INTERNATIONAL JOURNAL OF
MULTIDISCIPLINARY
RESEARCH & REVIEWS

An International Open Access,
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IJMRR

INTERNATIONAL JOURNAL OF
MULTIDISCIPLINARY RESEARCH & REVIEWS

ISSN

doi® ≋ Crossref

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Website : https://ijmrr.online/index.php/home

INTERNATIONAL CONFERENCE

ON

MULTIDISCIPLINARY RESEARCH IN EDUCATION MANAGEMENT, TECHNOLOGY & HEALTH SCIENCES
(ICMREMTHS - 2022)

SEP 25, 2022

Organized By

International Foundation for Radiant Researchers & Academicians (IFRRA)

In Association With

River Publication House & Media

EDITORIAL TEAM

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**INTERNATIONAL JOURNAL OF
MULTIDISCIPLINARY RESEARCH & REVIEWS**

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The Necessity of Value Oriented Education at our School education Curriculum

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Keyword	*Abstract*
Ancient education, Medieval education, Modern education, Erosion of values, Value education, Quality manpower, Overall development, moral principles and beliefs.	This paper presents the decline of values education in schools since the Middle Ages. It lays down the basic structure of ancient education which contributes quality manpower to the society imbibing moral, social and civic values. It also shows the erosion of values and how values are transferred from ancient foundations to modern times. As a result, the current situation calls for several reforms that can be implemented from ancient education for the overall development of students as human beings. Quality of education generally affects quality manpower for social benefits. Values are principles or standards of behavior, judgments of what is important in life. In ethics, value refers to the degree of importance of something or an action, determining what actions are best to do or how to live, or to describe the significance of various actions. A person's or a group's values are the moral principles and beliefs they hold to be important.

Introduction :

Ancient India has a glorious educational and cultural background. The development of Indian education and culture stood through the conflict. Apart from Indian history, Indian educational and cultural history also includes time spans of ancient, medieval and modern eras. Values are the essence of Indian education and culture. It is sad to say that even as an Indian we need to be educated in our values. In ancient times there was Gurukula system. Students lived with the Guru and received value based education. It was a far cry from the bustling city to the secluded countryside. What a wonderful choice of area! Moral soundness and exemplary conduct were the basis for admission to educational institutions in rural isolated areas. Students had to read epic stories based on values, which was the curriculum. They could easily acquire a basic understanding of what sin is and abstained from such acts. Father and mother only created the body but the state arising from the Guru's instruction was pure, indestructible and immortal. The Guru was regarded as father and mother and was certainly against sin. Both the general course and the episodes or stories of the Ramayana and Mahabharata narratives introduce us to ideal students, teachers, schools and ashrams and other centers of learning. Chief ancient education was characterized by the spirit of piety and righteousness, high character formation and development of personality, inculcation of civic social values, preservation-transformation and transmission of culture. Living in a joint family, family values continued to hold and practice such family values as taking care of the young and newborns jointly, respecting the elders, sacrificing one's own interests to make others happy and so on. Self-discipline, yoga, meditation, etc. were to emphasize the importance of physical values and to emphasize the importance of self-knowledge. The importance of a calm and peaceful mind that can rekindle love and peace. The dignity of labor was taught to inculcate this value, that no one is superior or inferior by the kind of work done.

The decadence of values began in the Middle Ages. Foreign invaders like Timur Long, Muhammad Ghori and Sultan Mahmud destroyed many Hindu temples as well as ancient literature. The great traveler and historian Ibn Battuta saved many such ancient literatures from the invaders and sent them to his friends in Baghdad,

Persia and other Islamic states. It is a great loss to Indian civilization especially in terms of moral, cultural and aesthetic values. On the other hand, during the Pathan, Sultan and Mughal rule, destruction of Hindu temples, conversions, disrespect for other religions and non-grant of funds for Vedic type educational institutions along with other benefits led to the degradation of the remaining values.

The modern era was started by the British. Like other rulers they also killed our saints, destroyed temples, attacked education and culture. They provide education emphasizing English language ignoring Sanskrit, Hindi, other Indian languages and our traditional culture. Christian missionary education is self-centered and another type of erosion of values. This is a fundamental change in value. The joint family system is now on the decline and the concept of nuclear family, single parent family and childless couple is gaining weight. In fact, in the race to have everything, we are really losing everything. What we value through this system is self-centeredness, sensitivity to the needs of older and younger generations. Schools and colleges are becoming a reservoir of discrimination. From admission to evaluation, from selection to promotion, the only standard we are cherishing is non-discrimination. Let us analyze our current education system in the light of the above facts. Where did we go wrong? What happened that started the decline of human values? Compared to today's scenario, ancient India had less opportunity, now more sin and corruption. In independent India, reports of various committees and commissions (Radhakrishna Commission, Mudaliar Commission, Kothari Commission) also suggested to revive our lost values.

