacred writings on Hindu mythology from as early as 400 BCE). A bell is chimed 108 times in Buddhist temples in Japan to finish the old year and welcome the new one.

7) "Yogadarshan" is one of the Indian theistic philosophies, in which Maharshi Patanjali discusses the ways of yoga. Combining those methods, the number is 108. The ways are as follows .

Stairs for Yoga to achieve the goal			
Sl No	Name Necessary of Paths	No of Paths	Clarification
1	Yoga	2	Sampragvata and Asampragvata
2	Chittabhumi	5	Kshipta, Mudha, Bikshipta, Ekagra and Niruddha
3	Chittabritti	5	Bipariaya, Bikalpa, Praman, Nidra and Smriti
4	Paths of Chittabrittinirodha	2	Abhyas and Bairagya
5	Bairagya	5	Lataman, Byatirek, Ekendriya, Bashikar and Para
6	Ioganga	8	Yam, Niyam, Asan, Pranayam, Pratyahar, Dharana, Dhyan and Samadhi
7	Yam	5	Ahinsa, Satya, Asteya, Brhmcharva and Aparigraha
8	Alternative practice of Yam	5	
9	Niyama	5	Soucha, Santosha, Tapa, Swadhyaya and Iswaranpranidhan
10	Alternative practice of Niyama	5	
11	Soucha	2	Bahyam and Abhantaram
12	Asana	11	Primasan, Birasan, Bhdrasan, Swastikasan, Dandasana, Sogashtay, Parvankasan, Krounchanishadan, Hastinishadan, Ushtranishadan, and Samasansthan
13	Sampragvatasamadhi	4	Bitarka, Bichar, Ananda and Asmita
14	Asmapragvatasamadhi	2	Upaya and Bhabapratyaya
15	Upaya	5	Sraddha, Birya, Smriti, Samadhi and Pragya
16	Bhabapratyaya	2	Bideha and Prakritilaya
17	Bitarka	2	Sabitarka and Nirbitarka
18	Bichara	2	Sabichara and Nirbichara
19	Pranayam	3	Rechak, Pural and Kumbhak
20	Samyam	3	Dhyana, Dharana and Samadhi
21	Parinam	3	Samadhi, Ekagya and Dharma
22	Bhabana	3	Mitrata, Karuna and Mudita
23	Siddhi	8	Anima, Laghima, Mahima, Prapti, Prakamya, Basitva, Isitwa and Kamabasavitray
24	Indriyaiay	11	Conquer the both 11 sense organs

So, in yoga, the number 108 has significance as the number representing spiritual completion.

8)According to astrology, there are 12 zodiac signs and 9 planets in the solar system. These 12 signs are cantered on 9 planets. The nine Grahas or planets govern this universal body .The names of the 12 Zodiac signs (Rashi) are – Arties (Mesha),Tausus (Brishabha), Gemini (Mithuna), Cancer (Karkata), Leo (Simha), Virgo(Kanya), Libra(Tula), Scorpio (Brishchika), Sagittarius (Dhanu), Capricorn(Makara), Aquarius(Kumbha) andPisces(Meena) . The 9 planets are –Mercury ,Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto .So 12 multiplies by 9 are 108 .The 12 Rashis are represented in the Maharshi as 12 equal segments of a circle, each covering 30 degrees. The circle of 12 Rashis with reference to the Earth as follows:



As seen from the Earth, the Sun moves through the circle of 12 Rashis within the course of one year. It takes about one month to pass through one Rashi. Here ,the Sun is shown moving through MeshaRashi. The Moon is shown moving through KarkataRashi .



9) In Hindu astrology, there are 27 Nakshatras (Lunar mansions) along the ecliptic. A list of them first found in the Vedanga Jyotisha in Sanskrit. This system predates the influence of Hellenistic Astronomy on Vedic tradition, which became prevalent from about the 2nd century CE. The 27 Nakshatras cover 13°20' of the ecliptic each. Each Nakshatra is also divided into quarters or *padas* of 3°20'. The 27 nakshatras, each with 4 *padas* (Fire, Earth, Air and Water) give 108. The names of the Nakshatras are – Aswini, Bharani, Krittika, Rohini, Mrigashirsa, Ardra, Punarvasu, Pushya, Ashlesha, Magha, Purvafalguni, Uttarafalguni, Hasta, Chitra, Swati, Vishakha, Anuradha, Jyeshtha, Mula, PurvaAshara, Uttara Ashara, Shravana, Sravistha, Shatavisha, Purvabhadrapada, Uttara Bhadrapada and Revati.

CONCLUSION:

At present there are various ideas in the Hindu public opinion, which may seem very common, but their antiquity is far-reaching. The ancient sages never imposed any reforms on the people without any specific reason. They told people to follow the customs that would benefit people and equality. The concept of 108 numbers is the same. It has been proved in the discussion that 108 is not just a number but also has special significance. It must be acknowledged, then, that all human beliefs are based on one specific pillar of authenticity.

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PROBLEMS OF PRIMARY EDUCATION IN CHITTOOR DISTRICT, ANDHRA PRADESH

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ABSTRACT

Primary education is the most important stage in any educational school. Its importance is many times greater in India when we are engaged in national reconstruction. The future of India is dependent upon the types of education provided in our primary schools. The teacher-pupil ratio in the schools has a great significance. The primary education of Chittoor district has been affected by the problems of wastage and stagnation to a great extent once a child is admitted into a school.

INTRODUCTION

Educational administration has become one of the most significant and dominant ramification in the field of Public Administration. An efficient adequate and effective educational system is sine qua non of social development and cultural maturation. In a democratic developing country like India, education at the primary school level still stakes more importance in view of its ability and possibility to shape and strengthen individual's future prosperity and progress. Primary education is the most important stage in any educational school. Its importance is many times greater in India when we are engaged in national reconstruction. The future of India is dependent upon the types of education provided in our primary schools. Currently, the primary education is in concurrent list and the local self governments are treated as a subject. Even though, the local bodies are trying to cope up with that limitation and trying to utilize the opportunity of under taking this task of promotion of literacy through establishing primary as well as secondary schools both in rural as well as urban areas. Among the rural local bodies, more specifically the mandal parishads and Zilla Parishads have been exhibiting much concern in the field of education by employing various categories of teachers and other personnel for the successful fulfillment of the objectives entrusted to them. The laudable point in respect of the Mandal Parishads in Andhra Pradesh is when there are state Government agencies to impart and spread education to all areas and the local bodies are to a great possible extent meant for providing civic amenities, the Mandal Parishads as an integral part of the latter have also taken a leap further in the task of expansion of education by managing primary schools. Thus, educational administration has become an indispensable and day-to-day matter of mandal administration in Andhra Pradesh as well as Chittoor district.

THE TEACHERS – PUPIL RATIO

As many as 80 per cent of the teacher – respondents expressed their serious concern over the violation of the teacher – pupil ratio. The teacher-pupil ratio in the schools has a great significance. The officially accepted teacher-pupil ratio is 1:30 which has to be adhered to as far as possible. Now-a-days the pupils under the age group of 6 to 11 are admitted into the schools



especially in rural areas where there is no alternative expect to admit them into primary schools. Automatically, the children admitted will be far more in number than the required ratio that is to be accommodated.¹ If the student's strength is increased beyond of a particular level, it is not possible for the teachers to pay personal attention to his pupils individually.

Wastage and Stagnation

The primary education of Chittoor district has been affected by the problems of wastage and stagnation to a great extent once a child is admitted into a school, it is essential to see that progress regularly from year to year (i.e. there is no stagnation) and she does not leave the school, before he completes the prescribed age or class (i.e. there is no wastage). But, due to the social and economic backwardness, the parents are reluctant to admit their children into the schools. Even after having admitted them, the parents would be tempted to engage their children in their fields or employ them in a remunerative enterprise, because of economic compulsions.² In such circumstances, there might be a large number of dropouts (i.e. wastage). Sometimes, the children may not sit for the examination because of fear, when once they fail in the examination they have to study in the same class again (i.e. stagnation).

In Chittoor district, there is fluctuation in the joining of pupils in first class, because there is a lot of propaganda by the corporate education educo-entrepreneur and also poor facilities in rural schools. The Table 1 given below shows the strength of pupils in the 1st Class.³

Table 1
THE STRENGTH OF PUPILS IN THE 1ST CLASS

Year	1 st class joined children
2011-2012	43,624
2012-2013	40,531
2013-2014	39,837
2014-2015	38,368
2015-2019	39,661
2016-2017	37,188
2017-2018	37,311
2018-2019	35,783

Source: Office of the District Education, Chittoor.

In Chittoor district, there are 6,13,216 students getting education for which there are 6,412 schools were set up. There are so many welfare programmes have been implementing in the district for increasing strength, in spite of this, as per Researcher's observation, every year 50,000 students are stopping education for which, the Government of Andhra Pradesh inviting such students to readmission by the introduction of the programmes such as 'Badi pelusthraa' 'Badibata' which are formulated and implemented by the Department of Education, Rajiv Vidyamission.



Lack of Accommodation

The public as well as the teacher's associations have complained that the primary schools are not provided with enough accommodation. The number of school buildings owned by the mandals has been most inadequate. Most of those schools are housed in the pucca buildings. The public may not be interested in admitting their children in the schools, where there are no basic facilities. Each school requires 56 rooms at least. As per statistics collected by the researcher, approximately, each school accommodations of primary schools in Chittoor district.⁴ Table 2 presents accommodation of primary schools in Chittoor district.

Table 2
ACCOMMODATION OF PRIMARY SCHOOLS IN CHITTOOR DISTRICT

Schools with single room	1970
Schools without toilets	3200
Schools without for girls toilets	800
Schools without drinking water	2782
Schools without kitchen rooms	1500
Schools without boundary walls	1100
Schools without electricity	586
Schools without gas connection	1735
Schools without T.V	3680

Source: Department of Education, Chittoor district.

At present all the primary schools have been provided with pucca buildings under Sarvashiksha Abhiyan scheme. But, majority of schools are not having playgrounds as required majority of the schools having no infrastructure. All the students have to sit on the floor. They have no benches, they have no ayas.

Lack of School Conductors

The public as well as the teacher's associations have complained that many schools under the Mandal Parishads are not having school conductors. They are expected to bring the small children from their residences to the schools and leave them safely to their residences after the closure of the school. But, due to the non-availability of conductors/conductresses, some parents are reluctant to send their children to the schools.⁵

Teaching Methods

It has been generally observed by the Researcher that while imparting knowledge to the children, the teachers are not up-to-date in using either the play- way method, or project method of teaching. Some of the teachers are teaching their lessons in the old conventional methods, they are not attracting the students with the new techniques.⁶ The Mandal Parishad staff has on the other hand, said that the teachers are not able to use these methods due to lack of teaching aids and proper accommodation facilities.

Need for Effective Inspection and Supervision

Education is the right royal to development. The educational system of a developing country such as India has to be recognized to have a dynamic development oriented administrative and supervisory system which can function as a catalyst for change and help education respond to the changing conditions in society. Education is not a medical process but a social force affecting the



development of human personality.⁷ The role of the school inspector in that of a liaison officer and human engineer as well as education by interpreting the problems of Head Masters, teachers, and high school authorities to each group and by working cooperatively with them for educational achievement and improvement. He is a friend, guide and philosopher, rather than a fault finder. The role of educational supervision therefore becomes. Supporting, assisting and sharing rather than directing and controlling supervision is not an imposition upon the teachers, but an improvement on the teachers.⁸ The most important function of a supervisor is to investigate the teaching learning process in terms of the environmental conditions. It requires extra-ordinary skill on the post of the supervisor to provide able leadership in group activities and a personnel administration.⁹

Lack of Furniture and Other Facilities

It has been complained by 90 per cent of the teacher-respondents that most of the schools under the Chittoor district do not have been absolutely required furniture. Sometimes even the teachers are forced to sit on the floor along with their students. Because of the lack of furniture, the students have to face many difficulties.¹⁰ The staff of the DEO, on the other hand, expressed the view that the governments has not provided with adequate funds to purchase the required furniture.

Lack of Suitable and Worthy Teachers

For free and compulsory education, it is necessary that suitable teachers from the adjoining areas or local persons are appointed who are willing to work in rural areas. They should be conversant with the local cultural, religious and social traditions. They should be fully familiar with language of the area. They should have the capacity to make the school environment healthy, attractive and useful. They should be master of subjects so that the teaching of various subjects may be done satisfactorily.¹¹

Single School Teachers

As per Researchers' information by the survey, in the Chittoor district, there are 1,467 single teacher schools, without additional post of second teachers it is a curse to the schools. If one teacher is going on leave on that day, the school will be closed. There is no education on that day. If the teachers C.L. extends more than one day what is the fate of the schools.

Lack of Text-Books

As teachers associations are general public have by and large complaints that the text books are not supplied to the schools properly. Lack of text books is one of the knottiest problems encountered by the students as well as the teachers. The Government of Andhra Pradesh is responsible for the publication of text books and also their distribution through the various Head Masters of the schools to the students. But the text books are not supplied to the schools promptly sometimes, the books will not be available even during the middle of the academic year. The text books are also not supplied to the schools in time. The District Education Office staff has on the other hand, said that most of the teachers reside far away from their schools. Further, it is not possible for the DEO staff to contact the teachers of the schools individually and arrange for the distribution of text books so, they are asked to go over to the DEO to receive the books. There is no provision to reimburse the traveling expenses incurred by them.¹²

Reform of Primary Education

Indian constitution provides for free and compulsory education for all children between 6 to 11 years of age. This may be extended up to 14 years of age. Some states have implemented it for the children up to 14 years of age. It was planned that this scheme of free and compulsory



education should be implemented up to the junior high school stage. Later on it was decided that free and compulsory education should be made available for children between 6 and 11 years of age. But when even this objective could not be achieved by the end of the Second Five Year Plan, its programme was extended in the third year plan. For the fourth year plan the scheme was revised for children between 6 to 14 years of age. But even till today this could not be achieved due to following difficulties in Chittoor district.¹³

Lack of Toilet Facilities

Most of the staff as well as students complaint that there are no urinals and septic lavatories for staff and students in most of the primary schools in Chittoor district. The women staff members face grater inconvenience than that of men staff members because of lack of such facilities in primary schools. There are 4475 primary schools which have no toilet facilities for girls and boys primary schools which have no toilet facilities. Unfortunately, that there is no toilets for women teachers. Hence, urinals and septic lavatories should be accorded top priority in the schools which are now under construction. Such provision should be made even in the old buildings and first preference should be given to women's toilet rooms as against men's.¹⁴

Lack of Audio-Visual Equipment

At present, the primary schools are not provided with audio visual equipment which is essential to make the students learn through audio visual education. At least, some of the primary schools should be given such facility. The District Public relations Office should act as a nerve centre for such activity by devising some periodical programmes.

Lack of Medical Facilities to School Children

In Chittoor district the Teacher's associations and individual teachers have also complained about lack of medical facilities to the school children. The office of the DEO, Chittoor have clarified the position and said that the officials of the health department will be visiting the schools to take care of the health of the school children from time to time. It may be suggested that the health check-up programme for the students of all the primary schools should be periodically undertaken by the health department. Health chart should be maintained for every child and in case of any contingency, immediate steps should be taken hygienic care for children should be undertaken by providing them with soap, hair oil, powder and towel. The mental abilities of the children and their family backgrounds should also be studied and analyzed and their socio psychological deficiencies identified and attended to. The Government of Andhra Pradesh should constantly persuade the health department to do the needful and make the best possible use of their services.¹⁵

No Rest Rooms

Lack of rest rooms is for the women teachers as well as girls mainly at the time of periods except model cluster schools.

Deficit of Teachers

Most of the parents are complaint that the most of the primary schools under control mandal parishads having insufficient deficit of teachers in the areas of Shantipuram, Ramakuppam and Gudupallemandal of the Kuppam constituency. If sufficient teachers are there, there is no scope for stagnation and wastage. It is suggest by the researcher, it is the duties of district education department instruct the mandal level education officers to concentrate on deputing



surplus teachers to schools that are facing a shortage of teachers. This is done by conduct a meetings from time to time by the District Educational Officer with the mandal level educational officers here, and also he will give instruction to the authorities concerned to prepare a plan of action to increase enrolment of students from the from the academic year. As a result, head master in various mandals for maintaining quality teaching standards on par with private institutions.

Dearth of Trained Teachers

There is a shortage of trained teachers to make elementary education universal and corporatry. Now-a-days, the young teachers do not wish to work in rural areas. But the fact remains that majority of primary schools are in rural areas. The chief reason of non-availability of suitable teachers is that teaching work is not attractive for many persons, since the salary of primary teachers is hopelessly low.

CONCLUSION

In Chittoor district, there are 6,13,216 students getting education for which there are 6,412 schools were set up. There are so many welfare programmes have been implementing in the district for increasing strength, in spite of this, as per Researcher's observation, every year 50,000 students are stopping education. Due to insufficient facilities by the government schools parents are committing their children in corporate schools. If children are showing interest to admit their children in private English medium school, they want to encourage their children to learn English language. Due to these reasons the government schools are facing problems and the enrolment in government schools in coming down drastically over the years. Almost all schools in Chittoor district facing lack of amenities like toilets, drinking water electricity of in and around the schools. But the government is trying to facilitate the above facilities to the schools even though the parents and society is taking more care about their children feature. There is need for overhaul of the teaching learning maths is the focus imparting quality education and good infrastructure. It is not easy to provide necessary funds for setting by such a large number of schools with buildings and other equipments. In order to meet this problem of new buildings along with the existing schools in private houses, temples, verandah of rich persons, residency of teachers etc. should be met by construction of low cost houses of thatch or tile with local materials.

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CAUSES OF OUT MIGRATION OF SCHEDULED CASTE FROM BIHAR

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Abstract

Migration is also affected by social groups, the people belonging to general category are found to be more as migrants than the SC and ST and other backward classes in long term migration, it may be due to the better financial position of higher caste who move out for better employment and studies in cities and also for labour work in case of poor from higher caste. It is also corroborated by findings that majority (55%) of the long term migrants in Punjab working as migratory labour belong to general caste category, due to the social stigma attached to working as labour that they do not work as labourers at their native place but do it at other places as migrant labour. In case of short term migrants SC and ST classes migrate more as labourers and short term wage earners, both men and women migrate among the lower classes for seasonal works and more for marriage related reasons in case of females of both the castes. The wave of labour migration from Bihar started in the decade of sixties, when the green revolution started in the north-western part of India, created an unprecedented demand of laborers in agriculture.

Keywords: Migration, Scheduled Caste, Women, Seasonal and Works.

Introduction:

Migration is an intrinsic part of process of development. It illustrates a dynamic link between both area of origin and destination. Migration operates within the framework of social, cultural, economic, and institutional conditions at both the sending and receiving ends and it plays an important role to alter the conditions of the entire space within which this processes operate (de Haas, 2008). Migration is often rationalized as an outcome of asymmetry of development between area of origin and destination. However, there is complete disagreement regarding the outcome of migration at area of origin (de Haan, 2000). The developmentalist views argue that with flow of migration, counterflows of capital (remittances and investment) and knowledge are also generated to area of origin, which can be invested and are believed to subsequently stimulate development and modernization. The backwardness of the state of Bihar is reflected in the lower agricultural output, skewed distribution of land and higher incidence of landlessness, higher dependency on agriculture and lack of industrialization and several socio-economic and institutional barriers. The stagnation in all sectors of economy in the past led to lower per capita income and higher incidence of poverty in the state. The lack of infrastructure, institutional barriers and poor governance in the state has developed a milieu of underdevelopment and the state is



described as 'the state without hope'. This situation is considered as the leading factor of heavy out-migration from the state of Bihar. The commercialization of agriculture also increased without any increment of production, increased their misery further, which led them to migrate to the different parts of the country, particularly towards the eastern region of India and even foreign countries for their survival (Sharma, 2005). In the later half of the nineteenth century, an eastward trends of migration became well established, particularly migration from western part of Bihar to Bengal and Assam. The migration stream was dominated by lower caste and landless laborers, who were staying at bare subsistence level and ready to respond to the fair high wage gap between their native place and east. They found employment in the mills, factories, docks and coal mines, or on the roads and railways, or in harvesting the crops of other districts of West-Bengal. This migration was mostly seasonal, and improved communication through railways made it possible for them to migrate easily and come back for agricultural and other activities at their native place. The circular migration was critically important for agricultural laborers and marginal farmers of Bihar for their bare subsistence. When the peasants and laborers were not able to get enough from cultivation, this migration was playing an important complementary role to fulfill their minimum needs. The wave of labour migration from Bihar started in the decade of sixties, when the green revolution started in the north-western part of India, created an unprecedented demand of laborers in agriculture. Starting in the early 1970s with a small trickle to the rural areas of Punjab it soon took the form of a flood during the next one decade. Soon the influx of migrants spilled over to the neighbouring state of Haryana. After the decade of eighties, labour demand saturated in the area of green revolution because of the changes in cropping pattern and mechanization of agriculture in green revolution areas. The recent move of labour migration from Bihar is the move towards big cities such as Delhi, Bombay, Surat, Kolkata, and Hyderabad etc. Out-migration started from all the section of the state, cutting across the hierarchy of caste and class. The migrants who used to migrate to rural area for agricultural wages, used to move seasonally, however the recent urbanward movement is more permanent in nature (Singh *et al.* 2005). Laborers are involved in a variety of occupations like those of security guards, rickshaw pullers and colliers, etc (Sharma, 2005). Migration is now viewed as finite stage of life-cycle of people of Bihar, as male member of household approach to a certain age, they send away to earn. The remittance is playing a critical role to support livelihood in the state.

Status of Scheduled Caste in Bihar:

Due to the rigid caste system, scheduled castes are those castes which remains at the bottom of hierarchy. They have been socially discriminated and exploited by the upper castes since time immemorial (Singh, 2009). They were considered as untouchables because people of these castes were associated with impure activities such as scavenging animals, washing clothes, clean urinals and cow shed of upper castes, etc. Due to the bottom rank in the social hierarchy, they were politically, socially, economically and educationally backward. However, many steps were taken by the British government to empower the depressed classes. The constitution of India is enriched with various safeguards for them to promote their social, political, economical and educational interests. The constitution of India made a various specific provisions



for them such as providing reservations to the scheduled castes and scheduled tribes in government jobs and educational institutions and encourage these people to improve socially, politically, educationally and economically. The occupational structure is very significant indicator to assess the levels of economic development of a village in different population groups as well and also major component in the establishment of general, social and economic position. In the next decade (1991) the proportion of working population in primary activity witnessed decreasing, whereas secondary and tertiary activity work participation indicates increased among the Scheduled Caste population. Working population in primary occupation was 77.02 %, secondary was 3.97 % and tertiary was 19.01 % during 2001. It is found that during 2009 the work participation in primary, secondary and tertiary activities reported 74.21 %, 4.12 % and 21.67 % respectively. It can be concluded that the proportion in primary and secondary sectors indicates decreasing trends. The most of Scheduled Caste population engaged in primary occupation due to main economy in village is on agricultural. Besides this majority of females are working as agricultural labours and male selective out migration. The economy of the village led to lack of employment opportunities, low level of literacy. On the other hand increasing work participation in tertiary activity indicates improvement educational facilities and literacy level, infrastructural and allied facilities. According to the total population there was a gradual decline in primary work participation. Bihari society follows a very rigid caste system, which influences daily life and politics. The 2011 Census of India indicated that Scheduled Castes constituted 15% of Bihar's 10.4 crores population. Population of scheduled caste in Bihar is 13,048,608 and Proportion of SC Population 15.7.

Review of literature:

Review of related literature is an important research effort as it provides comprehensive understanding of what is already known about the topic. Familiarity with research work of others provides up-to-date knowledge of the latest developments, findings, recommendations, tools and loopholes of researches. It helps to avoid duplication of what has already been done, and provides useful directions and helpful suggestions for research work.