More recent commissions 1968, 1986 also advocated revitalization of values. Initiative for Excellence in Education NPE – 2016 states, "NPE, 2016, (Government of India) – Value orientation is an over-arching and broad field that requires conscious coordination with general education at every stage. Acknowledgment of the diversity of Indian heritage, culture and history Familiarity with Indian heritage can lead to social cohesion and religious harmony. The content and process of education, especially school education should be prepared accordingly". Further quoting the said Commission, "NPE, 2016, (Government of India)- The main objectives of education in the coming years should encompass four essential elements i. e, Values create awareness, knowledge and skills While knowledge and skills are necessarily specific to the objectives of study and largely determined by reasons for future employment or leisure pursuits, awareness and values are universal in nature and should be shared by all".

Data Collection and Analysis :

100 Teachers Opinion on The Necessity of Value Oriented Education at our School education Curriculum.

73	80	85	86	80	68	81	65	68	71
90	86	78	77	81	94	87	92	74	74
79	82	76	74	87	71	81	73	76	87
82	80	80	81	88	78	85	82	78	69
92	75	84	78	80	86	80	93	83	90
94	88	88	88	83	87	86	81	87	92
91	80	87	83	83	81	80	85	72	76
77	72	81	87	85	82	87	93	90	88
90	88	80	84	84	82	88	90	74	71
70	64	88	90	84	84	79	69	68	80

Data collected by the Researcher themselves.

TABLE 1: Tally Marks of 100 Teachers Opinion on The Necessity of Value Oriented Education at our School education Curriculum.

Class limit	Class boundary	Tally marks	Class mark (x_i)	Frequency (f_i)
61 - 65	60.5 – 65.5	||	63	02
66 - 70	65.5 – 70.5	∭ |	68	06
71 - 75	70.5 – 75.5	∭ ∭ ||	73	12
76 - 80	75.5 – 80.5	∭ ∭ ∭ ∭ |	78	21
81 - 85	80.5 – 85.5	∭ ∭ ∭ ∭ ∭	83	25
86 - 90	85.5 – 90.5	∭ ∭ ∭ ∭ ∭ |	88	26
91 - 95	90.5 – 95.5	∭ |||	93	08
Total				100

Table for Showing the Percentile in Pie Chart and Bar chart.

Class boundary	Percentage	Degree
60.5 – 65.5	02%	7.2^0
65.5 – 70.5	06%	21.6^0
70.5 – 75.5	12%	43.2^0
75.5 – 80.5	21%	75.6^0
80.5 – 85.5	25%	90.0^0
85.5 – 90.5	26%	93.6^0
90.5 – 95.5	08%	28.8^0
Total	100%	360^0