Shanthi (1991) Examines the extent of employment oriented migration of females in India and the inter-state variations in its magnitude using NSSO 55 th round household level data on migration. It is found that though the percentage is very small for 'employment oriented migration' an analysis of work force participation of female migrants in the age group 15-60, irrespective of the reasons for migration reveals that in the post migration period, work participation of these migrants increases steeply in all the states. In the recent past 'independent migration' of females is on the increase in response to the employment opportunities in export industries, electronic assembling and garment units. In all the states in south India this percentage is high. In the north at the disaggregated level the percentage of 'never married' and 'heads' is high in rural-urban and urban-urban migration.

Mitra & Murayama (2008) Analyzed the district level rural to urban migration rates among males and females separately and find that both the rates are closely associated (irrespective of whether the migrants originate from the rural areas within the state or



outside the state). Though many of the relatively poor and backward states actually show large population mobility, which is primarily in search of a livelihood, the mobility of male population is also seen to be prominent in the relatively advanced states like Maharashtra and Gujarat. The social networks, which play an important role in the context of migration, are prevalent among the short distance migrants who tend to lose their significance with a rise in the distance between the place of origin and destination. Further they find that the effect of factors at the place of destination, prospects for better job opportunities are a major determinant of male migration. Low castes and minority groups tend to pull migration through network effects.

Dwivedi (2012) Migration in India is mostly influenced by social structures and pattern of development. The development policies by all the governments since Independence have accelerated the process of migration. Uneven development is the main cause of migration. Added to it, are the disparities, Inter regional and amongst different socio-economic classes. There are two important reasons for rural labour migration: (1) migration for survival, and (2) migration for subsistence. The first one indicates the severe social and economic hardships faced by rural labourers, a situation where migration becomes necessary to stay alive. These communities are generally landless, illiterate and drawn largely from Scheduled Castes, Scheduled Tribes and other depressed castes. The second reason for migration is also rooted in subsistence and arises because of the need to supplement income in order to fill the gaps of seasonal employment. Such communities often migrate for shorter periods and do not ordinarily travel very far from their homes.

Objectives:

The objectives of the paper is based on following headings:

- To Examine the trends of out migration of Scheduled Caste from Bihar.
- To Evaluate the causes of out migration of Scheduled Caste from Bihar.

Methodology:

The method used in this paper is descriptive-evaluative method. The study is mainly review based. It is purely supported by secondary source of data, i.e. books, journals, papers and articles and internet.

Trends of out-migration from Bihar:

The volume of out-migration from Bihar is very high. More than 6.2 million people from Bihar counted in other states of India, which is nearly 7.3 per cent of total population of the state in the same census year. In addition to that, a slightly higher volume of out-migrants (6.5 million) were captured by using the place of birth data. Male population of Bihar is more out-migratory than female as male out-migrant comprise 7.1 per cent of total male population as against the 6.9 per cent of total female population, nevertheless the volume of female migration is also equally significant. The propensity of migration of urban population of Bihar is very high than rural population; out-migrants from urban area comprise 12.3 per cent of total urban population of the state, whereas out-migrants from rural area comprise merely 6.5 per cent of rural population of the state. But as the level of urbanization of the state is very low, the volume of out-migration from the urban area of the state is very low in comparison to rural area and out-migration from the state has largely become the phenomenon of rural out Migration.



The rural to urban stream of out migration is the predominant stream which comprises around 60 per cent of out-migrants from the state followed by rural to rural out-migration with a share of around 26 per cent of total migrants. The share of urban to urban migration stream is around 17 per cent to the total of out-migrants and urban to rural migration constitute the least fraction of total out-migrants. Again, the Table reveals out-migration from the state is especially a move towards urban areas, since around three-fourth of migrants move to urban areas of the other states. the gender differentials to the selectivity of area of destination. Among male 80 per cent of out-migrants move to urban area, while around 65 per cent of female out-migrants move to urban area. On per thousand males, only 573 females move to the urban area, while to the rural area their ratio increased to 675. The overall sex ratio of out migrants is 765 females per thousand males. The duration of stay of out-migrants at their place of current residence. A major chunk of out-migrants (around 45 per cent) was staying at their place of current residence for a period less than 10 years, which is defined as intercensal migrants. The proportion of inter-censal migrants among male out-migrants was higher (around 46 per cent) than female out-migrants (around 40 per cent). Even among the recent out-migrants (migrated in last 1 year), the proportion of male out-migrants was higher (around 5 per cent) than female migrants (around 3.5 per cent). The rural-urban difference in duration of stay is not very significant.

Migration rates for urban and rural areas we can see that urban migration is lesser than rural migration with 54% being migrants from rural area in 2011 and 47% of them belong to urban category and over the periods migration rates in rural has decreased while that of urban area has increased indicating growing opportunities and facilities in rural areas, and the effects of liberalisation, privatisation and globalisation reflected in terms of more urban migration since the 1990's. The migration trends over the period based on gender (male, female) show that across various periods the rate of female migration is quite high than the male migration, and accounts to 70% in 2011 where as the male migration stands out to be just 30% and is found that Marriage contributes more than 50% share in female migration, but in case of male, marriage is not the case of migration but other reasons of job, lucrative wages are prominent and for female more than other factors marriage being the main reason as a social way of moving along with the grooms family in Indian patriarchal system. In Indian context employment is secondary to marriage in case of reasons to migrate (Deshingkar, 2006).

Destination of Out-migrants:

The place of destination of out-migrants and inter-censal migrants in the other states of India. The states where larger proportions of out-migrants were enumerated are west-Bengal (21.4 per cent), Jharkhand (20.5 per cent), Delhi (13.8 per cent), Uttar Pradesh (11.8 per cent), Maharashtra (6.9 per cent), Punjab (4.5 per cent), Haryana (4.5 per cent), Gujarat (2.8 per cent) and Assam (2.4 per cent). The destination of inter-censal out-migrants differs from the destination of all duration of migrants. Delhi which is the third major destination for out-migrants became first. Among major destinations, the states where the proportion of intercensal migrants is higher than the proportion of all duration migrants are Delhi (18.9 per cent), Maharashtra (10.2 per cent), Haryana (6.9 per cent), Punjab (6.7 per cent) and Gujarat (4.6 per cent) and the states where the proportion of inter-censal migrants is lower are West Bengal (13.3 per cent), Jharkhand



(13.8 per cent), and Uttar Pradesh (10 per cent). It suggests that the direction of move of out-migrants has shifted from eastern India towards the other regions of the country. In case of West Bengal and Jharkhand, the difference is more dramatic in case of male outmigrants, who migrate for the purpose of employment. The percentage distribution for male and female migrants separately for intercensal migrants shows that in case of bordering states like Jharkhand (male 9.7%, female 20.7%), West Bengal (male 12%, female 15.6%), and Uttar Pradesh (male 6.8%, female 15.5%), the proportion of female out-migrants is higher than the male out-migrants who migrate particularly either for marriage or with their household. In case of distant states, the proportion of male out-migrants out-number the proportion of female out-migrants, such as Delhi (male 20.8%, female 15.5%), Maharashtra (male 12.6%, female 6.1%), Punjab (male 8.2%, female 4.1%), Haryana (male 7.6%, female 5.8%) and Gujarat (male 5.7%, female 2.8%).

Reasons of Out-migration:

A short-term migrant is one who has migrated for work for more than 30 days but less than 180 days. This concept of NSSO helps one to understand the seasonal nature of migration. We can see that majority of the migration is from rural streams thus it is highly likely that majority of the rural-rural migration is of seasonal and follows the agricultural cycle of the respective region. As short duration migration occurs mainly in response to dwindling employment opportunities in rural areas along with underdeveloped nature of the non-farm sector. The state-wise total number of short duration migrants as well as their percentage share in the total population of the respective states shows that Uttar Pradesh, West Bengal, Rajasthan, Jharkhand, Madhya Pradesh, Gujarat, Nagaland are the states with the highest percentage of short term migrants in India. At the same time it was found that mainly the males were found to be involved in short term migration.

The reasons of migration in six broad categories. These categories are work or employment, business, education, marriage, moved with household, moved after birth (associated with the custom of Hindu family). It classifies the reasons of migration into 18 categories. Employment related reason is also classified into six categories, which are in search of employment, in search of better employment, to take up employment or better employment, business, transfer of service or contract and proximity to place of work. Heavy male out-migration from Bihar is taking place exclusively for economic or employment related reasons. Around 30.7 per cent of the total outmigrants moved to search an employment, as they were not in employment at the place of origin. Around 23.8 per cent of entire male out-migrants left their place of origin to get a better employment than their previous employment at their place of origin. Around 34.3 per cent of male out-migrants moved when they got an offer of employment or better employment at place of destination. Other important causes of male out-migration is migration of parent or earning member of the family (3.9 per cent), business (2.6 per cent) etc.

Socio-economic background of male out-migrants household

Migration is also affected by social groups, the people belonging to general category are found to be more as migrants than the SC and ST and other backward classes in long term migration, it may be due to the better financial position of higher caste who move out for better employment and studies in cities and also for labour work



in case of poor from higher caste. It is also corroborated by findings that majority (55%) of the long term migrants in Punjab working as migratory labour belong to general caste category, due to the social stigma attached to working as labour that they do not work as labourers at their native place but do it at other places as migrant labour (Kaur *et al.* 2011). In case of short term migrants SC and ST classes migrate more as labourers and short term wage earners, both men and women migrate among the lower classes for seasonal works and more for marriage related reasons in case of females of both the castes (Srivastava, 2003). Studies also show that caste being endogamous group being decided at time of birth, as far as migration is concerned higher castes migrate greater than lower castes.

It makes possible to understand the socio-economic background of the household, from where the out-migration is taking place. Among the migrants household, only those households are categorized from where at least one male member is migrated, the remaining households are categorized as non-migrants households. The inter-state migrant's households can't be separated from the data. However, around 85 per cent of male out-migrants from the state are inter-state out migrants, so the findings of out-migrants to all distance can be generalized to the inter-state out-migrants as well. The caste groups, the propensity to migrate is highest among general caste (24.2 per cent), among OBC household out-migration took place from 22 per cent household and among SC & ST households the proportion of out migrants is the lowest (19.3 per cent). The land holding determines the socioeconomic status of a household in rural area. The distress migration from rural area is correlated to the smaller size of holdings of a household, which force them to out-migrate in absence of productive assets to survive. But at the same time, it has also been argued that migrants are not exclusively from the lower socio-economic stratum, because the household of this stratum can't bear the costs associated to migration. Out-migration is lowest (13.7 per cent) among the landless households (less than 0.005 hectare) compared to marginal and small farmers (less than 0.2 hectares). Further, richer households have higher propensity to migrate compared to poorer households.

Conclusion:

Thus in the long run these unequal migration trends tend to equalize the income gaps in both rural and urban areas, leading to economic development on the whole, internal migration can help prevent households sliding into poverty in both sending and receiving areas, by its own mechanism in nature and with developmental process that occurs sideways. The Indian economy is growing at a faster pace, & cheap labour supply is one of the important catalysts for it. The prime reason of such heavy out-flow is related to employment. People are migrating not only in the absence of employment at their native place but also to secure a better earning also. It seems that the out-migration for employment is taking place not only in poor and socially backward households but the members of relatively affluent households are also migrating either in the same proportion or even higher. This must be noted by the policy makers while formulating programmes for mitigating poverty in Bihar.



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NOAH'S ARC: ANALYSING THE ROLE OF IBC ON ASSET RECONSTRUCTION COMPANIES IN NPA ALLEVIATION

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Introduction

Based on human behaviour and statistical probabilities, bad loans are the part and parcel of the economy, no matter their undesirability. Banks refer to such loans as Non-Performing Assets (NPAs) and how the banks and nations deal with them are reflected in their economies. The Indian Governments promise to make the nation a 5 trillion-dollar economy is very much attached to the dealing on NPAs. Such assets are considered to be loans that default in payment for over 90 days.

Among the major strategies to combat the issue of NPAs, the Insolvency and Bankruptcy Code 2016 has played a tremendous role in its alleviation. With Gross Non-Performing Assets (GNPA) of banks witnessing an improvement of around 2% between 2018 and 2019.¹ This was the first time in the past seven years that the NPAs witnessed a decline primarily due to the timely resolution of stressed assets and other related policies by the IBC and the Reserve Bank of India (RBI).² However it is also important to mention the correlation of the reclassification of highly NPA-infested IDBI Bank (averaging at 30% of its total loans³) as a private bank⁴ to the declining GNPA ratio.⁵

Until 2013, the stressed assets market was dominated with Asset Reconstruction Companies (ARCs), and the introduction of IBC and RBIs prudential stressed asset resolution framework has given ARCs a crucial role in ensuring the NPAs become operational and are sold at a better value at an opportune time for the benefit of lenders and other stakeholders. to the issue of NPAs. This is because barring a few large assets, most distressed assets are still looking for strategic buyers, or distressed M&A investors want to acquire the assets at throw-away prices.

ARCs are ideal for many sectors facing the problem of distressed assets such as power, engineering, and more obscure sectors where investor interest is relatively low. In this article, the discussion will be around the impact IBC has over the vastly looming issue of NPAs via the role of Asset Reconstruction Companies.

¹ GNPA ratio in 2018 stood at 11.2% and by September 2019 at 9.1%.

² *Report on the Trend and Progress of Banking in India 2018-19*. Reserve Bank of India. Dec 24, 2019.

³ *With 32% NPAs on its books, IDBI Bank is now the bad loan King in India: Ring a bell, dear LIC policyholder?* Firstpost. Nov 15, 2018.

⁴ Effective on January 21, 2019.

⁵ *Report on the Trend and Progress of Banking in India 2018-19*. Reserve Bank of India. Dec 24, 2019.

The Issue of NPAs

One of the primary transactions take place in banks is monetary lending. The management of the aspects of giving loans is considered focal to a bank's growth and its trust among the people associated with it. The performance of loans is, thus, usually classified into two types – (i). Standard Assets (regular payments made by the borrower), and (ii). Non-Performing Assets (payment defaults made by the borrower). Of course, the concern of the latter is significant because the Gross NPAs of banks have increased from 2.3% in 2008 to 9.3% in 2017 (Refer to Chart 1, Figure 1) and return on Assets declined from 1.1% in 2008 to 0.4% in 2017 (Refer to Chart 1, Figure 2), and stood at INR 10.35 lakh crore by March 2018.⁶These figures show that the increasing NPAs reduce the Bank's ability to generate future credit and thus lowering its profitability and the public trust in it.

Figure 1: Gross NPAs (% of total loans)

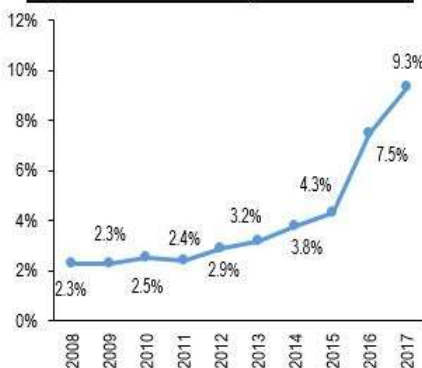
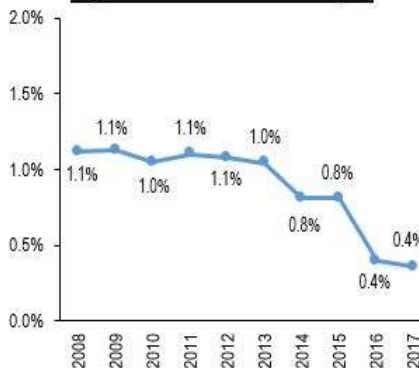


Figure 2: Return on Assets (%)



Source: Reserve Bank of India; PRS.

Chart 1

The rising issue of NPAs is strongly linked to the wrongdoing of Promoters/ Owners of businesses using the financial instruments from the Bank for their personal benefit by committing fraud. The insincerity of the leaders of the business leads to cases of insolvency and the recovery by means of resolution or liquidation is generally not palpable to the amount lost by the investors and other stakeholders of the business. Also, Banks cannot be expected to micro-manage the borrower and the way they use their funds. But there is another reason that contributes to the problem- the relaxed lending norms allow the Banks to skip conducting financial and credit ratings analysis towards big corporate businesses, due to the estimated profitability.⁷Furthermore, a domino effect was witnessed with the delay in environmental permits affecting the power, iron, and steel sectors, following in raw materials price fluctuations and supply shortage, thus catalysing the rise of NPAs.⁸

⁶Why the stimulus won't work: Public sector banks are not equipped to implement Covid stimulus package. The Times of India. Jun12, 2020.

⁷Non-Performing Assets in Indian Banks. Corporate Finance Institute.

⁸ Ibid

1. Sectoral Distribution of NPA

The Corporate/ Industry sector has seen a rapid increase in NPAs over the years and by September 2019 took the biggest share, amounting to two-thirds of the total NPAs at 17.4%. While agriculture sector has also witnessed a gradual incline since March 2017, the services sector remains relatively stable between 4-7% GNPA ratio, and the retail loans sector maintains a low GNPA ratio.

Within the industrial sector, the largest chunk of NPA is taken by large industry, although it has decreased significantly from ~25% to ~18% over the period of March 2018- September 2019. This can be linked to the dealing of stressed assets of “twelve large accounts” within IBC between 2017-2019, with the acquisition of Essar Steel during CIRP for USD 6 billion by Arcelor Mittal and Nippon Steel Corporation, making it the largest deal by value for 2019. Of the other “Large Accounts”- Bhushan Steel, accounted for more than half of the distressed assets value ~ USD 10 billion, and Electrosteel Steels valued at ~USD 300 million.⁹

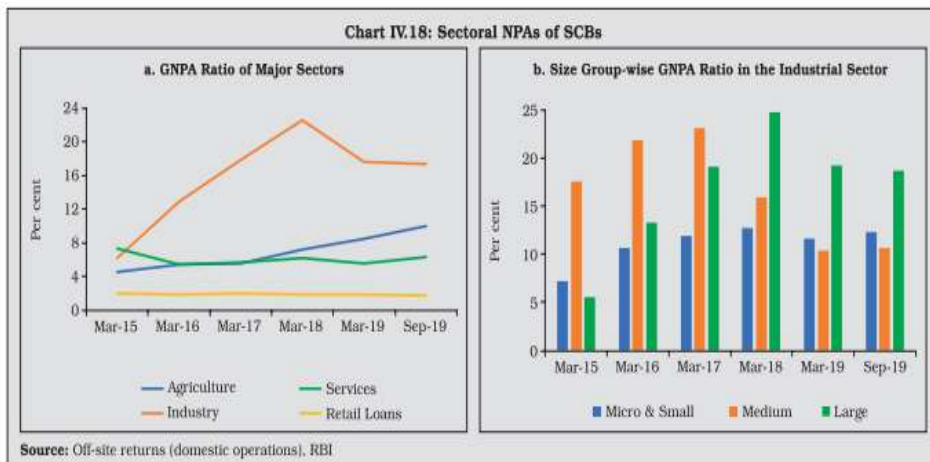


Chart 2

Source: RBI¹⁰

The Role& Practice of ARCs

This issue of NPA is the subject of much discussion within the banking sector with the RBI releasing revised framework for stressed assets to over a period of time with the latest coming into effect on June 7, 2019- *Prudential Framework for the Resolution of Stressed Assets*.¹¹ Since the suspension of IBC due to the COVID-19 induced lockdown,

⁹ Mergers And Acquisitions Trend In 2019 And Outlook For 2020. Inc42+. Jan1, 2020.

¹⁰ Report on the Trend and Progress of Banking in India 2018-19. Reserve Bank of India. Dec 24, 2019.

¹¹ RBI Notification on Prudential Framework for the Resolution of Stressed Assets. June 7, 2019.



the state-run banks are putting NPAs worth INR 20,000 for sale to the Asset Reconstruction Companies.¹²

It is important to note that ARCs were the sole avenue for distressed assets until 2013, and in an effort to open up investor opportunities, the entire distressed assets ecosystem witnessed an influx of regulations and measures. Briefly, ARCs buy NPAs from banks and financial institutions at a fair value, which allows the latter to clean up their balance sheets, allowing the banks to focus on regular banking activities. ARCs came into existence after the enactment of the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, 2002. Since then ARCs have undergone many regulation changes under the RBI. ARCs majorly fund their NPA investments with Security Receipts (SR), along with bonds and debentures. ARCs issue SRs to Qualified Institutional Buyers (QIBs) under an agreed scheme which allows the QIB to have a right, title or interest in the financial asset bought by ARC.¹³

The restructuring process of NPAs under ARC aims at regaining the value of the asset within a maximum of five-year time period from the date of asset acquisition. The various measures are as follows:

- i. Taking over or changing the management of the business of the borrower (in IBC terms- Corporate Debtor).¹⁴
- ii. Sale or lease of part or whole of the business of the borrower.¹⁵
- iii. Rescheduling of payment of debts payable by the borrower.¹⁶
- iv. Enforcement of security interest.¹⁷
- v. Settlement of dues payable by the borrower.¹⁸
- vi. Taking possession of secured assets.¹⁹

NPA Distillation

In the fiscal year 2017-18, NPA recovery via some major channels amounted at INR 40,352 crores, standing at 14.9% of the amount claimed. Of this, the majority of the cases fell in the lap of LokAdalats and the least fell with IBC (NCLT) but the recovery ratio of these two channels were reversed: with LokAdalats at 4% and IBC at ~50%. The numbers really reveal the success of the IBC in NPA alleviation with cases referred to IBC in 2017-18 stood at 0.0002% of the total cases but held 12.2% of the total amount recovered. (Refer to Table 1). It gets more interesting with the data of fiscal

¹² No IBC and Covid NPAs coming, PSBs may sell Rs 20k-cr bad loans. The Economic Times. Jun 2, 2020.

¹³ Section 7 of the SARFAESI Act 2002.

¹⁴ Ibid Section 9 (a)

¹⁵ Ibid Section 9 (b)

¹⁶ Ibid Section 9 (c)

¹⁷ Ibid Section 9 (d). Note- ARCs cannot enforce the security interest unless at least 75% by value of the secured creditors agree to the exercise of this right.

¹⁸ Ibid Section 9 (e)

¹⁹ Ibid Section 9 (f)



year 2018-19 showing that while the IBC case ratio stayed at 0.0002%, the amount recovered with IBC stood at 56.1% of the total (Refer to Table 2).²⁰

2017-2018				
Recovery Channel	No. of cases referred	Amount Claimed (in INR crores)	Amount Recovered (INR in crores)	% of Recovery to cases referred
LokAdalats	33,17,897	45,728	1,811	4
DRTs	29,345	1,33,095	7,235	5.4
SARFAESI Act	91,330	81,879	26,380	32.2
IBC	704	9,929	4,926	49.6
Total	34,39,276	2,70,631	40,352	14.9

Table 1

Source: RBI

2018-2019				
Recovery Channel	No. of cases referred	Amount Claimed (in INR crores)	Amount Recovered (in INR crores)	% of Recovery to cases referred
LokAdalats	40,80,947	53,506	2,816	5.3
DRTs	52,175	3,06,499	10,574	3.5
SARFAESI Act	2,48,312	2,89,073	41,876	14.5
IBC	1,135	1,66,600	70,819	42.5
Total	43,82,569	8,15,678	1,26,085	15.5

Table 2

Source: RBI

In its essence, the restructuring measures under by ARCs work with the IBC in perfect harmony. IBC mechanisms allow ARCs to churn capital faster and enhance returns since it allows a creditor-friendly domain thus enabling distressed asset investors to benefit via ARCs. Also, the behavioural nudges places under the IBC has instilled a better sense of credit discipline among the stakeholders. The significance of the time-bound resolution of distressed assets under IBC is a promising factor to affect the workings of ARCs and they can get rid of NPAs at a faster rate.²¹

Factually, IBC holds a better recovery rate on NPAs than any other legal mechanism, and with its introduction the sale of NPAs to ARCs decelerated in the banking norms but picked up soon after (Refer to Chart 3) as the ARCs also dealt with distressed assets that underwent the IBC mechanism and resulted in liquidation processes.