Bar – Chart of 100 Teachers Opinion on The Necessity of Value Oriented Education at our School education Curriculum.
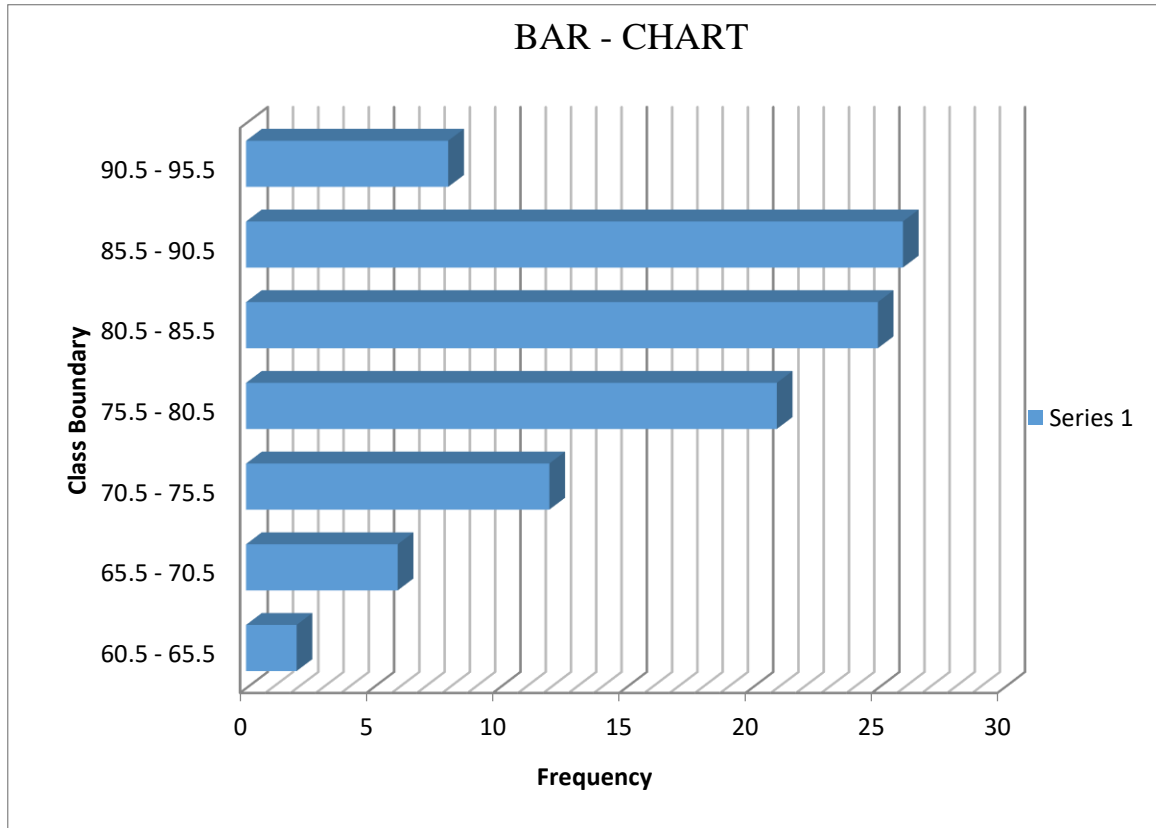
Pie – Chart of 100 Teachers Opinion on The Necessity of Value Oriented Education at our School education Curriculum.
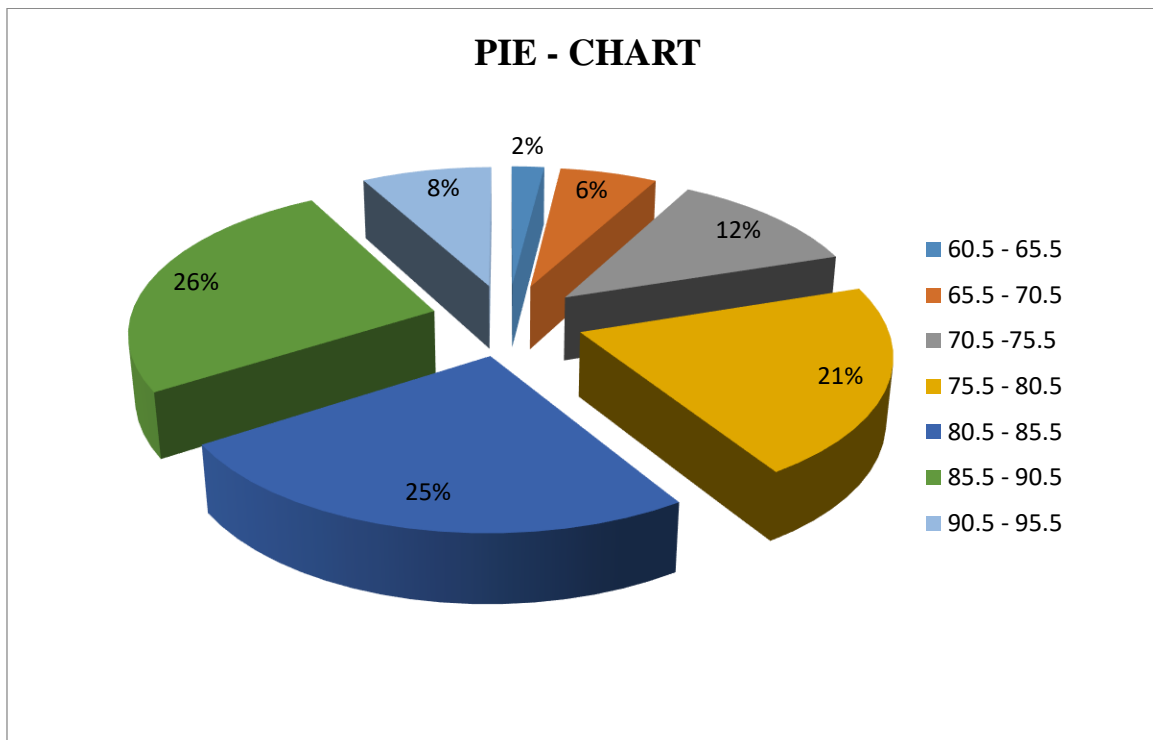