²⁰ Data provided by *Report on the Trend and Progress of Banking in India 2018-19*. Reserve Bank of India. Dec 24, 2019.

²¹ *Bolstering ARCs*. CRISIL (An S&P Global Company). August 2019.

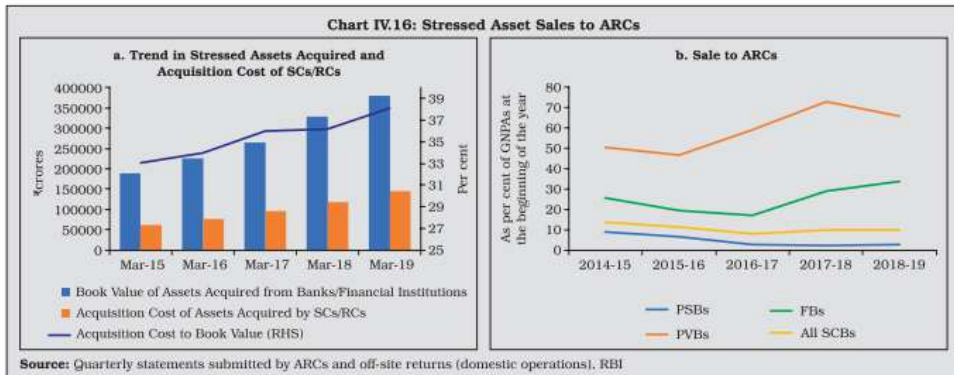


Chart 3

Source: RBI²²

Conclusion

One of the biggest banes of the Indian economy is the NPAs and the IBC mechanism is a continuous work in progress in redefining the distressed assets market sphere. If IBC is the guiding mechanism, ARCs are the executioners. To reach the USD 5 trillion economy requires an economy to innovate ways of dealing with NPAs and ARCs are set to bring in sizable investors in the stressed assets sector. The game-changing aspects of the Code with its fast paced resolutions, increase in judicial benches, transparency of information via information utility and increasing number of Insolvency Professionals are creating a thriving ecosystem for the flourishing of the distressed assets market and in turn enabling the ARCs to execute and restructure NPAs as a faster and efficient pace. Albeit, adherence to the IBC timelines still remains a challenge, it can be accosted to the adjustment of the human tendencies which have only recently discovered the benefits and policies introduced by the IBC.

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COVID 19 PANDEMIC- UNLOCK IMPACT AND WAY FORWARD FOR INDIAN ECONOMY

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Introduction

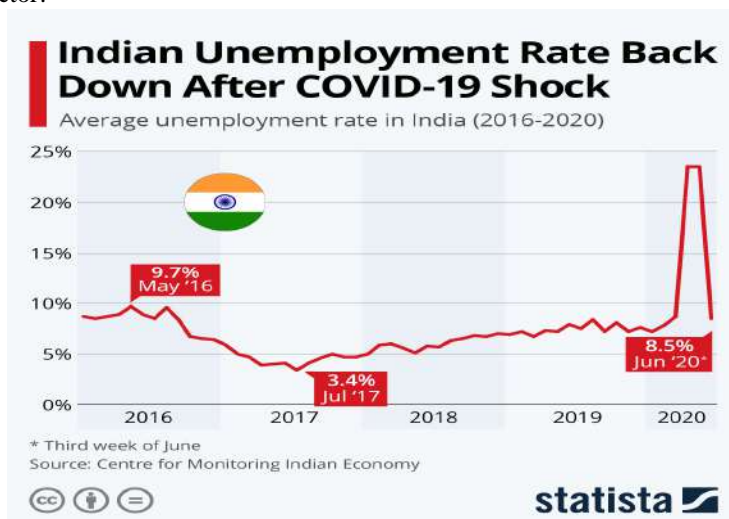
The COVID-19 pandemic in India is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020. As of 9 July 2020, the Ministry of Health and Family Welfare (MoHFW) has confirmed a total of 767,296 cases, 476,377 recoveries (including 1 migration) and 21,129 deaths in the country. India currently has the largest number of confirmed cases in Asia, and has the third highest number of confirmed cases in the world after United States and Brazil with the number of total confirmed cases breaching the 100,000 mark on 19 May and 200,000 on 3 June. India's case fatality rate is relatively lower at 2.80%, against the global 4.7%, as of 6 July. Lakshadweep is the only region which has not reported a case. On 10 June, India's recoveries exceeded active cases for the first time reducing 49% of total infections followed by recovery rate crossing 60% till early July. Although, active have continued to increase persistently. Along with the mentioned facts the government of India has already initiated the unlock measures across the country with one of the major objective of reviving the economy of the country.

Unlock Measures-As India moves to Unlock phases and economic activity resumes, the focus must be on getting growth back on track and reinvigorating the economy. A high degree of uncertainty will characterise the new paradigm that the economy will enter, yet it is imperative to take bold and innovative measures to navigate through such uncharted territory and bring the economy back on an inclusive and sustainable growth path.

With economic activity coming to a standstill following the lockdown, output and production collapsed, leading to significant loss of livelihood. Therefore, rebuilding and restoring lives and livelihood should be the foremost priority as the economy reopens. The pandemic brought to the forefront the plight of the migrants and daily wage workers, a majority of whom are dependent on earnings based on daily work for their livelihood. With almost 80 per cent of employment in India in the unorganised sector, there is an urgent need for considering a social security net to protect the livelihood of these workers. This will need to be carefully balanced against the available resources with the government.

Immediate and short-term measures to address greater formalisation of the economy must be stepped up through labour and regulatory reforms, which in turn would help in

creating greater employment and encourage small enterprises to move towards the formal sector.



Way Forward for Economy-With the country witnessing reverse migration for the first time, there is scope for creating more geographically distributed models of development and an opportunity for redefining investment priorities. Multiple opportunities exist across sectors such as allied products and food processing, coal and mining, traditional Indian handicrafts, etc.

Investments in rural health and infrastructure along with strengthening rural digital programmes and platforms could pave the way for a robust rural ecosystem. Industries along with state governments can be encouraged to set up facilities in rural areas, which in turn will generate jobs and strengthen the rural sector's share in the GDP.

Though the outbreak pervaded almost every aspect of the economy, it is primarily a health crisis and possibly one of the biggest that the world has seen, with even the most sophisticated health systems in the advanced nations struggling to tackle the disaster. In the case of India, where the public spending on health still continues to be low at 1.3 % of GDP, this crisis has heightened the need for building a robust healthcare system by stepping up investments in health infrastructure.

India needs to raise its public health spending to at least 3 % of GDP, in line with its peers. At the same time, the focus must also be on formulating a long-term strategy to boost the immunity of the population through high quality preventive public health, entailing investments in better nutrition, and maternal and child care.

Education will play a key role in ramping up India's healthcare as also in building a productive economy. This is the right time for India to boost its e-education and e-



healthcare systems with the help of digital tools for delivering quality and low-cost healthcare alongside traditional modes of delivery. At the same time, greater attention to R&D will be critical to build innovative tools and new methods of healthcare delivery.

Along with investments in health and education, Mother Nature is a priority area. The impact of the containment measures during the lockdown became evident on climate change, with countries reporting improved air quality and lower CO₂ emissions due to lower mobility of people. At the same time, Covid-19, along with the increased incidence of other natural calamities such as the recent cyclones and pest attacks, has shown us that we are staring at a future climate change crisis. Thus, the current time should be utilised as an opportunity to deepen our efforts in climate change mitigation and improving Mother Nature's balance.

Conclusion-

Boosting government spending for a sustained economic recovery is crucial at this hour. Given that the government is fiscally constrained, its efforts to provide stimulus to the economy, for example, in the form of 100% credit guarantee to MSMEs and various other recent measures, are commendable. More such measures will be needed in the future, but at the same time, the balance between fiscal spending and financial stability will have to be ensured.

While investment-friendly policies would be required for stepping up private investments, higher investments in science and technology would be critical to ensure India's competitiveness. At the same time, India needs to boost its exports, both for manufactured goods and services and for greater integration with the global value chains. Greater collaboration between industry, academia, start-ups and the government would be required to create a sustainable and innovative ecosystem that benefits all.

With the first phase of Unlock already underway, challenges for the Indian economy are many. With the pandemic causing significant distress to individuals and businesses, the role of industry-government partnerships will assume a key role in restarting the key engines of growth, as we build a self-reliant India that is competitive but is also engaged with the world.

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ATTITUDE OF TEACHERS' OF HIGHER EDUCATION TOWARDS TEACHER'S COMPETENCY IN E-LEARNING BEFORE AND PRESENT COVID-19

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Education considered as the most important and noble endeavours. It helps person to get their complete personal, spiritual, mental, social & physical potential. In India very large number of student who can't reach school for primary education and from primary education to secondary education and again secondary education to higher education the dropout rate is very high. There may be much different reason for that very less student attracted towards higher education. Reason may be lack of availability of resources, lack of Employment, poverty etc. Government trying to achieve the required infrastructure for the potential student, it may be in the form of recourse, infrastructure, qualified faculty etc. The success of any education system depends on the quality of teachers, which, in turn, depends on the effective teaching / learning process. Teachers' role is of vital significance for the development of society and appropriate changes in the society. Thus, the quality of higher education depends upon quality of those who impart it. Teachers are the most important components of any educational system. Teachers play most crucial role in the development of the education system as a whole and also in imparting and maintaining the standards of higher education. In the present scenario, the 'personality' of the teachers has deteriorated. Teaching is considered as one of the noblest professions but unfortunately this profession is losing its status in the society because of modernization, political influence, castism, corruption and other unfair means. For many teachers, especially in medical and dental sciences, teaching profession has become easy source of earning money. Making many money by unfair means like malpractices in examination resulted in decline of the quality of teaching values. Changing social attitude, non-responsiveness and poor level of accountability, emphasis on western system of education, impact of modernization, absence of the traditional Indian education system, etc. are the factors responsible for the degradation of teaching values in the society.

Competencies are the skills and knowledge that enable a teacher to be successful. To maximize student learning, teachers must have expertise in a wide-ranging array of competencies in an especially complex environment where hundreds of critical decisions are required each day. Teaching competencies include the acquisition and demonstration of the composite skills required for student teaching like introducing a lesson, fluency in questioning, probing questions, explaining, pace of lesson, reinforcement, understanding child psychology, recognizing behavior, classroom management and giving assignment. Competency development must a continuous



process in the organization. teaching competency means an effective performance of all observable teacher behavior that brings about desired pupil outcomes

E-Learning is becoming more popular than ever with the advent of new technologies and new inventions for teaching and learning, especially in the case of higher education in e-Learning and blended learning. Hence, competent e-Instructors are key to successful e-Learning implementations and they should have the appropriate skills and experience for the effective implementation of e-Learning and Blended Learning. In general, every instructor first becomes an Instructor then becomes an e-Instructor. Being a good e-Instructor means possessing more knowledge and skills about instructional technologies and even positive attitudes towards technological tools and processes. Thus, e-Instructors should be using information and communication technologies (ICT) effectively in all the phases of teaching, facilitating and assessing learner work. Although many instructors are highly qualified teachers with many years of experience, they acquire these valuable skills and experience based on their various instructional implementations with different groups, content and methods.

Natarajan, S. (2005) proved that teacher education programmes could be made more effective through a competency-based approach. Rajameenakshi, P.K. (2008) found that training in the skill of demonstration and microteaching significantly increased teaching competence. Gracious, (2010) shows there was no significant relationship between Creativity and Teaching Competency of prospective B.Ed teachers. Chathley, Y.P. (2013) found that there was no significant difference in the gain in general teaching competence between male and female trainees as a result of training in integrated skills. Basi, Satpaul Kaur, (2015) found positive correlation between the measure of job satisfaction and the criterion measures of teaching competency.

Just as the COVID-19 pandemic has changed the dynamics of learning for students, it has also impacted methods of teaching. Whether they are tech-savvy or not, teachers have been shaken up overnight and forced to upgrade their pedagogical and communication tools. The reality, at the teachers' end, was stressful in other ways as well. For them, it was the workplace that was entering their homes, where some of them have to grapple with domestic responsibilities and faltering internet connections. So, it is important to know the attitude of teachers of Higher Education towards Teacher's Competency in E-Learning Before and Present COVID-19.

OBJECTIVES

To study the Perceptions of Teachers' of Higher Education towards Teacher's Competency in E-Learning Before and Present COVID-19.

METHODOLOGY

In this study field survey method was used. The population of the present study has been defined as the Teachers' of Higher Education of Uttar Pradesh. Purposive sampling was used for study. A sample consists of 87 Teachers' of Higher Education related to different University. To know the Perceptions of Teachers' of Higher Education towards Teacher's Competency in E-Learning Before and Present COVID-19, a Perceptions Scale was developed by the researcher. The scale consists of 22 items and it has both positive and negative statement with Likert model having 5-point rating scale i.e. Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. The data



was collected by using above scale. To analyze the data the percentage analysis was used.

ANALYSIS OF DATA

Table: Showing Percentage of Teachers' of Higher Education towards Teacher's Competency in E-Learning Before and Present COVID-19

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Statement 1	170 (39.1%)	180 (51.7%)	3 (1.1%)	12 (6.9%)	1 (1.1%)
Statement 2	55 (12.6%)	192 (55.2%)	24 (9.2%)	38 (21.8%)	1 (1.1%)
Statement 3	65 (14.9%)	144 (51.4%)	21 (8%)	50 (28.7%)	6 (6.9%)
Statement 4	100 (23%)	180 (51.7%)	54 (20.7%)	8 (4.6%)	0 (0%)
Statement 5	85 (19.5%)	196 (56.3%)	15 (5.7%)	30 (17.2%)	1 (1.1%)
Statement 6	35 (8%)	172 (49.4%)	21 (8%)	56 (32.2%)	2 (2.3%)
Statement 7	30 (6.9%)	196 (56.3%)	57 (21.8%)	26 (14.9%)	0 (0%)
Statement 8	40 (9.2%)	208 (59.8%)	24 (9.2%)	34 (19.5%)	2 (2.3%)
Statement 9	15 (3.4%)	140 (40.2%)	45 (17.2%)	66 (37.9%)	1 (1.1%)
Statement 10	125 (28.7%)	148 (42.5%)	18 (6.9%)	32 (18.4%)	3 (3.4%)
Statement 11	45 (10.3%)	136 (39.1%)	18 (6.9%)	64 (36.9%)	6 (6.9%)
Statement 12	175 (42.2%)	152 (46.7%)	24 (9.2%)	10 (5.7%)	1 (1.1%)
Statement 13	120 (27.6%)	204 (58.6%)	6 (2.3%)	20 (11.5%)	0 (0%)
Statement 14	80 (18.4%)	140 (40.2%)	18 (6.9%)	40 (22.9%)	10 (11.5%)
Statement 15	80 (18.5%)	236 (67.8%)	12 (4.6%)	16 (9.2%)	0 (0%)
Statement 16	20 (4.6%)	156 (44.8%)	42 (16.1%)	50 (28.7%)	5 (5.7%)
Statement 17	60 (13.8%)	92 (26.4%)	21 (8%)	74 (42.6%)	8 (9.2%)
Statement 18	130 (29.9%)	204 (58.6%)	15 (5.7%)	8 (4.6%)	1 (1.1%)
Statement 19	150	168	21	16	0



	(34.5%)	(48.2%)	(8%)	(9.3%)	(0%)
Statement 20	150 (34.5%)	172 (49.4%)	24 (9.3%)	10 (5.7%)	1 (1.1%)
Statement 21	115 (26.4%)	216 (62.1%)	18 (6.9%)	8 (4.6%)	0 (0%)
Statement 22	185 (42.7%)	172 (49.4%)	12 (4.6%)	4 (2.3%)	0 (0%)

FINDINGS

1. After calculation it was found that 39.1% Teachers' of Higher Education have strongly agreed, 51.7% have agree, 1.1% have undecided, 6.9% have disagree and 1.1% have strongly disagree on the statement '*In the present scenario E-learning techniques are only option.*'
2. After calculation it was found that 12.6% Teachers' of Higher Education have strongly agreed, 55.2% have agree, 9.2% have undecided, 21.8% have disagree and 1.1% have strongly disagree on the statement '*E-learning techniques are very economical & institutions adopt it.*'
3. After calculation it was found that 14.9% Teachers' of Higher Education have strongly agreed, 41.4% have agree, 8% have undecided, 28.7% have disagree and 6.9% have strongly disagree on the statement '*My institution has adequate resources for E-learning.*'
4. After calculation it was found that 23% Teachers' of Higher Education have strongly agreed, 51.7% have agree, 20.7% have undecided, 4.6% have disagree and 0% have strongly disagree on the statement '*A strong technical knowledge is required to use E-techniques properly and efficiently.*'
5. After calculation it was found that 19.5% Teachers' of Higher Education have strongly agreed, 56.3% have agree, 5.7% have undecided, 17.2% have disagree and 1.1% have strongly disagree on the statement '*I was competent and comfortable in using E-techniques before pandemic.*'
6. After calculation it was found that 8% Teachers' of Higher Education have strongly agreed, 49.4% have agree, 8% have undecided, 32.2% have disagree and 2.3% have strongly disagree on the statement '*Using synchronous techniques are very easy & I was using it before COVID -19 pandemic in my teaching.*'
7. After calculation it was found that 6.9% Teachers' of Higher Education have strongly agreed, 56.3% have agree, 21.8% have undecided, 14.9% have disagree and 0% have strongly disagree on the statement '*Using Asynchronous techniques are very easy & I was using it before COVID – 19 pandemic in my teaching.*'
8. After calculation it was found that 9.2% Teachers' of Higher Education have strongly agreed, 59.8% have agree, 9.2% have undecided, 19.5% have disagree and 2.3% have strongly disagree on the statement '*I started synchronous techniques in my teaching after COVID – 19 pandemic.*'



9. After calculation it was found that 3.4% Teachers' of Higher Education have strongly agreed, 40.2% have agree, 17.2% have undecided, 37.9% have disagree and 1.1% have strongly disagree on the statement '*I started Asynchronous techniques in my teaching after COVID – 19 pandemic.*'
10. After calculation it was found that 28.7% Teachers' of Higher Education have strongly agreed, 42.5% have agree, 6.9% have undecided, 18.4% have disagree and 3.4% have strongly disagree on the statement '*I think E-learning will improve and make interesting whole teaching-learning process.*'
11. After calculation it was found that 10.3% Teachers' of Higher Education have strongly agreed, 39.1% have agree, 6.9% have undecided, 36.9% have disagree and 6.9% have strongly disagree on the statement '*I feel it easy to read e-journals, e-books, etc. on e-mode than hard copy of journals, books, etc.*'
12. After calculation it was found that 40.2% Teachers' of Higher Education have strongly agreed, 46.7% have agree, 9.2% have undecided, 5.7% have disagree and 1.1% have strongly disagree on the statement '*I feel E-library cannot replace the importance & utility of library.*'
13. After calculation it was found that 27.6% Teachers' of Higher Education have strongly agreed, 58.6% have agree, 2.3% have undecided, 11.5% have disagree and 0% have strongly disagree on the statement '*I feel lockdown had improved my technical knowledge & awareness.*'
14. After calculation it was found that 18.4% Teachers' of Higher Education have strongly agreed, 40.2% have agree, 6.9% have undecided, 22.9% have disagree and 11.5% have strongly disagree on the statement '*E-learning can be substitute of traditional teaching-learning process.*'
15. After calculation it was found that 18.4% Teachers' of Higher Education have strongly agreed, 67.8% have agree, 4.6% have undecided, 9.2% have disagree and 0% have strongly disagree on the statement '*Use of E-learning Or Dependency on E-mode may sociability in students.*'
16. After calculation it was found that 4.6% Teachers' of Higher Education have strongly agreed, 44.8% have agree, 16.1% have undecided, 28.7% have disagree and 5.7% have strongly disagree on the statement '*I am satisfied with E-learning or online teaching.*'
17. After calculation it was found that 13.8% Teachers' of Higher Education have strongly agreed, 26.4% have agree, 8% have undecided, 42.6% have disagree and 9.2% have strongly disagree on the statement '*I was attending webinars, workshops or faculty developmental programs online after COVID-19 pandemic.*'



18. After calculation it was found that 29.9% Teachers' of Higher Education have strongly agreed, 58.6% have agree, 5.7% have undecided, 4.6% have disagree and 1.1% have strongly disagree on the statement '*I started attending webinars, workshops or faculty developmental programs online after COVID-19 pandemic:*
19. After calculation it was found that 34.5% Teachers' of Higher Education have strongly agreed, 48.2% have agree, 8% have undecided, 9.3% have disagree and 0% have strongly disagree on the statement '*I feel interaction & emotional bonding with students is not like face to teaching.*'
20. After calculation it was found that 34.5% Teachers' of Higher Education have strongly agreed, 49.4% have agree, 9.3% have undecided, 5.7% have disagree and 1.1% have strongly disagree on the statement '*I feel all-round or holistic development is not possible through E-learning.*'
21. After calculation it was found that 26.4% Teachers' of Higher Education have strongly agreed, 62.1% have agree, 6.9% have undecided, 4.6% have disagree and 0% have strongly disagree on the statement '*I feel that after COVID-19 pandemic it is very important to use blended model of teaching.*'
22. After calculation it was found that 42.7% Teachers' of Higher Education have strongly agreed, 49.4% have agree, 4.6% have undecided, 2.3% have disagree and 0% have strongly disagree on the statement '*COVID-19 pandemic has taught us that we must upgrade ourselves technically in E-teaching techniques & should blend it with classroom teaching in the futures.*'

CONCLUSION

After analyzing the different statement it is found that maximum teachers of higher education strongly agree on the statement 22 and minimum teachers of higher education strongly agree on the statement 9. Maximum teachers of higher education agree on the statement 15 and minimum teachers of higher education agree on the statement 17. Maximum teachers of higher education indifferent on the statement 7 and minimum teachers of higher education indifferent on the statement 1. Maximum teachers of higher education disagree on the statement 17 and minimum teachers of higher education disagree on the statement 22. Maximum teachers of higher education strongly disagree on the statement 17 and minimum teachers of higher education strongly disagree on the statement 22. However, it is suggested that every university should include the latest topics on E-learning tools as per the requirement of new generation teachers and learners. E-learning tools should be properly integrated in all the subjects of Teacher Education curriculum, so that the student teachers of all the streams get the competency towards E-learning tools. The policymakers should develop some guidelines in which the innovative approaches like blended, flipped learning, online learning in Teacher Education programmes should be elaborated. Policymakers should organize various workshops and in-service training programmes at the national level to train the Teacher Educators and the TEIs should also get the funding for this organization.



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EXPLORING THE DIALECTICS OF BODY THROUGH THE LENSES OF POSTMODERN FEMINISM IN *HANDMAID'S TALE* BY MARGRET ATWOOD

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Abstract:

The synchronic and diachronic study of the body has been seen through different spectrums throughout centuries. The body as a concept is one of the most contested sites of intellectual and philosophical realities. The phenomenological realities of the body can be described through the material and realist discourses. Body in **both the** discourses is seen as the object of repression, suppression and this hegemonic glass of representation gives the ravished texture of women's body. The postmodern feminism explicates that the gender has been restructured and the categorized sex reformed without the imposed rules of society. The gender which is not fixed across the world, as it's a text which keeps on changing according to the performance, roles in the social and cultural context. Body which is commodified for the male gaze has been constructed in the murky society. Thus, women's body is only the object of control, study, discipline and gaze. Female sexuality, desires or identity is determined by the social norms that have themselves been produced by men. Through the stream of postmodernism the research paper will scrutinize the shocking treatment of sex, procreation and futuristic view of the world of male chauvinism which destroys the finest chords of wifehood, motherhood and womanhood.

Keywords: Postmodern Feminism, Body, Sex, Gender and Motherhood.

Introduction:

The women's body has been represented as mother, seductive, material, sexual asset and procreative machine. Female body is seen as the self-sacrificing mothers or faithful wives which becomes the stereotypical notion. Patriarchal society adds value to the women's body and women assimilate these values. The female body goes through several layers of modifications as the beauty contests commodify the women's body for the male gaze. Fashion industry, cosmetic surgery and advertisements create the rubric for the women outside the reel. Some of the most trenchant feminist criticism has been directed at the biology of bodies, specifically reproductive biology. Most of the feminist argue that the woman is reduced to the womb, almost as though her only function is to produce babies. Hendrik M. Ruitenbeek in his book *Psychoanalysis and Feminine Sexuality* (1966) explains the concept of Freud that all the female suffer from a 'penis envy'. On this he gave the biological explanation for women's psyche. One that is determined social constructions of women as the 'second sex' suffering from the lack.



This lack can be prevented as Rey Chow in the article “Sexuality” (2003) delineates that the female can take the path of marriage and childbirth to correct the deficiency. “If she is lucky, her desire for the missing penis will be appeased, finally, by the birth of a son” (96). The structural and biological difference between male and female body has demarcated the cultural aspect which helps to wake up the sleeping metaphors in science which involves the description of egg and sperm. Emily Martin in her article “The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female Roles”(1999) explains the figure of egg and sperm which is created by science on the stereotypical notion textured by the cultural restriction of male and female.

“In the case of women, the monthly cycle is described as being designed to produce eggs and prepare eggs and prepares a suitable place for them to be fertilized and grown- all to the end making babies. But the enthusiasm ends there. By extolling the female cycle as a productive enterprise, menstruation must necessarily be viewed as a failure. Medical texts describe menstruation must necessarily be viewed as a failure. Medical texts describe menstruation as the ‘debris’ of the uterine lining, the result of necrosis, or death of tissue. The descriptions imply that a system has gone awry, making products of no use, not to specification, unsalable, wasted, scrap” (180).

The male reproductive organ has always treated differently **whereas on the other hand** the female menstruation is the failed exercise whereas the maturation of sperm is seen as the remarkable transformation. Women’s body is overtly used in different fields as claimed by Jana Sawicki in the article “Disciplining Mothers: Feminism and The New Reproductive Technologies”(1999) explicates that this new technology has eradicated the pure essence of motherhood and probably the high-tech time will mystify the figure of mother. “ In arguing that new reproductive technologies may lead to the elimination of women altogether, Corea and others ignore the many, often conflicting, roles and positions that women occupy in contemporary society, the many services they provide, the many other ways in which their bodies are disciplined as mothers, workers, housewives, sexual beings and so forth”(197). With the advent of technology the culture is profusely demolishing as Anne Balsamo in the article “Forms of Technological Embodiment: Reading the Body in Contemporary Culture” expounds that the body is no more meaningful as it has become sign and sign transformed into commodity. The repercussions of the technological advancement are taking a new shape as the material body’s shop the global market place for cultural metamorphosis the way clothes are discarded after the fashion ends the same structure is being restructured through the surgical methods.

Tracing the Female Body

Feminism was the step to produce the invaluable compliment as it has rejected the notion of objectivity and neutrality. It is the stepping stone that the feminist decided to write their stories from the subjective pedestrian. The feminist showcases that the body has become the metaphor of power which tends to reject the male Cartesian tradition that thinking can somehow differ according the location. Mary Wollstonecraft in her



text *Vindication of the Rights of Woman: with Strictures on Political and Moral Subjects* (1792) argues that the male body shouldn't be treated as more powerful than woman but as equals. She gave the response to the political and educational theorist by setting a new syllabus for the women. She decipher that a woman should be companion of her husband not wives. This can viewed in the closet of *Handmaid's Tale* as Serena Joy was the commander's wife who was seen in the light of disgrace. The novel deals with the problems which are cultural specific rather revolving the game in universal way. The major theme builds the caricature of suppression, oppression of victimized women as surrogate. The problems which are not specified with names as Betty Friedan in her text *The Feminine Mystique* (1963) also talks about the widespread unhappiness of women despite having all the comforts. The life of the commanders and commander's wives in the Republic of Gilead where even the flowers doesn't seem blooming. The education system, magazines and advertisements were questioned by Friedan as even in Gilead reading and writing was prohibited as harsh punishments were given like arms and legs are ruthlessly chopped off if caught reading or writing. Handmaids were not allowed to touch any paper, pen and books as only ruling class used them. However, Mario Klarer in her article "Orality and literature as Gender-Supporting Structures in Margaret Atwood's *The Handmaid's Tale*" (1995) explicates that female of all status and creed were devoid of writing and this was taken as the advantage by male community and wrote profusely about the women and always shown in the cascading light of meekness, submissive and fragile.

The protagonist Offred was trapped in the repression of the repressive society, as in the pre-Gilead period she was happy with her family, education and had a job but in Gilead she finds herself nothing more than just the child bearing machine. Mary Ellman in her text *Thinking about Women* (1968) explains that there should be two literatures like the two public toilets one for men and other for women. She protest against the classification of the stigmatizing roles of male and female as females are bend to have the reproductive function whereas males show the superiority of the body. She also interrogates that women's supreme movement (Childbirth) is equal to that of intellectual form of creation. Even mythically in the Old Testament, Rachel's Handmaid has to offer herself in the service as time immemorial women who are often worked as the servant has been exploited primarily through her body. Single-minded Obsession was seen where all these emotions like love, romance and sex took place as it was all for the bearing of child and not for the orgasmic purposes. The commander who does the ceremony to impregnate the handmaids show no interest in their face or body as everything gets covered in the double layered red dress which is designed to hide their bodily contours. "What he is fucking is the lower part of the body. I do not say making love, because this not what he's doing. Copulating too would be inaccurate because it would imply two people and only one is involved" (104-105). Even Kate Millet in her text *Sexual Politics* (1969) argues that the patriarchy plays a larger role in relation to sex. She also demonstrate that how male dominates the arena of sexual intercourse. Through this the observation has taken a new shape of alienation as Offred's experience of sexual intercourse with the commander leaves her in the state of aloofness from her own body. "I sink down into my body as into a swamp, fenland, where only I know the



footing. Treacherous ground, my own territory. I become the earth I set my ear against, for rumors of the future”(83). She here clears the exploitation of her body which can only be felt by her as the element of pain cannot be considered unless the suffering starts to question “I used to think of my body as an instrument, of pleasure, or a means of transportation, or an implement for the accomplishment of my will” (83). Ellen Moer’s in her text *Literary Women*(1976) also clicks the same picture that it’s the women who separates their work from the mainstream of literary history and examines the fact that the women influence both their lives and their writings.

The discourse on body expands in every new epoch, as the politics of culture has encircled the constant struggle of binaries. In the metaphysical tradition the body has been explained as the embodiment of truth, moral values and cultural experiences. While in the contemporary epoch the chain of culture which is entangled around the body tries to unchain through the influence of Nietzsche, Foucault and Deleuze. Nietzsche and Deleuze, tries to reinvigorate the debate on body by presenting that the body, consciousness, matter and spirit are one and the same. Deleuze who developed his body thought from the philosophy of Spinoza, ‘life is a flow of desire’, likewise Nietzsche’s idea of ‘will to power’. Whereas Foucault in *The History of Sexuality: Introduction* (1980), examines that how the body is being controlled by the utilitarian society; which are docile, used and transformed and therefore the body is devoid of desire. Librating force which is taken place in the sequel of *The Handmaid’s Tale* (1996) by knitting the complex structures of past and then reviling the uncertain future through different events in *The Testaments*(2019). Every woman who were forced, punished and created breaks the harmony and believes in themselves by liberating their bodies. When the body enters into the stage of philosophical discourse the culture also plays the predominant role, as the body from time immemorial has been encircled by the tradition and hence, never been defined as natural, functional or desired body. In the metaphysical tradition the body was explained as the embodiment of truth, moral values and cultural experience. Friedrich Nietzsche in the book *Beyond Good and Evil* (1989) expounds about ‘nihilism’ which means rejecting the worldly pleasures of body and earth, which is mainly seen in the fields of religion, metaphysics, transcendental consciousness and science. “Nietzsche believed that humanity has to get rid of nihilism was taken up as the central project of his philosophical activity by Nietzsche. He also expressed his hope in the philosophers of the future who will bring new goals to human existence”(52). Philosophers during the time of Greeks have been debated about the metaphysical and morals of the body which existed in the pre-historical stage as tamed, sucked, humiliated, silenced and contained as the suppressed entity. Henceforth, the reclamation should change, as the body celebrates the contested site of flux, being concrete, sensual and material rather being abstract, rational and spiritual. In the post-modern epoch the body is seen more weighing than the mind as it is viewed as more propelling force, whether it’s about ethics, moral values or aesthetics in day to day life or the beautification of the body. Abey Koshy in the article “Reinvigorating the Body: A Critical Analysis of Agency in Nietzsche, Foucault and Deleuze” (2014) talks about the body according to different philosophers.



“Even the Darwinian kind of biologism, the most influential modern materialism lies far away from the bodily materialism of Nietzsche, Foucault and Deleuze who perceived body and consciousness, matter and spirit as one and the same. Spinoza who propounded psycho-physical parallelism is probably the only forerunner to such a thought in the history of philosophy. Deleuze who has developed his body thought from the philosophy of Spinoza has said that ‘life is a flow of desire’, and its parallel can be seen in Nietzsche’s idea of ‘the will to power’” (136).

There is an unresolved dualism in the body and consciousness, these spiritualists who move away from all the dispose of matter and body which remains valueless trash for them, after the relevance of material and spiritual. As consciousness is taken differently from the body because the reality lies beyond desires for the awakened soul. Body is seen as the prison for soul and also as hindrance for moving towards the functioning of consciousness. Nietzsche enters this debate to refute the traditional concepts of metaphysics, spiritual, soul immortality and divinity. He tends to develop a new philosophical thought on body. He gives an example from the text *On the Genealogy of Morals* (1969) “moral values are not something originated from transcendental archetypes or forms as Plato claimed, but the outcome of the type of food a person eats and the climatic condition of a land in which a person lives” (237). Thus, all the values, beliefs and thoughts developed in a human are the result of bodily origins. When the world started the human were also the part of natural animal being, but eventually due to the spiritual awakening the human turned their way towards humanity which made their anthropocentric attitude more rational. The replacement of naturalistic-animal order of human carried many reasons such as divine power, consciousness and values acquired by spirituality. And Nietzsche viewed this part as the strong case of ‘nihilism’. Nietzsche explains this in the text *The Antichrist* (1990) that he wants to bring the human back into its original natural-animalistic form. He says “we no longer trace the origin of man in the spirit, in the divinity; we have place him back among the animals” (134). So, the basic attempt is made to bring the human back into the animalistic element of nature from the humanism which is considered as the lord of universe. Nietzsche thought was staged into two forms of bodily discourse; one was phenomenological view which got the spectacles of body consciousness unlike transcendental consciousness and the second was of the view from poststructuralist that the body has a political sphere in the modern epoch which undertakes the investigation. This is to perceive that the body which is tamed, used and deformed in the modern culture is being restructured to carry out the task assigned to it. “Poststructuralist project is meant to unravel the techniques employed by the dominant powers to tame and organize the human body in different periods in history. Their project is to produce a genealogy of the body rather than providing simply a theory of the body like phenomenology does”(138). Nietzsche release new prospective which philosophers were unable to unwrap that the body can also exist devoid of spirituality which becomes the external factor to control its natural essence. The classical case by Aristotle who introduced about the external factor i.e. God (who is the unmoved mover and is the cause of the creation) controlling every movement of the body and matter.



“Nietzsche is the first person in the history of thinking who showed that the body does not require any external mental substance for instigation of its movements and thoughts. With the announcement of the ‘death of God’ he was actually making the body free of external control of spiritual substances. He replaces it with a force that is an attribute of the body itself which is the ‘will to power’”(139).

With this discussion the responses enters with the Foucault’s idea drawn from the Nietzsche’s critique of nihilism, he asserts that from the historical period the body is something which is molded, tortured and reshaped by the dominant force of power. With slight disagreement with Nietzsche, Foucault explicate body as the human body shaped by culture which eventually goes through different changes either through physical torture or by the numerous discourses on it. In the article, “Nietzsche, Genealogy, History” (1984), “he does not speak of any bodily attribute or force that works from within the body that shapes its agency. Rather, the body is molded by a great many distinct regimes; it is broken down by the rhythms of work, rest and holidays; it is poisoned by food or values” (83). Therefore, neither the psychological characters define the human nature nor the physiological movement shapes the body rather the discipline of the society creates the human body.

The discourse on body expanded with the further vindications of Gilles Deleuze who wrote *Anti Oedipus* with Felix Guattari which showcases the liberation of the body politics. Nietzsche’s ‘will to power’ is substituted by the Deleuze and Guattari’s perception of ‘desire’ as the attribute of the body. Desire in the universal sense is being confined and blocked in the modern structured society. To free from the constraints of the culture they purposed the idea of ‘the body without organs’. Here the ‘organs’ symbolizes the cultural materialism and the societal tradition which binds the body into closed circle of organism. “In the view of Deleuze and Guattari human liberation largely depends on removing such organs to get back to a state in which desire becomes productive once again. Deleuzian thought of the body without organ can be seen as an endorsement of Nietzsche’s recognition of a pre historic, primordial, pre-cultural and natural body that is driven by the life affirmative ‘will to power’”(140).

Creation and recreation of the history, in which the body materialized either from the subjugation of the dominant power politics or by the discourses of various philosophers has imprinted which keeps adding whenever there are some changes in the cultural imprints. This genealogy not only encounters the impact stepped on the body culturally, but also takes part in the resistance against the dominant force of power of society and the imprisonment which shattered the minimal joy craved by the body. Foucault’s genealogical works such as *Discipline and Punishment* (1979), *The History of sexuality: An Introduction* (1980) and *The Birth of the Clinic* (1963) examines that how the body is being controlled by the utilitarian society which are docile, used and transformed. “The body is directly involved in a political field; power relations have an immediate hold upon it; they investigate it, mark it, train it, torture it, force it to carry out tasks, to perform ceremonies, to emit signs” (25). These analyses are to give rise to the different disciplines whereas; in the cultural space the body and the desire are regulated in the



controlled operation. With this the counter starts by the resistance of the body which is necessary to control the power it can either come from within or through the external force. These anti-life powers which are the repressive order of society like socio-cultural institution, police, state etc only disintegrate the body. Therefore, if the body can resist the domination it can only come from within, no external power can help to resist. As Nietzsche “has already shown that bodies are driven not by external spiritual principles but by its own internal force which is ‘will to power’”(142). Foucault neither agrees with the idea that the power doesn’t act as a force or essence of the body, nor he think that the body has libidinal desire. Unlike Nietzsche, Foucault couldn’t conceive that the body has the internal force that is ‘will to power’ or the internal sexual drive like libido. This can be seen through the Text *The History of Sexuality: An Introduction* (1980), he explains that the drive is the product of power dominance, rather the biological instinct. He also sees the desire as the constructed material of the culture but not the trait of the body.

“Human body is portrayed as an object that is affected by the power of the discourses of sex. The sex is not an inner energy of the human bodies but is the product of the discourses of Christianity, medicine, psychoanalysis and other social sciences. Human being’s desire for sex cannot be seen as an instinct, existed prior to the operation of those discourses. There is no sexuality for the body other than the presence of some anatomical elements, biological functions and sensations, which are discrete and never felt as a sexual instinct” (152).

The cultural theorist Herbert Marcuse in the text *Eros and Civilization* (1970) describes about the ‘eros’ rejecting the idea of Foucault about the libido, as he disapprove the fact that the contemporary civilization continues to suppress the erotic pleasure. According to him, the unconscious libidinal pleasure should be linked to make the renewed society where the human can be more creative and happy. In the pre-historical period where the bodies were natural-driven and were free from all the inscriptions but Foucault always visualize body with the cultural inscription engraved by the dominant power. He sees it as an organized entity rather the post-modern beliefs as body without organs. The liberatory project is hard to draw on body because of his cultural deterministic thought, which requires the wiping of cultural imprints on the body by the power dominance of the society. Abey Koshy in the article “Reinvigorating the Body: A Critical Analysis of Agency in Nietzsche, Foucault and Deleuze” (2014) says “if history is a repeated struggle between various forces foe domination and the body always its product, it is doubtful if Foucault can effectively justify a scope for a political struggle” (144). Foucault draws a passive picture of body which does not have the resistance for the dominant power. He says in *The History of Sexuality* (1980), that every age has its own positive and negative regulations on the body. For instance he speaks of the history of the body of the ancient Greek civilization where they had a very positive economy of pleasure. Greeks never saw body as the suppressive force to extract the labor power out of it rather in the modern epoch the body is seen as the object to extract the wealth.

“Although the notion of body and power employed by Foucault is a reformulation of Nietzsche’s idea of the ‘will to power’ he fails to see the underlying possibility of resistance that could be developed from the body’s internal power. This entitles us to claim that Nietzsche’s genealogy goes



beyond mere analysis of the techniques deployed by the reactive forces to produce subjectivities in different historical periods. His genealogy also unravels the subtle psychology of the repressive forces and the dynamics of their functioning”(146).

The two tasks is been suggested by Nietzsche’s body politics. The first is to overpower the nihilistic history by creating a culture that allows the free-flow of bodily desires. The second is the self discovery of bodily instinct by each individual. This practice might be for short duration but it gives the possibility to exist between the negative social orders. “This practicing of the living of the bodily is what Nietzsche characterizes as the aesthetic dimension of existence”(150). Through the overflow of energy and superabundance of life the body enhances the site of desire. Nietzsche in the book *Will to Power* explains “art produces...an excess and overflow of blooming physicality into the world of images and desires...and it excites the animal functions through the images and desires of the intensified life. Further it is stated that art exercises the power of suggestion over the muscles and senses...it works tonically, increases strength and inflames desires of the body”(427).

The body is perceived as the desiring body for Deleuze and Guattari. As they put forward the idea of zero intensity of bodies, schizoanalysis introduces the idea of ‘body without organs’, which basically help the body to escape the regiments of power structures like culture, state, family and moral institution. “Body without organs is not a body that dismantles physical bodily parts or organs. Rather it is a metaphor used by Deleuze and Guattari for the body that removes the inscriptions and meanings drawn on the surface of it by the repressive human culture” (153). The bodies of different animals, plants and humans have created the lines of escape of their identities as the formation of their matters which passes through various directions are highly unstable. As explained in *Thousand Plateaus*,

“The body without organs causes intensities to pass: it produces and distributes them in a spatium that is itself intensive, lacking extension...it is non stratified, unformed, intense matter...that is why we treat the ‘body without organ’ as the full egg before extension of the organism and organization of the organs, before the formation of the strata...” (153).

Deleuze started as an experiment on the body to measure the intensity, which was devalued in the present civilization where body is only seen in the metaphysical or spiritual sense and hence, demystifies the natural instinct as love, sexuality and sensuality. Body has always been under the eye of objectification through political, social and philosophical discourses. “Through the schizoanalytical project of Deleuze and Guattari does not propose any foolproof means for the permanent liberation of the body, they throw more light into the possibility of a different life that affirms body and its forces” (156). Some form of organization of the body has to be admitted, as the cultural and social components cannot be entirely ribbed off.

Body having various dimensions and when it delves into the psychoanalysis it produces a different structure to discuss this structure Anup Dhar shares the article “The (Sexed) Body in Psychoanalysis: Between the Chiasma and Chasm” (2014) which explains the body through the three spectacles that is: “the Christian confessional flesh, the Cartesian understanding of mind/body and the medical understanding of the body” (166). In



Christian structures the sins are closely related to the body rather the illegitimate relationships. The question arises as the body feels the tickling and titillations.

“In a word: we are witnessing the flesh being pinned to the body. Previously, the flesh, the sin of the flesh was above all breaking the rule of union. Now the sin of the flesh dwells within the body itself. One tracks down the sin of the flesh by questioning its different and its different sensory levels”(167).

The line moving towards the sexuality, as the concept is being deployed to present its own experience. This was born through flesh and instinct as the code of the carnal was always resided in the body and its pleasure. Jacques Lacan in the text *Feminine Sexuality: Jacques Lacan and the ecolefreudienne* (1985), explains body from ‘real bodies’ to the ‘Real of Bodies’, by seeing the body as “irreal (not unreal, not real in a naïve sense, but irreal- irreal as in-between real and unreal)” (174). In the Lacanian real the whole body is seen as the inassimilable taking the turns towards the fragmented corporeal experiences. There are three understanding of Lacanian Real.

“1. Real before Language- Real as a priori- Real which exist before the area of symbolization and it is the letter or language which tend to kill the body, the body as the whole is real.

2. Real after Language- Real as the remainder of the process of symbolization, Real is what cannot be symbolized; hence the Real remains the inassimilable remainder, but this is a body that cannot be named; it only gestures towards an unnamed remainder or an unnamed excess, an excess that cannot be domesticated.

3. Real as the by-product (and not the leftover) of the process of symbolization; Real as that which is secreted out by the process of symbolization; Real as that which is repudiated in the process of the formation of the symbolic; hence the whole body or the body as a whole is not Real; instead, body parts emerge as Real, as foreclosed” (175).

This foreclosed contingent process of the Real is differently defined by Lacan by taking body in the Real ground of experience.

In the philosophical tradition the most debated part remains the relationship with one’s own self. But in many traditions it’s been seen that self is being projected separately than the body, which is often seen as the accidental part or problematic arena. As SpreekumarNellikappilly in the article “The Phenomenology of Body: Gadamer’s Hermeneutic Analysis of Health and Illness” (2014) examines that the concept of body which is seen through the angle of phenomenology. It takes the journey “towards the understanding of the human reality-and for that matter any reality-begins with an understanding of bodily experiences and the phenomenon of embodiment” (199). Thus, the most observant point remains at the stage is the existence of the soul, as we hardly have the experience of the body being living or just remained the subject of decay. Jean Paul Sartre in *Being And Nothingness* (1943) illustrates “this phenomenological worry by describing how a physician experiences her patient’s body as in the midst of the world” (303). This can be screened through observing one’s own body, as when we observe our body with its organs their vitality is seen in an ultrasonic screen. He adds that “it was much more my property than my being” (304). The evident difference between the body as a property, as a being and as a person took a structure which Sartre



termed as “the being that is revealed to us in the typical midst of the world experiences is the being-for-others”(304).

Objectifying Body

Women's body is always seen as the object of suppression, repression and oppression which is also explained by Martha Nussbaum and Rae Langton. They have presented the notion of objectification according to the social realm existing in the society. Martha Nussbaum has identified seven different features with the idea that the treatment of women has always been as an object of use.

1. Instrumentality: a person is being used as a tool to fulfil objectifier's purposes; the handmaids in the *Handmaid's Tale* were the assets for bearing the child for commander's wives. In the Gileadean society the women had no right towards freedom as they were the slaves of commanders. They were the objects in the hands of ruling class. “The best and most effective way to control women for reproductive and other purposes was through women themselves” (290).
2. Denial of autonomy: the person is being treated as the one who lacks in autonomy and self-determination; Women in Gilead were treated with the horrors of culture as they wanted to snatch even the iota of their confidence. They had hit their self very badly which has distorted them and became complex to refax.
3. Inertness: the person is treated as the one who lacks in agency, and perhaps also in activity; in the novel every other women has her own work to perform but if the handmaids lacks in producing the child they were sent to the concentrations.
4. Fungibility: the treatment of a human as interchangeable with other objects;
5. Violability: the person who is treated as the one who lacks in boundary-integrity;
6. Ownership: the person who is treated as something which is owned by another;
7. Denial of subjectivity: the person is treated as the one who is secluded and there no consideration of his accounts (feelings and experiences).
8. Rae Langton has added three more features to Nussbaum's list:
9. Reduction to body: the identification of the body and body parts by treating the person;
10. Reduction to appearance: treating the person according to their looks and senses;
11. Silencing: the person who is being treated as if he/she is silences or don't have the capacity to speak. Even the protagonist of the novel tries to escape from Gilead to expose her story of victimization. As M. Prabhakar in his article “The Handmaid's Tale: Language as Subversive- Weapon” (1999), explains how the language becomes the medium through which the victim gets the chance to express her plight. “Language as the means of communication to unlock her inner feelings and bitter experiences as well as a ‘Subversive Weapon’ to raise her voice against the marginalization of women” (86).

In the novel Margret Atwood shares a distinct prospect on the relation of men and women. The complex relationship between power and sexuality is expressed by her and delineates that how power dominates on sex as Michel Foucault in his book *History of Sexuality vol.* (1980) says

“To deal with sex, power employs nothing more than law of prohibition. It's objective: that sex renounce itself. Its instrument: the threat of punishment that



is nothing other than the suppression of sex. Renounce yourself or suffer the penalty of being suppressed; do not appear if you do not want to disappear. Your existence will be maintained only at the cost of your nullification. Power constrains sex only through a taboo that plays on the alternative between two nonexistences”(84).

Immanuel Kant also showcases the sexual objectification through different strands of contemporary feminist. According to Kant when thought enters on sexuality it becomes highly problematic figure when mostly it is exercised outside the monogamous marriage. In his *Lectures on Ethics* (1920), he expounds that the person is being used till it last essence and then after usage the person is being undertaken for other purposes. “Sexual love makes of the loved person an object of appetite; as soon as that appetite has been stilled, the person is cast aside as one casts away a lemon which has been sucked dry...as soon as a person becomes an object of appetite for another, all motives of moral relationship cease to function, because as an object of appetite for another a person becomes a thing and can be treated and used as such by everyone” (163).

Conclusion

The parallel effect of the objectified female is seen through the natural beam of patriarchy which continues to spread its wings but with the controlled effect of the era the female out rightly jumped for their rights. The repercussions started to affect the society when a woman, a wife and a daughter came up with the revolution of change against her body. Even in *Handmaid's Tale* the women are treated in way and were used as the object of usage. Their role was the most dehumanized, as they were the surrogate for the aging and the barren commanders. As Offred says “we are two legged wombs, that's all: sacred vessels, ambulatory chalices” (146). The handmaids were given three different chances in two years each with different commanders to bear them the child and if they were not able to conceive, then they were given the name of ‘Unwoman’ and were sent to the colonies to clean up the toxic wastes. Their present status seems paradise if they compare with the colonies. On this AminMalak in his article “Margaret Atwood's *The Handmaid's Tale* and *The Dystopian Tradition*” (1987) delineates that “the dictates of state policy in Gilead thus relegate sex to a salable commodity exchange for mere minimal survival” (13). The constant struggle of women in the realm of domination and power tries to subvert the cultural thought which is stagnant in the present epoch.

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NUTRIENTS WHICH PROMOTE IMMUNITY AND ESSENTIAL DURING COVID-19 PANDEMIC

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Abstract:

Covid-19 is a major pandemic situation facing the world today caused by SARS-CoV-2 which has implications on our understanding of infectious diseases which is affecting all over countries of the world. The spread of novel SARS-CoV-2 virus has increased interest on the role of the immune system, leading to a large number of claims around supplements and certain foods that can help combat the virus by 'supercharging' the immune system. We can promote functioning of immune system by taking different variety of nutrients with appropriate amount. The immune system is one of the most complex bodily systems, made up of a network of cells, molecules, tissues and organs that have evolved a range of different functions that enable them to deal with the diverse pathogens present in the environment. We can face and fight against COVID -19 by including healthy foods in our diet which promote immune system.

Keywords: Nutrients, Immunity, COVID-19, Pandemic.

Introduction:

Corona viruses are a large group of single-stranded RNA viruses that are common among mammals and birds. Most of the person infected with the COVID -19 virus is experience mild to moderate respiratory illness and, less frequently, gastrointestinal diseases. The virus mainly transmitted through droplets that causes COVID-19 and these droplets generated when an infected person coughs, sneezes, or exhales and a healthy person comes contact with infected person. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces. The respiratory symptoms caused by corona viruses can range from common cold-like or mild influenza-like symptoms to severe pneumonia. In December 2019, a new type of corona virus causing pneumonia and death was identified in Wuhan, China. Current strategies aim to limit the spread of the virus by preventing contact between people.[1]

Government of different countries focus to maintain social distancing, Use of mask and include nutritive diet to enhancing the immune functioning. Nutrition should be at the forefront of these approaches. Balanced nutrition which can help in maintaining immunity is essential for prevention and management of viral infections. [2]

The WHO guidance on diet, especially during the current pandemic states that "good nutrition is crucial for health, particularly in times when the immune system might need to fight back". Including a diet with appropriate amount of nutrients like vitamins,



Minerals and Protein supports optimal function of the immune system by providing nutrients and antioxidants to slow damage of cells caused by free radicals. Vitamins and minerals keep us healthy and protect us from falling sick. Vitamins, Protein and minerals are known as protective food. A balanced diet is a guarantee of strong immune system that can help withstand any assault by the virus. A proper diet can help to ensure that the body is in the strongest possible state to battle against the virus.[3]

Nutrition, Immunity and COVID-19:

Vitamin C: Vitamin C is water soluble vitamin and has antioxidant nature. Vitamin C is an essential nutrient with several roles in our body. It has antioxidant nature, meaning it can neutralize free radicals (unstable compound) in body and help prevent or reverse cellular damage caused by unstable compounds. It's also involved in a number of biochemical processes, many of which are related to immune health.

Vitamin C act on immune health in several ways. Its antioxidant nature can decrease the inflammation process, which may help to improve our immune function to fight against viral and bacterial infections. Vitamin C also keeps our skin healthy by boosting collagen synthesis, helping the skin serve as a functional barrier to keep harmful compounds from entering our body. Vitamin C in the skin can also promote wound healing. Vitamin C also promote the activity of phagocytes, A type of immune cells that can "swallow" harmful bacteria and other particles.

In studies of its effectiveness against viruses that cause the common cold, vitamin C doesn't appear to make any less likely to get a cold — but it may help get over a cold faster and make the symptoms less severe.

There's also some evidence from animal research and case studies in humans that high dose or Intravenous Vitamin C can reduce lung inflammation in severe respiratory illnesses caused by H1N1 ("swine flu") or other viruses. In an article published in the Chinese Journal of Infection Diseases, the Shanghai Medical Association endorsed the use of high dose vitamin C as a treatment for hospitalized people with COVID-19.

Additionally, a 2019 review found that both oral and IV high dose vitamin C treatment may aid people admitted to intensive care units (ICUs) for critical illnesses by reducing ICU stay length by 8% and shortening the duration of mechanical ventilation by 18.2%. [4]

Moreover, in vitro and in vivo studies in avian have shown that vitamin C could be protective against avian coronavirus infection, and human trials have found that vitamin C may decrease susceptibility to viral respiratory infections and pneumonia. High doses of ascorbic acid reduce the severity and duration of symptoms from the common cold, which is caused by rhinovirus. Studies of vitamin C for the treatment of hospitalized and critically ill patients have shown mixed results on mortality, length of stay in the intensive care unit, and duration of mechanical ventilation. [5]

Ascorbic acid is a crucial vitamin necessary for the correct functioning of the immune system. It plays a role in stress response and has shown promising results when administered to the critically ill. Quercetin is a flavonoid who has antiviral properties have been investigated in numerous studies. There is evidence in a study that vitamin C and Quercetin co-administration exerts a synergistic antiviral action due to overlapping antiviral and immune modulatory properties. The use of vitamin C and quercetin both



for prophylaxis in high-risk populations and for the treatment of COVID-19 patients as an adjunct to promising pharmacological agents such as Remdesivir or convalescent plasma.[6]

ZINC: Zinc is an essential mineral with a wide range of roles in the human body, including supporting the function of different enzymes. The body needs zinc to carry out normal metabolism and ensure the proper function of the reproductive, cardiovascular, and nervous systems. Foods high in zinc include animal products, such as meat, shellfish, chicken, and fortified breakfast cereal. [7]

Zinc affects multiple aspects of the immune system functioning. Zinc is crucial for normal development and function of cells mediating innate immunity. In double-blind placebo-controlled trials of zinc supplementation, zinc reduced the incidence and duration of acute and chronic diarrhea and acute lower respiratory tract infections in infants and children. [8]

The findings suggest that zinc could have protective effects against COVID-19 by supporting anti-viral immunity and reducing inflammation. A team of researchers at Sechenov University in Moscow, Russia, led the review and published it in the *International Journal of Molecular Medicine*. Zinc supports the production and maturation of white blood cells, which are the major cells in the immune system. There are multiple types of white blood cells, some of which make antibodies, capture and destroy pathogens, and return the immune system to normal after an infection and Zinc helps in production of these types of cells. Zinc also helps to regulate inflammation. While an inflammatory response is necessary to fight infection, the overproduction of pro-inflammatory cytokines early in the infection is responsible for some of the worst symptoms of COVID-19. [7]

Especially older patients with chronic diseases and most of the remaining COVID-19 risk groups would most likely benefit from zinc supplements. [9]

Water: Our bodies are made up of about 70 per cent water. Hydration plays a key role in keeping us healthy and also ensuring that all our body functions run efficiently, without any problems. Staying hydrated is recommended for weight loss, healthy skin and hair, and also for boosting our immunity.

As the novel coronavirus spreads rapidly all over the world, experts suggest that apart from practicing personal hygiene by washing hands frequently, coughing and sneezing with nose and mouth covered, etc, people should follow a healthy diet, stay hydrated, and quit smoking, drinking, to reduce their risk of the novel coronavirus infection.[10]

Drink 8–10 cups of water every day keep hydrated the body. Water is the best choice, but we should also consume other drinks, fruits and vegetables that contain water, for example lemon juice, tea and coffee. But be careful not to consume too much caffeine, and avoid sweetened fruit juices, syrups, fruit juice concentrates, fizzy and still drinks as they all contain sugar.[11]

A myth that drinking water every fifteen minutes will keep coronavirus at bay, had been doing the rounds on social media, a few days ago. While drinking water does not guarantee that you will not contract the coronavirus, staying hydrated can boost your immune system, and ensure that the body is able to fight the virus, if and when it is transmitted to you. Drinking water helps to oxygenate your cells. When your cells have



enough oxygen, they are working at their full capacity, which helps them guard your body against any foreign bodies that try to enter, and fight them, if they do.

Hydration also plays a very important role in regulating our body temperature, according to the Centre's for Disease Control and Prevention, CDC. Therefore, if we do come down with a fever, whether it is a symptom of COVID-19, or any other infection or disease in the body, drinking enough water is very important. According to a report on Havard Health, staying hydrated is important for a variety of reasons, and keeping the risk of infections reduced is one of them. Hydration also helps in the transmission of nutrients to all parts of the body and keep all body tissues and functions running efficiently – a pre-requisite for reducing your risk of infections.[10]

Staying hydrated also means healthy membranes, when we cough, sneeze and just breathe, membranes in our nose and mouth eliminate bacteria. Moisture helps heal the broken membranes so additional infectious organisms can't enter the body.[12]

Vitamin D:

Vitamin D plays an essential role in the immune system. Vitamin D interferes with the majority of the immune systems cells such as macrophages, B and T lymphocytes, Neutrophils and Cathelicidin, a peptide formed by vitamin D stimulated expression, has shown antimicrobial activity against bacteria, fungi and enveloped viruses, such as corona virus. [13]

Epidemiological data report of several countries with a high prevalence of hypovitaminosis D may have increased susceptibility to complications and mortality due to COVID-19 infection.[14]. The striking overlap between risk factors for severe COVID-19 and vitamin D deficiency, including obesity, older age, and Black or Asian ethnic origin, has led some researchers to hypothesise that vitamin D supplementation could hold promise as a preventive or therapeutic agent for COVID-19.[15]

A Research study report which was conducted overall ten countries namely the UK, Ireland, France, Germany, Belgium, the Netherlands, Denmark, Finland, Norway, and Estonia showing

that the prevalence of severe vitamin D deficiency (defined as 25(OH)D less than 25 nmol/L) strongly and significantly correlated with the COVID-19 death rate per million people.

The correlation coefficient of 0.76 indicates that approximately 58% of COVID-19 mortality can be explained by severe deficiency in vitamin D, says the team. [16]

Several studies demonstrated the role of vitamin D in reducing the risk of acute viral respiratory tract infections and pneumonia. These include direct inhibition with viral replication or with anti-inflammatory or immune modulatory ways. In the meta-analysis, vitamin D supplementation has been shown as safe and effective against acute respiratory tract infections. Thus, people who are at higher risk of vitamin D deficiency during this global pandemic should consider taking vitamin D supplements to maintain the circulating 25(OH)D in the optimal levels (75–125 nmol/L). [17]

Vitamin E: Vitamin E is a series of fat-soluble compounds called tocopherols. Vitamin E is a major antioxidant in the body. It works with selenium to help prevent the breakdown of certain enzymes that are vital to the body's metabolism. Vitamin E is found in all cell membranes of the body. It protects them from oxidative damage. Recent



evidence has highlighted that nutritional supplementation could play a supportive role in COVID-19 patients. Administration of higher than recommended daily doses of nutrients such as vitamins D, C, E, Zinc and omega-3 fatty acids might have a beneficial effect, potentially reducing SARS-CoV-2 viral load and length of hospitalization. These nutrients are well-known for their antioxidant properties and immunomodulatory effects. Deficiencies in these nutrients can result in immune dysfunction, and increase susceptibility to pathological infection. In fact, dietary insufficiency of vitamins and minerals has been observed in high-risk groups of COVID-19 patients, such as the elderly, increasing the morbidity and risk of mortality. [18]

Vitamin E is a fat-soluble vitamin that plays a key role in regulating and supporting immune system function. It prevents oxidation of Beta Carotene and Vitamin A in the intestine.

Vitamin E is a powerful antioxidant that can protect you from various infections, bacteria, and viruses. Soaked almonds, peanut butter, sunflower seeds, and even hazelnuts should be consumed to get the daily dose of vitamin E. [19]

Magnesium: A cohort study in Singapore has found that the combination of vitamin D, magnesium and vitamin B12 (DMB) could reduce the rate of progression in older patients with Covid-19. The study conducted by researchers at the Singapore General Hospital and Duke-NUS Medical School reported that patients who received DMB had a significant reduction of clinical deterioration compared to patients without DMB. The study included 43 Covid-19 positive patients aged 50 years and above who were admitted to the Singapore General Hospital between 15 January to 15 April 2020. Diagnosis was determined via a positive SARS-CoV-2 PCR from nasopharyngeal or throat swab. As the situation evolved, only patients admitted from 6 April onwards were given DMB (n=17) consisting of a single daily oral dose of vitamin D3 1000 IU, magnesium 150mg and vitamin B12 500mcg for up to 14 days. Patients who did not receive DMB (n=26) were the control group. [20]

Taking 500 mg. of magnesium daily beefs up immunity in just four days, according to research in the European Journal of Clinical Nutrition. The mineral energizes white blood cells and ups their production of coronavirus-killing antibodies. British scientists say magnesium improves lung function and breathing ability for people with asthma and chronic obstructive pulmonary disease (COPD). Plus, this essential mineral reduces damaging lung inflammation in patients fighting respiratory viruses. [21]

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DESIGNING A MODEL FOR SPEECH SYNTHESIS USING HMM

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ABSTRACT:

In this paper we will discuss a general overview of Text to Speech or Speech synthesis, and Design a model for synthesizing speech for a given text using hidden Markov model (HMM), which has recently been very popular and demonstrated to be very effective in speech synthesis. This flexibility in changing speaker identities, emotions, and speaking styles is the main advantage of this approach. In this paper we will also discuss the relation between the more conventional approach and the HMM-based approach. At the end we will discuss the advanced techniques which may be use for future developments are described.

KEYWORDS: Statistical parametric speech synthesis; Hidden Markov model (HMM); HMM-based speech synthesis system; text to-speech synthesis (TTS)

INTRODUCTION

The Text to Speech (TTS) or Speech synthesis is a technique for generating intelligible, natural-sounding artificial Speech for a given input text. It has many applications, which include in-car infotainment systems, voice-over functions, e-book readers, communication aids for the Speech impaired, speech dialog systems, communicative robots, singing speech synthesizers, and speech-to-speech translation systems. Speech synthesis has two main components called a front end and back end, in front end text analysis, and in the backend, speech waveform generation is done. In the text analysis, an input text which is given by the user is converted into a linguistic specification which consists of phonemes elements. In the speech waveform generation, the speech waveforms are generated from the output of text analysis. We will discuss the speech waveform generation component.

In the early 1970s, the speech synthesis used very low dimensional acoustic parameters for each phoneme, which produces very low-quality Speech. In the 1980s, the speech synthesis components and phonemes i.e. “diaphones” are stored in small database and concatenated them according to the given phoneme sequence by applying signal processing. In the 1990s, computer science technology increase which also helps in enhancing the speech and linguistics resources, a database of speech waveform components are stored and used to select most accurate speech units that matches both

phonemes and other linguistic components such as lexical stress, pitch accent, and part-of-speech information to synthesis high-quality natural-sounding synthetic Speech with proper prosody. This approach is generally called "unit selection" and other systems, like commercial systems, are developed to achieve in a higher level of reading-style synthetic Speech. And use in various applications such as screen reader, newspaper readout functions, reading-style synthetic Speech may be sufficient, TTS systems should read out texts with expressions. The unit selection method restricts the speech synthesis to speak in same style as it is in the original recordings as there are no or very few modifications to select the unit of recorded speech. But if we want the speech synthesis with different emotions and speaking styles with this method, we need larger speech databases containing different speaking styles. But this result in the explorational increase in the database with the recording of a high quantity of Speech with many speaking styles and emotions is obviously time-consuming and cost inefficient. This triggers the need for cost-efficient method over speech variations, another data-driven approach called "statistical parametric speech synthesis" emerged in the late 1990s and became popular in recent years. With this approach for modeling, many acoustic parameters are modeled using a time-series generative model. The hidden Markov model (HMM) use to model a Statistical parametric speech synthesis as its generative model, is called HMM-based speech synthesis. HMMs represent the phoneme sequences, and various contexts of the linguistic specification same like the unit selection approach and HMM-based speech synthesis are used to develop a vocoder which is an example of simplified speech production model, vocal tract parameters and excitation parameters represent Speech which generate a speech waveform.

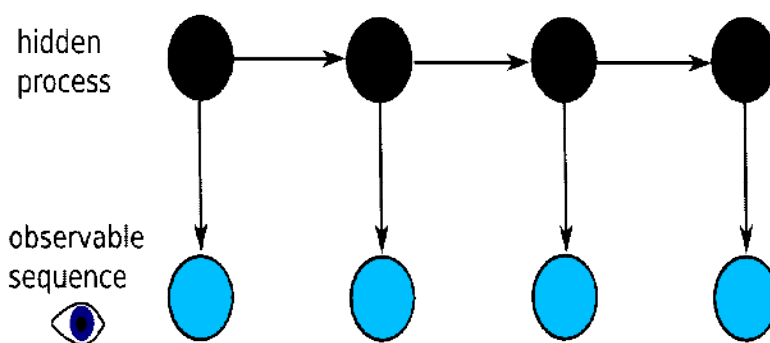
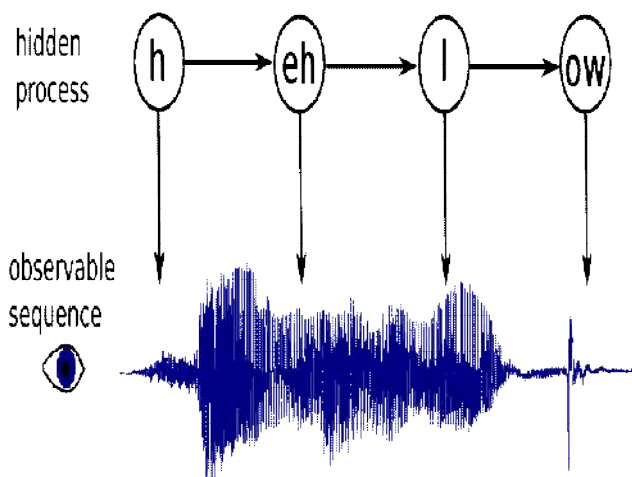


Fig. HMM Based Test to speech or Speech synthesis



The quality of HMM-based synthesis does not have naturalness as a unit selection; therefore, to enhance the quality and make more cost-effective, we discuss Support Vector Machine (SVM) and Log-Likelihood Ratio (LLR) based synthetic speech naturalness evaluation system. SVM and LLR based synthetic speech naturalness evaluation system to evaluate the naturalness of the synthetic Speech. And in this paper, we focus on how we can enhance the accuracy of the speech naturalness evaluation system. HMM, based speech synthesis and waveform concatenation speech synthesis system.

1. LITERATUREREVIEW

2.1 Text to speech (TTS) or speech synthesis has two main components:

1. Text processing
2. Generating Speech

Text processing:

In a Speech synthesis system or TTS, the input given text is first analyzed, then it normalized, and finally transcribed into a phonetic or into some linguistic representation.

Components of text processing deal with low-level processing issues such as sentence segmentation and word segmentation

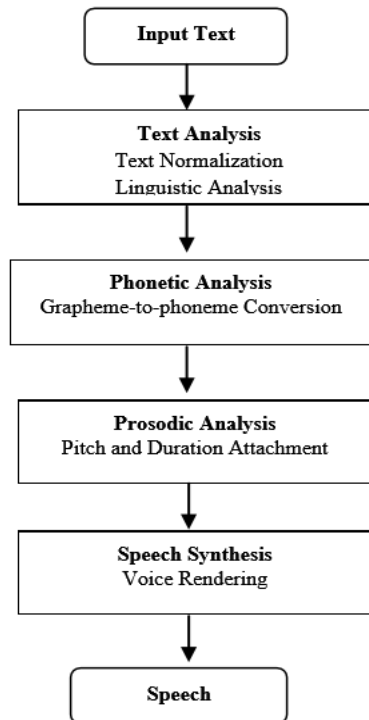


Fig.1 Block diagram of Text-to-Speech Synthesis

- a) Detection of document structure—first we need to detect the document structure by interpreting punctuation marks and paragraph formatting.
- b) Text normalization - The text normalization handles acronyms and abbreviations. The purpose of normalization is to match the given text e.g., Er could be rendered as an engineer. Proper normalization makes the good output.
- c) Linguistic analysis - Analysislinguistic includes syntactic analysis to facilitate accenting and a morphological analysis for proper word pronunciation andphrasing to handle written text ambiguities.

Generating Speech:

The speech generation component the following parameters is used to generate the Speech,



a) Analysis of phonetic-

It will focus on the phone level of each other. Each phone is tagged with the information about what sound to generate and how it should produce it means emphasis and style. Grapheme into phoneme conversion: Pronunciation is extracted from each word of the input text is been determined.

Disambiguation of homograph: It figure out whether the input sentence uses the present tense or past tense version of the word. To identify a word, a tense system depends on the dictionary.

b) Prosodic analysis –

The prosody analysis is important because it gives the basis for marking prosodic effect around our utterance plans, i.e., phonological prosodic processing, and later to arrive at suitable rendering strategies for the marked prosody i.e., phonetic, prosodic processing. There are two approaches in the prosody.

Create an abstract descriptive system that characterizes observations of the behavior of the parameters of prosody within the acoustic signal (fundamental frequency movement, intensity changes, and duration movement) and promote the system to a symbolic phonological role.

Create a phonological system that can be used to input to the process, which eventually results in an acoustic signal judged by listeners to have proper prosody.

2.2 DEVELOPMENT OF TEXT-TO-SPEECH SYNTHESIZER

Artificial Intelligent and its application in speech is a dream of the humankind for centuries. To understand how the representation of the systems and how the development has taken shape in the present form. This review may provide new researchers with insights for further processing. we will discuss the history of speech synthesis from the mechanical efforts which introduce initially to systems that form the basis for present high-quality natural speech synthesizers.

The first known machine that tried to mimic real human speech was developed by Christian Kratzenstein of St. Petersburg in 1779. This machine could produce five long vowel sounds. Twelve years later, Wolfgang Von Kempelen developed a machine that could produce vowels and some consonants. The first full TTS system was developed in the late 1960's. Since then, the technology is been improved have been many advances in the accuracy and the quality of TTS systems. Companies like IBM, Microsoft, and Bell Labs have developed both free and commercially available systems.



3 METHODOLOGY

Following are some products of Text-to-Speech synthesizer,

A. MITalk

In 1976, Allen, Hunnicutt, and Klatt developed the MITalk at MIT available in English language. This TTS used different levels to convert text to synthesized speech. In the first level, abbreviations, numbers, and symbols were transformed into words. Then, using a 12,000 morph (prefixes, roots, and suffixes) lexicon, words were converted to their phonetic equivalent. Words not in the lexicon were converted to phonemes by using rules [10].

B. DEC Talk

Digital Equipment Corporation DEC Talk was based on system it is available in American English, German, and Spanish. The DEC Talk system later became commercially available in 1983. The system is capable to synthesize most e-mails, proper names, and URL addresses and also supports a customized pronunciation dictionary. It has also the punctuation control for pauses, pitch, and stress.

C. Festival

The Festival is multi-lingual TTS currently available in English British and American, Welsh and Spanish. This system is developed by Alan Black and Paul Taylor. This system is programed in C++ Language and supports residual excited PSOLA and LPC methods and MBROLA database. With LPC method, LPC coefficients and the residuals are used as control parameters. It uses letter-to-sound rules and a large lexicon for TTS conversion. Speech synthesis is accomplished using unit-selection concatenation of diaphones. Festival offers a general framework for building speech synthesis systems.

D. AT&T VOICEBUILDER

The AT&T VOICEBUILDER supports only English language. It provides a new tool to researchers and practitioners who want to have their own voices synthesized by a high-quality commercial-grade text-to speech system without the need to install, configure, or manage speech processing software and equipment. It is implemented as a web service on the AT&T Speech Mash up Portal. The system records and validates users' utterances, processes them to build a synthetic voice and provides a web service API to make the voice available to real-time applications through a scalable cloud-based processing platform. All the procedures are automated to avoid human intervention.



E. Text-To-Speech System in Indian Languages

IIIT Hyderabad has built a generic framework for Hindi and Telugu languages for generating text processing modules and linguistic resources which could be extended to all the Indian languages with minimal efforts and time. Anand Arkia et al. approach is to make use of minimal language information, acoustic data, and machine learning techniques. Their efforts in this direction support mainly for font identification, Font-to-Akshara conversion, and pronunciation rules for Akshara's and text normalization.

F. WHISTLER

Whistler is a trainable Text-to-Speech (TTS) system available in English language that automatically learns the model parameters from a corpus. The speech Synthesis engine is based on the training procedure on Hidden Markov Models and Concatenative synthesis. The Text to speech unit inventory for each individual voice is synthesized automatically from unlabeled speech database.

3.1 SMOOTHING METHODS FOR TEXT-TOSPEECH SYNTHESIS

In Concatenative speech synthesis based on unit selection, joint cost also known as Concatenative cost, which give measurement of how well two units can be joined. After the units are concatenated, most system attempts three smoothing methods and three join cost function such as No smoothing, linear smoothing and Kalman filter-based smoothing. T. Dutoit shows that the Line Spectral Frequencies (LSF) has produce smoother transition and good interpolation properties than LPC parameters.

The enhancement of the speech can be done by using Kalman filter, which is a perceptual post filter concatenated with a standard Kalman filter, we get the best performance. A speech synthesis system produces neutral speech, it can be modified into emotional speech by tuning the pitch counter of stressed words by using Gaussian normalization technique. The two HMMs is use as the post processing of speech synthesis for spectrum conversion from neutral to expressive speech style. The expressive speech use in storytelling application is synthesized by applying a set of prosodic rules for converting neutral speech produced by Text to speech system into applications like storytelling speech with modification in Pitch, Intensity, Tempo, and Duration. Multiple acoustic models are often combined in statistical parametric speech synthesis. The combination of multiple acoustic models HMMs and Gaussian gives significant improvement in the quality of the text to speech.

4 PROPOSED METHODOLOGY

We have proposed a model for speech synthesis using HMM by SVM based synthetic speech naturalness evaluate a system of the naturalness of the unit selection and

waveform concatenation synthetic speech in. The system of this synthesis is constructed by three steps.

1) Training data set is prepared by unnatural and manual natural labeling for synthetic speech. In these 5 native speakers have labelled many names of places generated by a unit-selection speech synthesis system for GPS used in navigation applications, and prosody word is utilized as the basic unit in labelling, either prosody word is label as unnatural or natural.

2) Context-dependent acoustic and acoustic feature extraction model training. In this step, pronunciation of the synthetic speech is divided into two spaces, the unnatural and natural pronunciation space, and context dependent acoustic model is been trained for the two spaces separately.

3) SVM is classified training, LLR is been calculated from the acoustic features of the synthetic speech which is given the two spaces acoustic model and combined to compose the feature of the SVM is classified for each basic labeling unit. At the end, the SVM classifier given training to evaluate the naturalness for the speech synthesis.

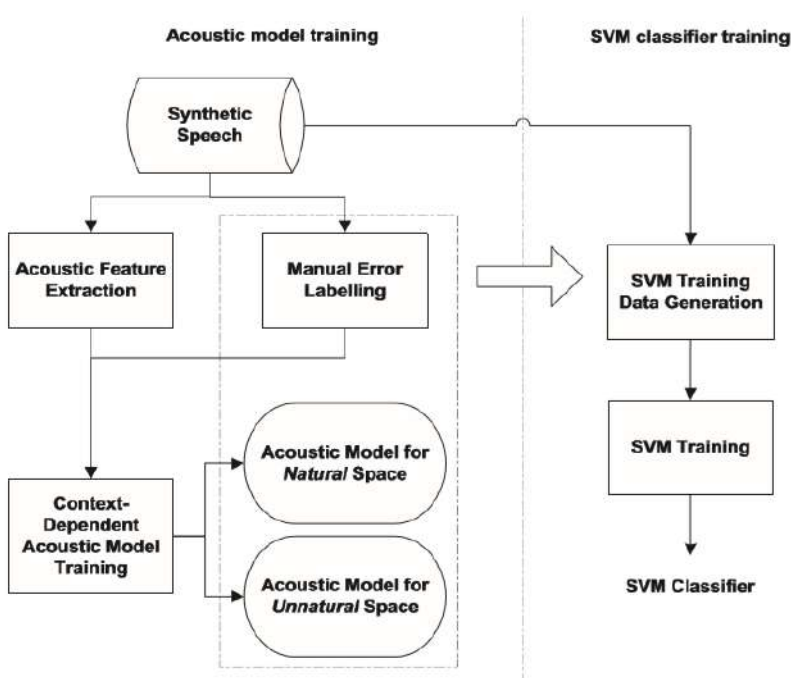


Fig. Flowchart of the synthetic speech evaluation system

4.1 IMPROVEMENTS ON SYNTHETIC SPEECH NATURALNESS EVALUATION SYSTEM

4.1.1 Probability of posterior SVM classification features

Instead of LLR the combination of posterior probability is employed as the SVM classification feature. Assuming a prosodic word consists of N syllables and the acoustic feature extraction has M dimensions, and N * M dimensional vector Ω is composed by

$$\Omega = [\omega_1^1, \dots, \omega_1^M, \omega_2^1, \dots, \omega_2^M, \dots, \omega_n^m, \dots, \omega_N^1, \dots, \omega_N^M]^T, \quad (1)$$

And

$$\omega_n^m = \frac{P_m(o_n | \lambda_U, c_n)}{P_m(o_n | \lambda_N, c_n) + P_m(o_n | \lambda_U, c_n)}, \quad (2)$$

where $n=1, \dots, N; m=1, \dots, M$; which stands for the acoustic features which belongs to the n^{th} syllable in the word.

And λ_U and λ_N denote to the trained acoustic models for unnatural and natural space respectively; C_n is representation of the context information of syllable n ; $P_m(o|\lambda, c)$ is used to represent the component of likelihood calculated for them the dimension of feature o given context c and model λ .

It is been compared with the LLR, normalized to a small dynamic range of posterior probability.

Therefore, the different dynamic range for the different unnatural/natural decision tree cluster is avoided. And more appropriate feature for SVM classifier training is the posterior probability for its fixed dynamic range.

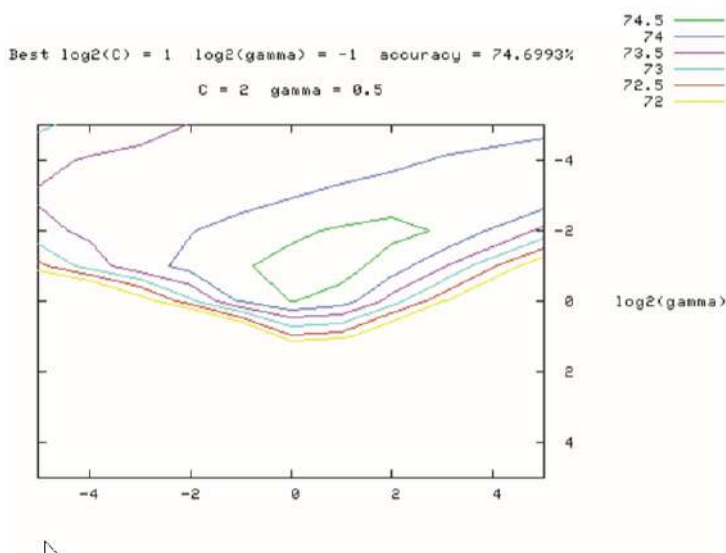
4.1.2 Decision tree scale optimization with KFD analysis

The performance of the synthesized speech naturalness evaluation system is related to its classification features. In this system, the classification features have posterior probability. As the classification features are generated from its clustered acoustic model, we can optimize the discrimination of the classification features of the tuning the scale of its natural and unnatural acoustic model. However, since we have SVM training is very time consuming and its performance is also affected due to other factors such as misclassification penalty parameter, KFD analysis is to analyze the discrimination of

classification features. The most powerful discriminant analysis method is KFD analysis to efficiently compute the degree of discrimination in feature space with respect of kernel trick.

And Minimum Description Length (MDL) criterion is used to execute context dependent acoustic model clustering is very natural and unnatural acoustic model training process. However, the MDL criterion is derived based on an asymptotic assumption and the assumption fails when there is not enough training data. Since the amount of training data in this experiment is very smaller than speech recognition tasks, MDL criterion might not successfully. Therefore, the decision tree scale must be tuned to achieve the optimum evaluation system performance. The α is a parameter set to regulate the scale of the binary decision tree in the MDL. Smaller the α value lead to larger decision tree scale and larger α will lead to small tree scale. When we create MDL, we set the default α value as 1.

Therefore, automatically optimized can be done by calculating the KFD with different MDL factor α value, the scale of the binary decision tree and tuning the scale of the decision tree will discriminate in feature space is maximized through.



4.2 BUILDINGSPEECHSYNTHESIS SYSTEMWITH HMM

A waveform concatenation speech synthesis and unit-selection speech synthesis system are constructed on the base of the synthesizing speech. Other than the only focus on one

path with the minimum “concatenation” and “target” cost chosen using scoring, The N-best unit sequences are saved for rescoring by speech synthesis naturalness evaluation system. The re-scoring strategy is as follows. We set a fixed threshold manually for synthetic speech naturalness evaluation score, then score with the one best path with the minimum “concatenation” and “target” cost given in previous selection using proposed synthetic speech natural evaluation system. As higher evaluation score represents better synthetic speech naturalness, when the score of the path is higher than the threshold, the one best path given in previous selection is regarded as natural and chosen as output. Otherwise, it will regard as unnatural and the path which has the highest synthetic speech evaluation score will be chosen from the N-best paths as optimum unit sequence for its further concatenation.

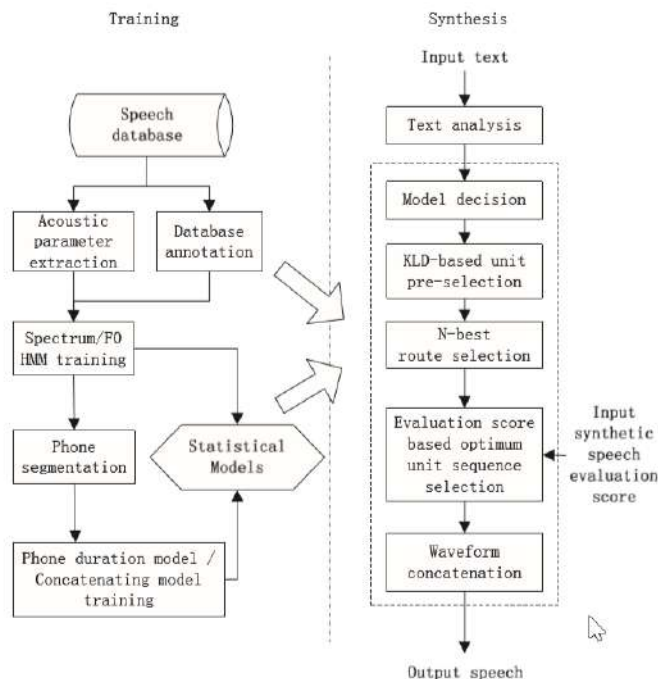


FIG: Building HMM based speech synthesis system

5 CONCLUSIONS AND FUTURE WORK

In this we will discuss the overview of HMM-based speech synthesis and its recent advances. HMM-based speech synthesis has started to be used in daily life, e.g., cell phones, smart phones, infotainment systems, and many more. Although HMM-Based speech synthesis quality has been improved, its naturalness is not like actual human



speech. In conversational speech, naturalness of speech is still insufficient to synthesis nonverbal or casual e.g., to express emotions and emphasis, to fill the gap between synthesized speech and naturalness.

Synthetic speech or Text to Speech naturalness evaluation system proposed in our previous work is improved in three directions. And an evaluation score based HMM based unit-selection speech synthesis system is proposed. Subjective listening test which shows that proposed evaluation score based HMM based speech synthesis system is significantly performing the baseline system without evaluating score. Our future work includes employing the synthetic naturalness evaluation system to continuous long sentences, and to include some spectrum and duration feature into SVM classifier.

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STUDY ON 'TECHNOLOGICAL INTERVENTION AND IT'S IMPLICATION ON HR FUNCTIONS'

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Abstract:

Today is the era of digitization and use of upgraded technology in each and every aspect of business in 2020 market. Organizations forced to become techno savvy forenriching the efficiency and productivity. HR functions have increasingly shifted to the technology platforms that include employee self-service (ESS) and manager self-service (MSS) tools to make HR information more accessible. Research says,in next 10 years, maximum organizations will have HR technology which provides daily detailing and recommendations for the workforce insights based on Artificial Intelligence and machine learning. This paper tried to explore some technological trends namely Block chain, Artificial Intelligence, HR Analytics and Robotic Process Automation and its applications in HR services.

Keywords: Artificial Intelligence, HR Analytics, Robotic process automation in HR ,Technology.

Introduction:

In recent years, we can't deny the effect of information technology on human resources (HR) processes and practices. Our world has become a global village. The upgraded means for communication, more technological advancements, computer and internet have brought the horizons closers. Thus forced the functioning of the business world in a great way. Many business functions can be performed speedily and with much more accuracy with the aid of computers and the Internet. New upcoming technology always impacted to all areas of business including HR practices. Typically Human Resource Management (HRM) is perceived as functioning towards recruitment& selection, training& development, compensation and appraisal and other admin related work. It has become an indispensable part of every organization. Technology and HRM both are closely associated to each other. Use of Information technology tools has significant impact on improving efficiency of major HR areas namely recruitment, maintenance, development and decision-making functions. Business technology can help small businesses to improve their communication processes.Technology has important effects on business operations. Irrespective of the size of enterprise i.e. small scale, medium scale or large scale, technology will facilitate to make money and produce the results as per customers demand. At the same time, technological infrastructure affects



the culture, efficiency and relationships of a business. It also affects the security of confidential information and trade advantages.

Technology had entered in various HR function like Recruitment. Previously the recruitment cycle was so lengthy which takes long time with lot of manual work. But now a days, using Applicant tracking system (ATS) which automatically track and screen the resumes and only suitable resumes are forwarded for interviews. Thus it reduced HR recruiter burden to screen every application and minimize the cycle time with accuracy and efficiency. Even with help of artificial intelligence tele-calling, video interviews, on-boarding process, time keeping, training and development process, payment calculation, reward and recognition was atomized. Thus Technology facilitate various HR functions and help HR to work as a strategic business partner in true sense.

The present paper is an attempt to study the impact of technological trends like Blockchain, HR analytics, Robotic process automation and Artificial Intelligence on HR practices.

Literature review:

- **Dianna Stone, Deadrick, Lukaszewski, Johnson (2015)** in the paper “The influence of technology on the future of Human Resource Management” reviews the current effects of technology on HR processes, considered the existing literature on the topic, and discuss the advantages and potential limitations of using these systems. The findings of this paper suggest that employees prefer more interactive, interpersonal and information-rich approaches to all of the areas of HR management. Incoming generations expect information on demand and may even prefer a more expedient versus face-to-face approach to management in general and HR management
- **Dr. V. K. Jain (2014)**– This paper suggest that HR can be effectively managed through the use of computers and IT tools. HR functions like recruitment, employee selection, employee management and workforce planning are managed through Internet, web portals, video conferencing, data warehouse etc. Various training, maintenance and performance evaluation, feedback, employee turnover, tardiness and absenteeism analysis, management and planning functions, succession planning etc. can be monitored and analyzed through Internet, Intranet, employee portals, and company portals etc. This paper gives a brief overview about possibilities of IT usage in HR field for measuring and tracking human capital and using the HR information system generally
- **Dr. SEYNI Mamoudou ,Dr. G.P Joshi (2014)**– This paper discuss usage IT tools with various HR processes like Recruiting, training, career mgmt., idea mgt. communication, health & safety etc. The paper aims to identify the efficiency of information technology and its role in human resources management electronically at universities in the Gaza Strip, and the population of the study consists of IT staff centers, The researchers used the questionnaire as a tool for the study, descriptive and analytical approach was used to achieve the objectives of the study, (SPSS) program has been used to analyze the study data. The study reached several recommendations like need for financial support to IT centers for their importance in the process of change to electronic management. The need to develop e-HRM in



universities, because they have a key role in the success of the process of transition to electronic management.

- **Megha Vashishth(1991)** in her paper of Role of IT in HRM: Opportunities and Challenges explored that in the field of HRM, technology has made a paradigm shift towards cost reduction and efficiency along with a lot of opportunities and challenges. It helps in reducing the costs associated with the delivery of various services to the employees like recruitment, training & development, manpower planning etc. It provides readily information to managers also which helps them in taking the strategic decisions. It supports HR strategies, policies, practices in the organization. Therefore, it can be said that instead of facing several challenges, technology and HRM are inextricable concept Challenges like cost, acceptance, back up and security concern, increasing isolation, more informed employees

Objectives:

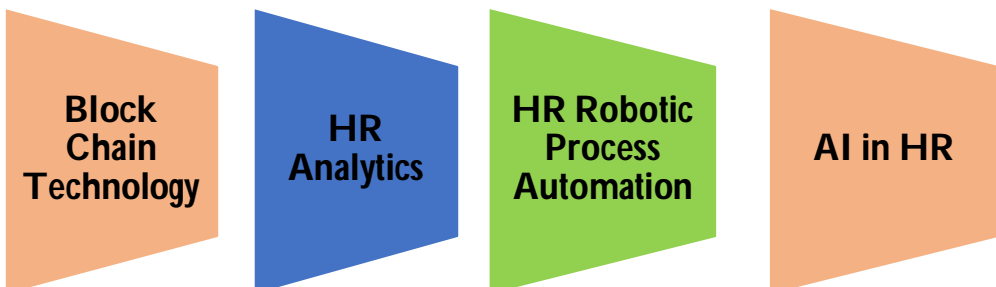
1. To study Block chain technology and its usage in HR services.
2. To study HR analytics and its implication on HR services.
3. To study Robotic process automation with reference to HR functions.
4. To study role of Artificial Intelligence in HR.
5. To find out challenges and issues in implementing technology in HR functions

Research methodology:

The research work on “Technological Intervention and it’s implication on HR Services” is descriptive in nature and based on secondary data collected from various websites, research articles and news.

Work Analysis:

Following are some current technological trends which may have some implications on HR services and functions:



1. To study Block chain technology and its usage in HR services:

A blockchain is a decentralized, distributed, and oftentimes public, digital ledger that is used to record transactions across many computers so that any involved record cannot be altered without the alteration of all subsequent blocks.

Uses of Blockchain in HR Functions:

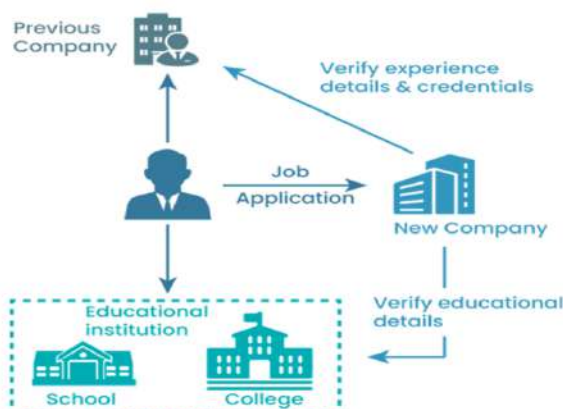
a) Recruitment, Verification and Referencing -

Recruitment is time and money consuming process. Every company invest considerable time and money to carry out recruitment. It includes the activities like screening the resumes including data regarding educational certificates, work history, job titles, skills, responsibilities, experience records and other credentials which add value to resume.

Problem Area: Many time fake data is provided by candidates to get selected for the job and later on it turn as recruitment failure with procurement cost.

Blockchain technology would create a distributed ledger. Every authorised Institute would document the list of candidates who have completed the academic requirements leading to the degree or certificate. IIT Bombay and colleges under the Delhi University will be the first ones to receive blockchain-based credentials, called Indiachain.

Here is how blockchain will help Recruitment & Selection process



As shown above, suppose the candidate applied for a job, then HR official by using block-chain technology will verify his/her educational details which are authorized and uploaded as blocks by the member institutes and at the same time, HR department can verify previous job history like experience, job titles and other credentials from previous company who had uploaded the data in block chain. Thus referencing and selection of right candidate will be easy with the help of blockchain technology.

b) Smart Contracts:-

Smart Contracts are general contracts between two parties with some terms and conditions. It is one of the application of Blockchain which is used to facilitate the Payments. With a smart contract, the business and worker can establish the criteria for which pay is earned. Once those terms and conditions are fulfilled, the smart contract is satisfied, pay will be distributed instantly.

For example, payment is released to an independent truck driver the moment the cargo he is delivering arrives safely at its destination. Thus it facilitates instant payment of money with accuracy and without delay and frauds.



c) Block chain Can Protect HR from Cyber Criminals

Human Resource management involves dealing with a lot of very sensitive personal and financial data. HR departments may receive and store information relating to pay, health insurance, finance and banking, disciplinary records, and more. Blockchain secure the transaction.

Data tampering is highly difficult in blockchain. If you want to modify or change any block, all other connected blocks need to be changed and require the permission. Thus it is the most secured technology for data maintenance.

d) Money transfer

Money transfer between countries is an expensive process. It attracts the heavy fees of intermediators like bank or financial institutions. Blockchain facilitate it using cryptocurrency like bitcoins to transfer money between countries and pays the worker in the local currency without the expensive fees of middlemen and banks.

e) **Audit and compliance** is easy with blockchain technology.

HR Analytics

Human Resource analytics (HR Analytics) is defined as the area in the field of **analytics** that deals with people analysis and applying **analytical** process to the human capital within the organization to improve employee performance and improving employee retention. It is extended as the deeply data-driven and goal-focused method of studying all people processes, functions, challenges, and opportunities at work to elevate these systems and achieve sustainable business success. HR analytics uses some quantitative tools to provide predictions and helps in sound HR decision making.

HR analytics can be categorised as:

Descriptive Analytics: Descriptive analytics is the basic type of analytics which took the historical data and summarizing it into meaningful understanding. This analytics E.g.: Headcount reporting, hiring metrics, key performance indicators, etc. this is reactive in nature.

Transactional Analytics: this includes various transactions in HR namely Computation of salary slip, anniversaries, birthdays, etc...

Advanced Analytics: It helps in analysis and prediction. E.g.: Use of machine learning, data mining and predictive analytics (performance analysis). Thus it is proactive in nature.

3. Robotic Process Automation

Robotic process automation (or RPA) is a form of business process automation technology based on metaphorical software robots (bots) or on artificial intelligence (AI)/digital workers. It is sometimes referred to as *software robotics*.

Robotic process automation deal with automating some repetitive HR task which do not add value. There are certain transactions that will always happen in certain cases.

For example,



On boarding new hires :-when a new employee is being on-boarded, they will always need to be sent certain documents to complete before their first day, issued an employee ID, an email address, and a computer. Rather than placing a ticket to request each one of these items individually, a ticket will automatically be sent to each appropriate department in order to quickly and effectively get the new employee on board as fast as possible.

Resume screening and candidate shortlisting process can be atomized where just by inserting key words in datasheet, certain resumes having that word will be automatically shortlisted. Thus reduce the pressure on HR staff.

Offer letter administration, sending offer letters to job candidates: Different candidates for various positions have separate offer letter which may vary with different employment clauses or terms and conditions. In case process automation, different templates are ready which may facilitate speedy offer letter drafting and sending to candidates. Thus accuracy and speed of whole process can be increased.

Some other applications of Robotic process automation are:

- facilitating health plan enrolment,
- Time Management/Time Sheets
- Payroll calculation
- Tax Documents & Forms

Thus Robotic process automation can help to reduce time and improve accuracy and efficiency of process as well automate the repetitive task and help HR staff to concentrate on strategic issues.

4. Artificial Intelligence in HR :

Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. It think like a human and perform tasks such as learning, problem-solving, reasoning, and language processing. Artificial Intelligence can be used on following HR functions.

Recruitment & on boarding:

- AI technology can streamline application processes by designing more user-friendly forms that a job applicant is more likely to complete, effectively reducing the number of abandoned applications.
- By maintaining a database of past applicants, AI technology can analyse the existing pool of applicants and identify those that would be a good fit for new roles as they open up.

Interviewing candidates using chat box or AI tools.

Chabot's: Natural language processing (NLP) trains Chabot's and similar systems to understand human language, tone, and context. NLP will emerge as a crucial capability for AI systems as organizations continue to automate HR service delivery with Chabot's.



Quick response to applicant

Background verification: Machine learning-powered predictive models can extract meaning and raise red flags based on structured and unstructured data points from applicants' resumes.

Internal Mobility and Employee Retention

- Some AI software can evaluate key indicators of employee success in order to identify those that should be promoted, thus driving internal mobility. Doing so has the potential to significantly reduce talent acquisition costs and reduce employee retention rates.
- This technology can also predict who on a team is most likely to quit. Having this knowledge as soon as possible allows HR professionals to deploy retention efforts before it's too late, which can strategically reduce employee attrition.
- Employee Attrition: Find employees who are at high risk of attrition, enabling HR to proactively engage with them and retain them.

Daily Life examples - Apple's personal assistant, Siri -She helps us find information, gives us directions, add events to our calendars, helps us send messages and so on. Siri is a pseudo-intelligent digital personal assistant.

Alexa , Tesla -its predictive capabilities, self-driving features and sheer technological "coolness.

Netflix -provides highly accurate predictive technology based on customer's reactions to films.

Google maps, Facebook etc

Issues with Digitization of HR functions

Human resources departments have been always loaded with big data related to people and various processes. HR department facing big challenges in implementing HR digitization namely

- Lack of Data Analytics Skills within HR
- Insufficient IT Resources for HR Data Analytics
- Data Privacy and security Compliances

Conclusion:

Digitization is inevitable thing in today's era. Almost all functions of HR like recruitment, selection, training and development, performance appraisal, compensation and legal compliances can be digitized. Most of the companies are using the various technologies like SAP , ERP and digitized the whole system. Using Block chain, HR analytics, Robotic process Automation and other technology will definitely increase accuracy, speed and reduce the error on one hand but create the data privacy and data maintenance challenges. Also digitization of HR function, can't mean to replace human beings with technology or machines. Human resources are always required for the decision making considering all intangible aspects like personality, attitude, communication, motivation etc. Digitization definitely enhances accuracy, speed and relive HR to focus more on strategic functions.



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AYN RAND'S THEORY OF ALTRUISM AND RATIONALITY

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Abstract

Altruism holds death as its ultimate goal and standard of value. It is logical that renunciation, resignation, self-denial and every other form of suffering, including self destruction are the virtues it advocates. Logically, these are the only things that the practitioners of altruism have achieved. By evaluating the issue of helping others into the central and primary issue of ethics, altruism has destroyed the concept of any authentic benevolence or good will among men. It has indoctrinated men with the ideas that to value another human being is an act of selfishness. Ayn Rand argues that altruism also works not only for man's life but also for the state, for the society, for the race, for the gang and for the nation. It functions for the sake of a collective good. *Altruism* also functions as the collectivism which sustains human life and rational values. *Altruism* erodes men's capacity to grasp the concept of rights or the value of an individual's life. It also reveals a mind from which the reality of human being has been wiped out.

Rationality means the recognition and acceptance of reason as one's only source of knowledge, one's only judge of virtues and one's only guide to action. It means one's total commitment to a state of full, conscious awareness, to the maintenance of full mental focus in all issues, in all choices, in all of one's waking hours. It is also a commitment to the fullest perception of reality within one's power and to the constant active expansion of one's perception and knowledge. It is a commitment to the reality of one's own existence.

Key Words: - Altruism, Rationality, Recognition, Collectivism.

Altruism is not a synonym for kindness, generosity or good will but the doctrine that man should place others above self as the fundamental rule of life. Ayn Rand has covered this ground too well in theory, practices in history and from every aspect. The concept of altruism advocates self-sacrifice and consistency.

Altruism is not a simple benevolence or charity but rather the moral and political obligation of the individual to sacrifice an interest for the sake of a greater social good. It has been man's ruling moral code through most of the history of mankind. The concept of altruism holds that man has no right to exist for his own sake. Man's service to others is the only justification of his existence and that self-sacrifice is



his highest moral duty. Ayn Rand wants to interpret that altruism is not a basic cause for brutality worship and that the cause lies in the fundamental philosophy of unreason. It lies in the epistemology of intrinsicism and subjectivism. Intrinsicism reduces cognition to revelation. The moral man's reward is life.

The concept of altruism is also viewed by *Objectivism*. It is the idea that people live for others and place others above the self. The creators who are not altruists initiate or follow *Objectivism* are "self-sufficient", "self-motivated", and "self-generated" who serve no one but themselves. *Objectivism* leads the view beyond the perceptual level as a volitional adherence to altruism as well as an adherence to reality. *Altruism* is also a volitional adherence to reality.

Chris Matthew Sciabarra comments:

"In her rejection of Russian mysticism, altruism, collectivism, and statism, Rand began to identify a philosophical conjunction that was not apparent to others of her generation" (40)

Ayn Rand stresses the creative altruism as a means of conquering the human predatory instincts witnessed in the Soviet Union. Ayn Rand argues about the point that by placing God, the collective and the state above the self, altruism aimed for a culturally induced selfishness. Its goal is not benevolence to the relief of suffering rather its purpose is to prey on people's sense of guilt and inadequacy. Altruist code becomes a source of virtue and repudiates altruism's penchant to celebrate a nonexistent God by crucifying human beings.

Ayn Rand writes:

"Altruism holds that man has no right to exist for his own sake that service to others is the only moral justification of his existence, and that self-sacrifice is his highest moral duty." (VOR, 4)

She also illustrates her views about the characteristic of an altruist as a mixture of bitter contempt and intense, profound hatred for mankind, hatred impervious to reason. Altruist regards men as evil by nature, he complains about their congenial stupidity, mediocrity, depravity and the omnipotent power. Altruist is a man who has a profound hatred for mankind.

Mimi Reisel Gladstein supports Rand's philosophy of altruism and states: *"Collectivism, altruism and mysticism all work against individual freedom, a healthy ego and rationality."* (25) In Ayn Rand's philosophy of *Objectivism*, all these areas such as collectivism, altruism and mysticism are interconnected. *Altruism* is the tool by which the individual discerns that which is self-sustaining and ego nourishing. Ayn Rand personifies and perpetuates the evils of collectivism.



Ayn Rand illustrates the point that it is a world in which competition is lauded as the basic axiom and guiding principle but too much competition is condemned as cutthroat. Ayn Rand argues that it is a world in which the law is so savage that businessmen have no way of knowing whether specific actions will be declared illegal until they hear the judge's verdict about the fact.

In the view of the confusion, contradictions and legalistic hairsplitting which characterize the realm of altruism, the entire altruism system must be opened for review. It is necessary to ascertain and estimate the historical roots of the altruism laws and economic theories upon which these laws are based. The entire structure of altruism states in this country is a jumble of economic irrationality and ignorance. It is the product of gross misinterpretation of history and of rather naïve and certainly unrealistic economic theories. *Altruism* also presents the savages of cut-throat competition and gross capitalism in the principle of altruism status.

D.J.DenUyl and D.B. Rasmussen observe: "*Rand's criticism of altruism and praise for capitalism are considered an antireligious message of philosophical materialism.*"(225) The reaction to Rand's philosophy reflects a tension within the conservative intellectual movement. Rand here gives more importance to Capitalism because of altruism as philosophical materialism.

Ayn Rand illustrates the two factions by contrasting admiration for Capitalism and Altruism. The first faction is roughly labeled with traditionalist. It sees government's purpose to be the promotion of virtue. Traditionalist thinkers regard Christianity as the moral basis of Western civilization as ethical altruism. The second faction roughly called libertarian. It takes the purpose of government to be the promotion of liberty. Libertarian thinkers who deny the legitimacy of ethics or consider its enforcement to be beyond the government's preview are ambivalent towards Rand's conjunction of ethical egoism, altruism and laissez-faire Capitalism.

Ayn Rand propounds:

"The collective neglect of art has persisted precisely because the function of art is non-social. One of the grimmest monuments to altruism is man's culturally induced selfishness." (TRM, 16)

Ayn Rand wants to illustrate an instance of altruism's inhumanity, of its brutal indifference to the deepest need of man as an actual individual. Man's willingness to live with himself as with the unknown, to ignore, evade, and repress the personal (non-social) needs of his soul. Rand says that man must know at least about the things that matter most and to consign his deepest values to the impotent ground of subjectivity and his life to the dreary wasteland of chronic guilt.

Ayn Rand proposes that altruism is introduced as an insolvable conflict into romantic literature from the start. The altruism morality cannot be practiced except in the form of self-destruction and therefore cannot be projected or dramatized in terms of



man's life on earth. Without altruism as a criterion of values and virtues, it is impossible to create an image of a man at his best, as he might be and ought to be.

Rationality is one of the prominent premises of *Objectivism*. It is an epistemological theory of Ayn Rand's philosophy. In this regard, Ayn Rand says: "*Rationality is man's basic virtue, the source of all his other virtues*" (VOS, 25). It is interpreted that man's basic virtue, the source of all his evils is the act of unfocusing his mind, the suspension of his consciousness, which is not blindness, but the refusal to see, not ignorance, but the refusal to know. Irrationality is the rejection of man's means of survival. It is also a commitment to a course of blind destruction that is anti-mind and is anti-life. *Rationality* is the principle that all of one's goals, values and actions take place in reality. Therefore, one must never place any value or consideration what so ever above one's perception to reality. It means a commitment to the principle that all of one's convictions, values, goals, desires and actions must be based on, derived from, chosen and validated by a process of thought. It is one's acceptance of the responsibility of forming one's own judgments and of living by the work of one's own mind. It is the virtue of independence. It means that one must never sacrifice one's convictions to the opinions and wishes of others which is the virtue of integrity.

Thus to conclude, One must never endeavor to consider reality in any manner which is the virtue of honesty. One must never seek or grant the unearned and undeserved neither in matter nor in spirit. It is the virtue of justice. An individualist is, first and foremost, a man of rationality. It is upon the ability to think, upon his rational faculty, that man's life depends. *Rationality* is the precondition of independence and self-reliance. An "individualist" who is neither independent nor self-reliant is a contradiction in terms. Individualism and independence are logically inseparable. The basic independence of the rational individualist consists of the loyalty to his own mind. It is his perception of the facts of reality, his understanding, his judgment that refuses to sacrifice to the unproved assertions of others. The rational individualist is a man who lives for his own sake and by his own mind. He neither sacrifices himself to others nor sacrifices others to himself. He deals with men as a trader, not as a looter, as a producer.

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AN ATTEMPT TO TEACH BASIC ELECTRICAL ENGINEERING COURSE THROUGH VIRTUAL MODE USING GNOMIO

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Abstract:

During the covid-19 Pandemic period virtual teaching is opted by most of the educational Institutions. In this paper the attempt to teach Basic Electrical Engineering Course for Engineering First year students through Virtual mode using Gnomio is elaborated. The Moodle Gnomio site registration, adding students, assignments, Quiz patterns and the final grading of the course are detailed. To encourage the student's involvement in leaning the online course, course supports asynchronous mode that is uploading the material audio files, video files, word documents, quiz, face to face recoded streaming of teaching. Quiz and assignment design increases the interest among the students towards involvement. The enrolment of the students is easier and course completion is done by almost all the students registered.

Keywords: Moodle, Gnomio, Online, Virtual, Teaching and Learning, Basic Electrical Engineering

1. Introduction

Teaching and Learning process is in transformation from Traditional class room teaching to Online teaching. During present pandemic period, teaching online is opted by many of the educational Institutions. India affected with Covid Virus in the month of march and went to lockdown. Due to lockdown, most of the educational institutes teaching online for the benefit of students. There are many online platforms available. Among them some are WhatsApp, Telegram, Facebook, Moodle-gnomio. This paper tells about the development of course through online, Mode of teaching through online. The pedagogy followed during the pandemic is explained in this paper and the final outcome of the students. In India, most of the education happens through the traditional mode which is a classroom based teaching. Covid -19 pandemic is seen in India from the mid-month of March and the country underwent the full lockdown during this period. Most of the activities got disturbed in this situation and also the Education. To overcome the crisis in leaning process, Online mode of education is taken up in a wide range of practice from primary schooling to the Masters'. There is a mixed response with online based teaching process.

Online mode of education transforms the teaching from offline mode to online mode. Traditional face to face learning method gets replaced by the online method of



teaching learning process. A student from any place in the world gets benefited with the learning process through online if the internet facility is available. [1] Due to Covid-19 Pandemic, Georgia transitioned school education also to online. [17]

There are various tools available for E-Learning and during the Covid -19 Pandemic period most of the research went on regarding the various tools and their implementation in teaching learning process to help the students in learning. Online education helps the students learn through virtual classrooms without missing a valuable academic year in the education. Interesting, Interactive and dynamic mode of teaching through online helps the students get connected to the online education [2]. During the Pandemic, most of the teaching initiated through WhatsApp, Emails, and through video conference apps like skype, Zoom, Google meet, WebEx etc., [3] The students during Pandemic situation are not able to step out from home and working on the projects from home through computer based software [4]. During Covid the Project submissions also happened through Online mode. Many universities opted online based submissions for the project works of Under graduation, Masters and PhD Viva through online. Moodle based Online submissions gives the options for assignment submissions with start and end dates. [7]

2. Literature Overview:

Modular object-oriented dynamic learning environment(MOODLE) is a Learning Management System(LMS) which supports the online based education. MOODLE platform helps in various pedagogical methods of teaching through the built in plugins available in it [5]. Moodle platform designs a new course formats as per the course design [11]. Moodle helps the instructor to make the quizzes more interesting by creating them in the game pedagogy. The in classroom activities or out classroom activities can be made more interactive very often using Moodle [6]. Students involvement and creativity is increased due to online mode of teaching through Facebook and Moodle platforms. WhatsApp and Telegram are the other platforms to go through the various pedagogical practices [8]. Technical Resources are filling the various gaps in teaching. In the student Centric or Learner centric teaching, the usage of social networking sites like Facebook, WhatsApp, Telegram, Instagram, Moodle, Podcasts etc., are increasing the knowledge bonding between student and teacher. This helps the student to perform better in their Theory and Practical Examinations [9]. Moodle is a tool which has variety number of quizzes like Multiple choice, Short answer type, Long answer type, True/False etc., and the Game based Quizzes like Snake and Ladder, Crossword, Millionaire etc., creates interest in students while answering the quiz. WIRIS Quizzes also available to answer the Mathematical based Quiz [10].

The works designed must be recorded through Creative commons which helps the others to make use of the licensed works as per the conditions available. Lectures through Khan Academy, Byjus are widely growing in today's world which helps the students in their self-study process. Coursera, Edx are some online MOOC platforms available to explore more on technology and learn new courses of various disciplines. The learner improves their cognitive skills by exposing to various courses based on the interest. Coursera extended support to the countries affects with Covid by releasing the Courses with Free of cost or Low cost [12]. NPTEL is other Platform in India which is through SWAYAM Platform. SWAYAM is a Government of India initiative designed



to achieve access, Equity and Quality. The main objective is "To take the best Teaching Learning Resources to all, including the most disadvantaged." website address of swayam portal is <https://swayam.gov.in/>

3. Survey on online teaching:

Teaching online widely impacts on teaching relevance, content delivery to the student, support of the faculty to the student in teaching, high quality preparation to teach online, planning to deal with un expected incidents while teaching [21] As a part of the online teaching an online survey is done with a sample of 100 parents who are the parents of the children of different age groups. Survey gave a mixed opinion on online teaching. The parents supported online teaching for higher classes and discouraged the same to the kindergarten children. Parents supporting and preferring the online teaching process which helps the student learn and the academic activities go as usual without affecting much during this pandemic situation.

4. Methodology Used:

There are many tools available for online mode teaching and this mode is not a new one. Online based teaching is not a new process. This is already under research and also under implementation in many organisations or universities. Moodle based learning is possible for engineering, Medical students and also to the students in the High school, Undergraduate, Masters gets benefited with this platform [13]. Internet support is widely required to the instructors, researchers, students to go through the Online based Teaching and learning. Methodology of teaching process through online mode changes little to the regular teaching process. Adoptability to new learning process is very important to make use of online education in the present world scenario. Moodle LMS is one of the good choice to learn with very less internet bandwidth and speed [14]. Google plat form with Google Docs, Workspaces, YouTube also motivates the students towards self-learning [15]. Moodle tool can be made use in various courses [16]. Online learning increases the interaction of the students with teacher in most of the cases [18]. Good content management, Pre designing of the activities, timely evaluation of the students helps the Moodle platform comfortable to the students and Teachers [19]. In Project based courses, which includes with software simulation helps the students to complete the project works in time due to fixed end dates and times for submission [20].

5. Creation of the course and enrolment:

The site <https://www.gnomio.com/> is used to create the site and register the site. After registering the username of the site with registered email address, teacher receives the email from gnomio. Login to the site using the login credentials provided in the email.

I. Step by step procedure followed to create the course in gnomio site

- Plan the course, Course syllabus, Course contents.
- Choose the LMS which is suitable to organize the course. For example: Moodle gnomio, Google classroom, Moodle cloud etc., Note: In this paper LMS chosen is Moodle gnomio.



- Register the site and Login with the basic instructions available to do so.
- Create the Course name and add the syllabus, add the students using the cohort option or self-enrol options or through email invitations.
- Add the contents topic wise or week wise. The contents like Video files, Audio files, Presentation files, YouTube videos which are Creative commons licensed are which are planned under one category to be added.
- The students who login to the gnomio site can view the contents added by the teacher and can download the same based on the permissions available from the LMS.
- Assignments, Quizzes are added for each topic wise. The start date and end dates of each quiz and assignments is given to encourage the students for timely submissions.
- Assessments of the quizzes can be done through automatic grading or manual grading, Most of the Multiple choice, one-word answer questions are automatic graded and Long answer questions graded manually.
- After manual grading Grade book is published based on the rubrics planned.

II. Case study:

Basic Electric Engineering Course is taken through virtual mode and the course material shared to the students through gnomio Moodle.

UNIT-3

Unit-3 of BEE deals with the DC Machines and Transformers

DC Machines and Transformers

Basic Concepts: Faraday's laws of Electromagnetic induction – statically & dynamically induced emf-Lenz's law – Fleming's Right hand rule.

DC Machines: Principle of operation - Construction - working; Types of DC machines: B.M.F and Torque equation; Torque-Speed characteristics and speed control of separately excited DC Motor - Numerical problems.

Transformers: Ideal and practical transformer; B.M.F equation; Simple Problems: Equivalent circuit - losses in transformers; Three phase transformer connections (Descriptive treatment only).

4.Basic Concepts	<input type="checkbox"/>
5. DC Machines Part 1	<input type="checkbox"/>
Construction of DC Machine	<input type="checkbox"/>
Types of DC Generator	<input type="checkbox"/>
EMF Equation and Numerical Problems on DC Generators	<input type="checkbox"/>
DC Motor	<input type="checkbox"/>
Transformer	<input type="checkbox"/>
All about 1-Phase Transformer	
Discussions or Doubts on Unit 3	<input type="checkbox"/>
Dear students, this forum is opened to discuss on Unit-3	
Single phase Transformer	<input type="checkbox"/>
Single phase transformer (More Simple)	<input type="checkbox"/>
Three Phase Transformer	<input type="checkbox"/>

Fig 5.1: Screenshot capture of Course Contents added to the gnomio



The Fig 5.1 shows the screen capture of the Course Contents added to the course created in gnomio site named <https://egeecourses.gnomio.com>. The contents added are the Word documents, Pdf files, Power Point Presentations, Pre-recorded videos, YouTube files from the web, website links with the required information, Quiz etc., are added through the plugins in gnomio. This include the files, URL, Discussion Forum, Quiz, Assessments etc.,

To add any content settings are turned on to edit mode and add the contents. To add the contents, Turn on Settings → Add an activity or Resource → Click on the content tab to be added → Edit the settings based on the content.

III. Quiz/ Assignment Evaluation:

Automatic evaluation or Manual evaluation is possible for the Quizzes or Assignments. Quizzes are added using Aiken Format and Giff Format. Assignments are assessed manually which were submitted through online in pdf format which is already assigned in the settings.

Grade book summary of the course based on the assessments:

Name	Weights	Max grade	Actions
Basic Electrical Engineering	-	-	Edit ▾
Assignment on Unit 3	47.619	100.00	Edit ▾
Quiz on DC Generator	4.762	10.00	Edit ▾
Assignment on Unit 4	47.619	100.00	Edit ▾
Course total		210.00	Edit ▾

Fig5.2: Screen Capture of Grade book summary

Assessments given: 3

Grading is adjusted to 100 %

Course Max grade in Total is 210 points

Table given below indicates course completion Progress

Final Grade book is exported in the form of Excel sheet. Excel sheet includes the details of Quiz attempted by every participant/Student and their individual score is recorded. The extracted information is summarized in the Table 1: Course Completion Progress.

Table I: Course completion Progress

S.No.	Course Completion in Progress in Percentage	No. of Students
1	Students who completed 100 % of the Course	9
2	Students who completed above 90 % of the Course	20
3	Students who completed above 80 % of the Course	29
4	Students who completed above 70 % of the Course	38
5	Students who completed above 60 % of the Course	45

Overview of students






Role	Student																
	1	2	3	»													
Select	First name / Surname		Last in course		Completion Progress												Progress
<input type="checkbox"/>		401_Vedabhisikta	Friday, 15 May 2020, 3:06 PM	<div><div></div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div></div>												72%	
				<div><div> Quiz on DC Generator</div><div>Completed</div><div>✓</div></div>													
<input type="checkbox"/>		402_Abarrane	Friday, 29 May 2020, 6:43 PM	<div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div></div>												97%	
<input type="checkbox"/>		403_AlekhyasPathak	Saturday, 30 May 2020, 11:49 AM	<div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div><div>✓</div></div>												100%	
				<div><div> Three Phase Induction motor</div><div>Completed</div><div>✓</div></div>													

Fig:5.3: Screen capture of overview of students course completion progress sample of 3 students.

6. Outcome:

During the Lock down period, when the education went online gnomio became a choice for BEE course. The course design is done as per the syllabus with the contents of written notes, Presentations, Video recordings, YouTube preloaded presentations, NPTEL and Swayam Platforms. 60 students got benefited with the course content where gnomio is easily accessible with low speed internet and bandwidth.

7. Conclusion:

When the education is transforming from offline to online the sources used during this course is gnomio Moodle which is open source LMS with good set of options. Other LMS available are Google Classroom, Moodle Cloud are also helpful to some courses. It is concluded that, when the course content and design are available going online mode of teaching helps a lot to the students. More interactive based course design is mandatory to grab the attention of the students.

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FACTORS AFFECTING LONG TERM AND PERMANENT FAMILY PLANNING UTILIZATION AMONG HIV POSITIVE WOMEN ATTENDING ANTIRETROVIRAL THERAPY CLINICS AT PUBLIC HEALTH FACILITIES OF ILU ABABORA ZONE,SOUTH WESTERN ETHIOPIA 2018/2019

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Abstract

Introduction: - Understanding factors associated with unintended pregnancy among HIV positive women is very important to design strategy for prevention of further transmission and infection with new virus. Modern family planning methods, particularly Long Acting Contraceptive Methods (LACM) are highly effective in reducing maternal mortality by preventing unintended or closely spaced pregnancies. However, there is paucity of information in this regard. Given the degree of HIV prevalence among women and the current antiretroviral therapy scale up in Ethiopia, it is important to understand factors affecting long acting family planning utilization among HIV sero positive women in order to prevent mother to child transmission. **objective:**-to assess factors affecting long term and permanent family planning utilization among HIV sero positive women attending ART centres' of Ilubabor zone , South west Ethiopia, 2018/2019.**Methods:** Institution based cross-sectional study design with quantitative method of data collection was used. The sample size was 353; all anti-retroviral therapy clinics in the zone were included and simple random sampling was used to select if more than one antiretroviral therapy sites in one woredas. Data collection period was from March9 to April 13/2019 .The data was entered using EPI data version 3.1 and analysed using SPSS version 21. Descriptive statistics was done and logistic regression was used to identify factors affecting long acting family planning utilization among HIV sero positive women. P-value < 0.05 at 95 % CI was considered statistically significant. **Result:** the study shows that out of 341 respondents 84(24.6%) were utilizing long acting contraceptive methods. Based on the finding of this study, educational status (AOR,3.926(CI :[(1.300-11.857])), having discussion on familyplanning with husband/partner (AOR,4.87(CI :[2.42-9.82])), and fear of side effect(AOR, 2.98 (CI :[1.33-6.6])) were a factors affecting the utilization of long acting contraceptive methods.

Conclusion and recommendation: - The finding of this study revealed that the utilization of long acting contraceptive method was low. Educational status of the women, attitude of women toward long acting contraceptive methods and discussion on LACMs with health worker were found to be independent predictors of long acting contraceptive methods utilization among HIV sero positive women.

Key words: long acting, women on ART, Ilu Aba Bora zone, South west Ethiopia.



1. Introduction

Family planning is defined as the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births [1]. Modern contraceptive methods are divided into three: -Long acting reverse able contraceptive methods (IUCD & Implants); permanent contraceptive methods (tubal ligation & vasectomy) and short term contraceptives methods (Oral pill, inject-able, male& female condoms, foam tablet &cervical cap [2]. Four contraceptive methods are categorized as long acting contraceptive methods (LACMs): intrauterine contraceptive devices (IUCDs), implants, female sterilization, and vasectomy. IUCDs and implants are long acting temporary methods; when removed, return to fertility is prompt. HIV-positive pregnancies are associated with a high maternal mortality rate that is tenfold higher than that of HIV-negative women and there were an estimated 56,100 HIV-related maternal deaths, accounting for approximately 20% of maternal deaths globally[3]. Sub-Saharan Africa records the highest incidence of HIV as well as unplanned pregnancies [3, 4]. And approximately 20-40% of the total number of pregnancies which occur in sub-Saharan Africa is estimated to be unplanned and 20-35% of women were also estimated to have an unmet need for contraception [4, 5]. Unplanned pregnancies comprise of major public health concern mainly among HIV sero positive women as it is linked with poor maternal and child health outcomes which increases the possibility of mother to child transmission of HIV infection (MTCT) during the pregnancy and postpartum period[6,7]. Unintended pregnancy can cause serious health, social, and economic consequences for women, families, and communities. It is linked with late entry into prenatal care as well as low-birth weight babies and poor maternal nutrition [8]. Studies estimated that 75% of HIV positive people are of reproductive age worldwide [9]. According to 2011 Ethiopian Demographic and Health Survey (EDHS) estimate, the prevalence of HIV in Ethiopia was 1.5% among the population group of age 15–49 years and the figure among women was significantly higher (1.9%) than men (1.0%) [10]. Most children with HIV were infected by mother-to-child transmission (MTCT) of the virus. Across Africa, up to 1900 children are infected daily with HIV, and three million children younger than 15 are living with the disease [10]. Effective contraception has been shown to reduce MTCT of HIV by preventing unwanted pregnancies [5, 8, 11]. It is estimated that approximately 120 000 HIV-positive births per year would be averted if the family planning needs of all HIV positive women in sub-Saharan Africa could be met[9,11].



Given the importance of dual method use, perceptions and use of contraceptives, including condoms, among HIV-positive women merit special attention. Understanding factors that influence practices among HIV infected women already on antiretroviral therapy (ART) is critical as access to ART increases.

However, these issues currently remain poorly understood among this specific population of women. There is little published data on the long acting contraceptive use amongst HIV-positive women attending ART clinics in Ilubabor zone. So, the aim of the study is to assess long acting and permanent contraceptive utilization and associated factors amongst women of childbearing age living with HIV /AIDS attending the ART clinic in Ilubabor zone public health facilities.

2. MATERIALS AND METHODS

Study area and period

Illu Ababora is one of the zones of the Oromia regional state. Based on the 2012 Census conducted by the CSA, this Zone has a total population of 1, 271,609, of whom 636,986 are men and 634,623 women. Mettu is the capital city of the zone and has 600km distance from Addis Ababa. The study was conducted from March 9 to April 13, 2018/19.

Study design

A facility based cross sectional study design was employed.

Source and study population

All HIV sero positive reproductive age women attending ART follow up clinics at public health facilities of Ilu Aba Bora zone. All sampled HIV-positive women of reproductive age group (15-49) attending ART clinics and visit selected health facilities for ART service during data collection period.

Sampling procedure

The sample size was determined by the single population proportion formula by considering 50% the prevalence of long acting LAPFP utilization with marginal error of 5% between the sample and the population at 95% confidence level, which are **382**.

Measurement

A structured questionnaire for this study was adapted based on instruments that were used in other related and published studies. The questionnaire consisted of three parts, Part 1 dealing with socio-demographic characteristics, Part 2 exploring contraceptive practices and part III - reproductive characteristics and part IV-sexuality and reproductive health information. Before going to data collection, pre-test was conducted in Bedele hospital on 5 percent of the final sample (19 people) to ensure the validity of the survey tool.

Data collection

The questionnaire was filled by 5(five) female BSC nurses working out of ART clinics and they were selected based on their qualification and previous experience. The principal investigator has trained data collectors and followed and controlled overall data collection process. The questionnaire was translated to Afan-Oromo and Amharic by language experts and then translated back to English to check for consistency by independent language expert.

Data analysis

The data was entered using EPI data version 3.4.3 statistical software and analyzed using SPSS version 23 statistical package. The descriptive statistics such as percentage, mean, cross tabulation, tables, and graphs were used to describe the data. Variables with P- value of less than 0.25 in binary logistic regression analysis were entered into the multivariate logistic regression analysis. Significant independent predictor was declared at 95% confidence interval and P-value of less than 0.05 as cut off point.

Operational definitions

Long term family planning users:-any woman uses one of LACM that is IUCD/Implant/tubal ligation.

Short term family planning users:-any woman who uses modern contraceptive other than LACMs

Modern contraceptive users:-any woman who uses either short term family planning or LACMs.

Knowledge of LACM: - a woman aware of at least one long term Contraceptives method

3. RESULTS

3.1. Socio demographic characteristics of the respondents

Three hundred forty one women were participated in the study giving a response rate of 89.2%. Majority of the respondents, 30% were in the age group of 25-29 and the mean age was 30.6± 5.8 years (Table 1).

Table1. Socio demographic characteristics of HIV positive women attending antiretroviral therapy clinics at public health facilities of Ilubabor zone, Ethiopia, 2018/2019

Age	Variable	N=341	Percent (%)
	15-19	18	5.2
	20-24	26	7.5
	25-29	97	
	30-34	96	27.7
	>= 35	103	29.7
Residence	Urban	243	70.0
	Rural	104	30.0
Ethnicity	Oromo	226	65.1
	Amara	95	27.4
	Tigre	20	5.7
	Others*	6	1.7
Religion	Orthodox Christian	133	38.3
	Protestant	115	33.4
	Muslim	83	23.6
	Others**	16	4.6
Educational Status	Don't read and write	102	29.4
	Primary school	166	47.8
	Secondary school	53	15.3
	Diploma and above	26	7.5
Marital status	Married	202	58.2
	Single	34	9.8
	Widowed	47	13.5
	Divorced	64	18.4
Occupation	Unemployed	205	59.1
	Daily laborer	68	19.6
	Merchant	48	13.8
	Government employed	26	7.5
Income category	<500	134	38.6
	501-999	125	36.0
	>1000	86	24.8
	Unstated	2	0.6
Spouse Education	Do not read and write	139	40.1
	Primary school	119	34.3
	Secondary school	43	12.4
	Diploma and above	46	13.3

* = Wakefata and catholic, ** = Gurage, Kafa, Agnuwak and Nuwer



3.2. Knowledge of women on long acting & permanent contraceptive methods

Two hundred seventy one (79.5%) of the respondents were aware that Implanon prevents pregnancy for 3-7 years, 16(4.7%) did not know and the rest 54(15.8%) of the respondents were not sure about it. Among the participants, 203(59.5%) were aware that after immediate removal of Implanon, women become pregnant. Concerning vasectomy and female sterilization near to halve women, 168(49.3%) were not sure that pregnancy is not possible after vasectomy whereas 167(49%) were aware that pregnancy is not possible after female sterilization (Table2).

Table 2:- Knowledge on LAPCM among HIV positive women attending antiretroviral therapy clinics at public health facilities of Ilubabor zone, Ethiopia, 2018/2019

S.N	Knowledge of women on LAPCM	Response	Frequency	Percent
1	IUCD can prevent pregnancies for more than 10 years	1.Yes	141	41.3
		2.No	12	3.5
		3.I don't know	188	55.1
2	IUCD is not appropriate for female at high risk of getting STIs	1.Yes	48	14.1
		2.No	47	13.8
		3.I don't know	246	72.1
3	IUCD has no interference with sexual intercourse or desire	1.Yes	84	24.6
		2.No	39	11.4
		3.I don't know	218	63.9
4	IUCD has No effect on breast feeding	1.Yes	95	27.9
		2.No	12	3.5
		3.I don't know	234	68.6
5	IUCD is immediately reversible (become pregnant quickly when removed)	1.Yes	87	25.5
		2.No	15	4.4
		3.I don't know	239	70.1
6	IUCD Has minimal side effect	1.Yes	73	21.4
		2.No	21	6.2
		3.I don't know	247	72.4
7	Implant has no effect on breast feeding	1.Yes	194	56.9
		2.No	49	14.4
		3.I don't know	98	28.7
8	Implant can prevent pregnancies for 3-7 years	1.Yes	271	79.5
		2.No	16	4.7
		3.I don't know	54	15.8
9	Implants require minor surgical procedure during insertion and removal	1.Yes	190	55.7
		2.No	61	17.9
		3.I don't know	90	26.4
10	Implants is immediately reversible (becomes pregnant quickly removed)	1.Yes	203	59.5
		2.No	31	9.1



		3.I don't know	107	31.4
		1.Yes	146	42.8
		2.No	27	7.9
11	After male sterilization pregnancy is not possible	3.I don't know	168	49.3
		1.Yes	4	1.2
		2.No	19	5.6
12	Vasectomy is effective after 3 month	3.I don't know	318	93.3
		1.Yes	4	1.2
		2.No	19	5.6
13	Vasectomy has no interference with sexual intercourse	3.I don't know	318	93.3
		1.Yes	167	49
		2.No	20	5.9
14	After female sterilization pregnancy is not possible	3.I don't know	154	45.2
		1.Yes	4	1.2
		2.No	16	4.7
15	female sterilization is effective after 3 month	3.I don't know	321	94.1
		1.Yes	86	25.2
		2.No	26	7.6
16	female sterilization has no interference with sexual intercourse	3.I don't know	229	67.2
➤ Knowledge score of respondents		low	238	69.8
		moderate	88	25.8
		high	15	4.4

3.3. Attitude of women towards long active contraceptive methods

As this study indicates that, 167(49 %) of respondents thought that Implanon need good nutrition and 152(44.6%) thought that causes severe irregular vaginal bleeding. In contrast, about half of the participants 179(52.5%) reported that insertion and removal of Implanon was not highly painful. Out of the total respondent only 96 (28.2%) agreed that privacy was not kept during IUCD insertion whereas 139 (40.8%) not sure. In addition, 179(52.5%) not sure that IUCD prevents from performing daily activities but few of them 28(8.2%) agreed. Among the total respondents few of them 50(14.7%) thoughts that operation for female sterilization is dangerous. Concerning to husband/couple attitude toward LACM, about 219(64.2%) of respondent said that their husband/couple encourage to use LACM whereas only 19(5.6%) did not know his attitude (Table 3).

**Table 3: Attitude on LAPCM among HIV positive women attending antiretroviral therapy clinics at public health facilities of Ilubabor zone, Ethiopia, 2018/2019**

S.N	Attitude questioner	Response	Frequency	Percent
1	Using implant need good nutrition	Agree	167	49.0
		Disagree	121	35.5
		Not sure	53	15.5
2	Implant moves freely in the body and lost at the time of removal	Agree	89	26.1
		Disagree	179	52.5
		Not sure	73	21.4
3	For me irregular bleeding due to using implant is severe	Agree	152	44.6
		Disagree	140	41.1
		Not sure	49	14.4
4	The insertion and removal implant is highly pain full	Agree	81	23.8
		Disagree	186	54.5
		Not sure	74	21.7
5	Insertion of IUCD cause to lose privacy	Agree	96	28.2
		Disagree	106	31.1
		Not sure	139	40.8
6	Using IUCD restrict normal activities	Agree	28	8.2
		Disagree	134	39.3
		Not sure	179	52.5
7	Operation for female sterilization is dangerous	Agree	50	14.7
		Disagree	150	44.0
		Not sure	141	41.3
8	IUCD is interfere with sexual intercourse	Agree	31	9.1
		Disagree	95	27.9
		Not sure	215	63.0
9	Attitude score	Negative	228	66.9
		positive	113	33.1
10	Husband/couple attitude toward LACM	Supporter	219	64.2
		Opposite	66	19.4
		Neutral	37	10.9
		I don't know	19	5.6

3.4. Practice & Perception about long acting contraceptive method

In this study, the prevalence of long term family planning utilization was only 0.246(24.6%). Even though the prevalence of LACM was 0.246, almost all users were relied on implanon (Figure1). Among the total respondents only 57(16.7%) ever used long term family planning before but 284(83%) were not. Out of this women which ever used LACM before 38(66.7%) were discontinue /change LACM. Based on this the main reason for discontinuing /changing the method was as follow; 19 (50%) were due to side effect, 16(42.1) were due to plan to become pregnant, 2(5.3%) due to medical problem and the remains 1(2.6%) was due to partner disapproval.

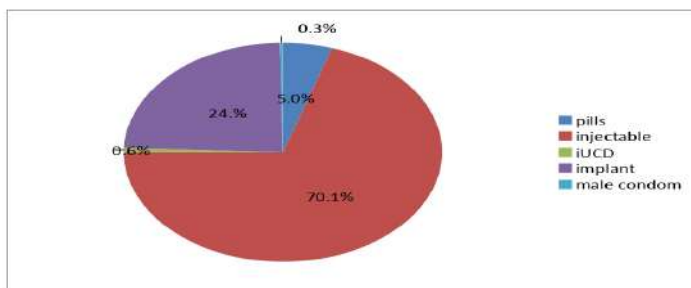


Figure 1:-Distribution of utilization of long acting contraceptive methods among HIV positive women attending antiretroviral clinics at public health facilities of Ilubabor zone, Ethiopia, 2018/2019

Concerning to those who ever not used LACM before 102(35.9%) was due to fear of side effect.

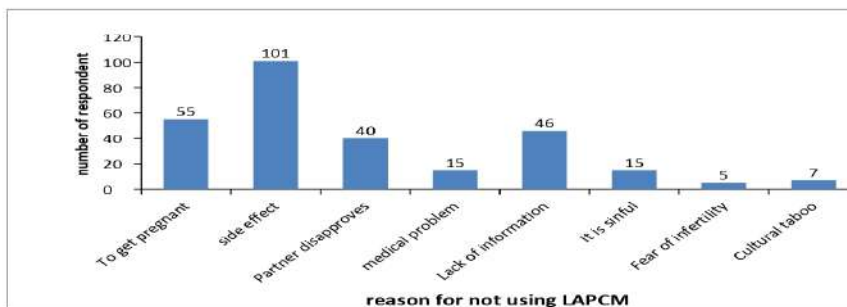


Fig.2. Main reason for not using LACM among HIV positive women attending antiretroviral clinics at public health facilities of Ilubabor zone, Ethiopia, 2018/2019

3.5. Factors affecting utilization of long acting contraceptive Methods

Based on the finding of this study, educational status (AOR,3.926(CI :[1.300-11.857])), having discussion on family planning with husband/partner (AOR,4.87(CI :[2.42-9.82])), and fear of

side effect(AOR, 2.98 (CI :[1.33-6.6]) were a factors affecting the utilization of long acting contraceptive methods (Table 4).

Table 4: Bivariate and Multivariate analysis of factors affecting utilization of long acting contraceptive method among HIV positive women attending antiretroviral therapy clinics at public health facilities of Ilubabor zone, Ethiopia, 2018/2019

Variables	Used LACM		Crude OR (95%)	Adjusted OR (95%)	P-Value
	No	Yes			
Educational status of respondent					
No formal education	118	21	1	1	
Grade 1-6	79	27	1.920(1.015-3.633)	2.420(1.115-5.253)	0.024
Grade 7-12	37	23	3.493(1.739-7.015)	2.737(1.168-6.415)	0.025
Collage & above	23	13	3.176(1.394-7.236)	3.926(1.300-11.857)	0.020
Ever discussed on family planning with husbands					
No	132	14	1	1	0.000
Yes	125	70	5.280(2.830-9.852)	4.878(2.422-9.822)	
Fear of side effect					
yes	85	12	1	1	
no	171	72	2.982(1.535-5.795)	2.980(1.338-6.637)	0.001

4. Discussion

This study identified factors that affect utilization of long acting family planning among HIV positive women attending antiretroviral clinics at public health facilities of Ilubabor zone. In this study the prevalence of LACM utilization was **24.6%**. This result is lower than the study conducted in Bahirdar, northern Ethiopia [27.5%] [10], in Kampala district, Uganda (31.7%) [11] and southern Africa (South Africa and Zimbabwe) (34%) [12]. Possible reasons for these variations could be methodological and time difference including difference of socio-demographic, economic and infrastructural and policy difference.

LAPMs utilization in this study was higher than the studies conducted in Debre Markos, northwest Ethiopia (19.5%) [13] Gimbie, west Ethiopia (15.6%) [14] Mekelle, north Ethiopia (12.3%) [15] Debre Tabor, northwest Ethiopia (9.2%) [16] Goba, southeast Ethiopia (8.7%) [17], Jinka, southern Ethiopia (7.3%) [18] Batu, central Ethiopia (3%) [19] And western Ethiopia (20%) [20] The difference is may be difference among the study participants in that the respondents of this study had ART follow up and frequent exposure to health education programs and family planning counseling.

Respondents who have educational status of collage and above were four times more likely to use LAPCM AOR,3.92 ;CI(1.300-11.857)as compared to those with no formal education . This association was also seen on studies done in Mekelle north Ethiopia [15] northwest Ethiopia, Debre tabor [16] and Gimbie, west Ethiopia [14]. Possible reason could be, educated women in any level can read and understand the advantage of using LAPCM & impact of pregnancy on their immune status and better to ask /get information from health workers.

Participants having discussion with husband on family planning were five times more likely to use LAPCM, AOR: 4.87, CI :(2.422-9.822) as compared to others. This association was also seen on studies done in in Mekelle north Ethiopia [15] ,northwest Ethiopia, Debre tabor [16] and Debre Markos, northwest Ethiopia [13] .This could be discussion with husband/partner may help women to freely express their birth plan & family planning choice by weighing the advantage & disadvantage.

Women having no fear of side effect use LAPCM two times more likely AOR:2.98, CI:(1.338-6.637) as compared to their counter parts. This is may be related to myths and misperceptions in the society regarding family planning use specially LAPCM which is deep routed & may arise from lack of knowledge and absence of proper discussion with health worker. This fear is may



be higher for PLWHIV since they take HAART for life long; considering pill and side effect burden.

5. Conclusions and Recommendation

In this study the prevalence of LACM utilization was **24.6%**, which is low. Educational status of the women, fear of side effect and discussion on family planning with husband were found to be independent predictors of long acting contraceptive methods utilization. Policy makers should further encourage women to pursue their education to at least primary school level, the zonal health beareu should strengthen the integration of family planning on ART clinics & ART providers should counsel and share information on LACM to correct attitude of the women and improve the utilization LACM.

6. List of abbreviations

AOR –Adjusted odds ratio, **CI**- confidence interval, **COR**- crude odds ratio, **FP**-Family Planning, **IRB** – institutional review board , **IUCD**- Intra uterine Contraceptive Device, **LACM**- Long Acting Contraceptive Methods, **STI**- Sexual Transmitted Infection.

7. Declarations Author contributions:

TT performed proposal preparation, data entry and analysis of the result, data entry, analysis, result, discussion & manuscript preparation.

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9. Competing Interests

The authors declare that there is no competing interest.



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