Column – Chart of 100 Teachers Opinion on The Necessity of Value Oriented Education at our School education Curriculum.
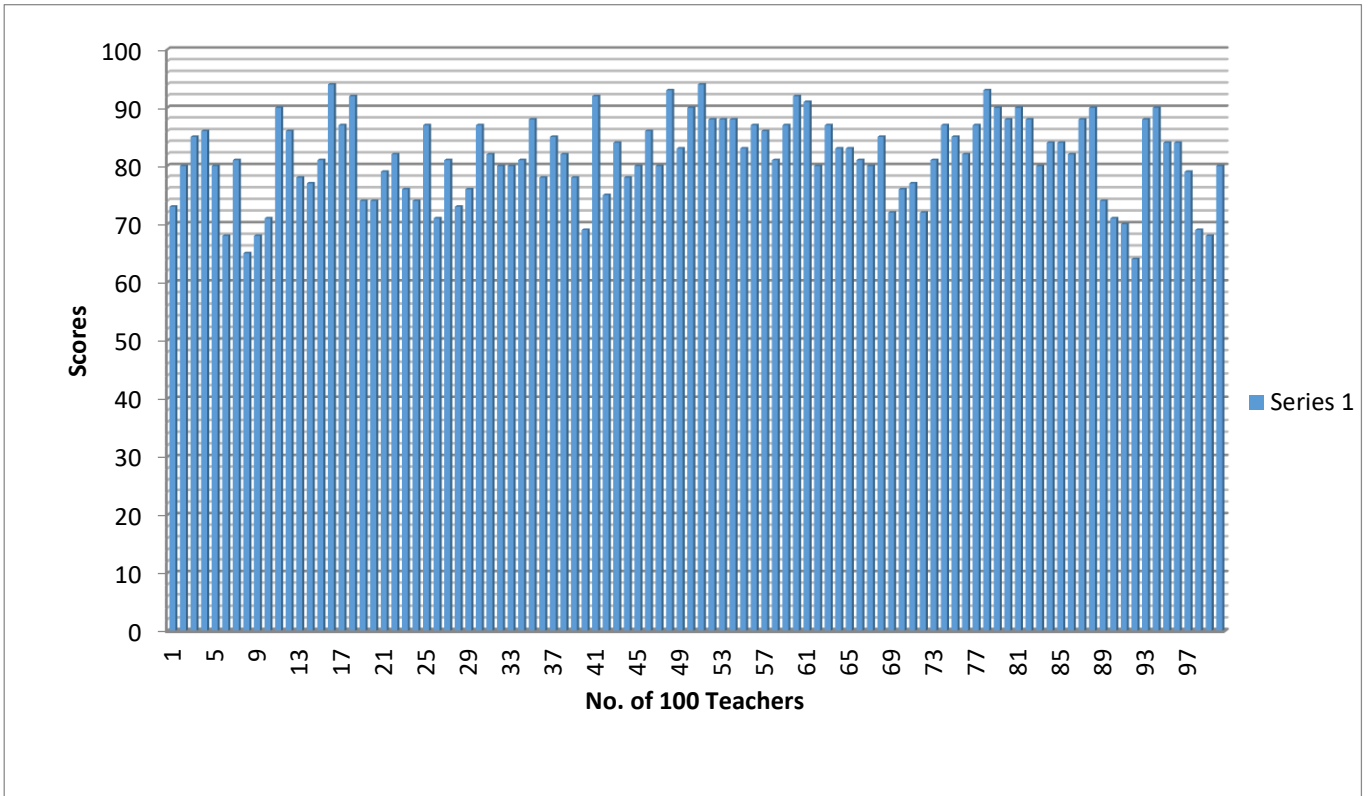
Frequency Curve of 100 Teachers Opinion on The Necessity of Value Oriented Education at our School education Curriculum.
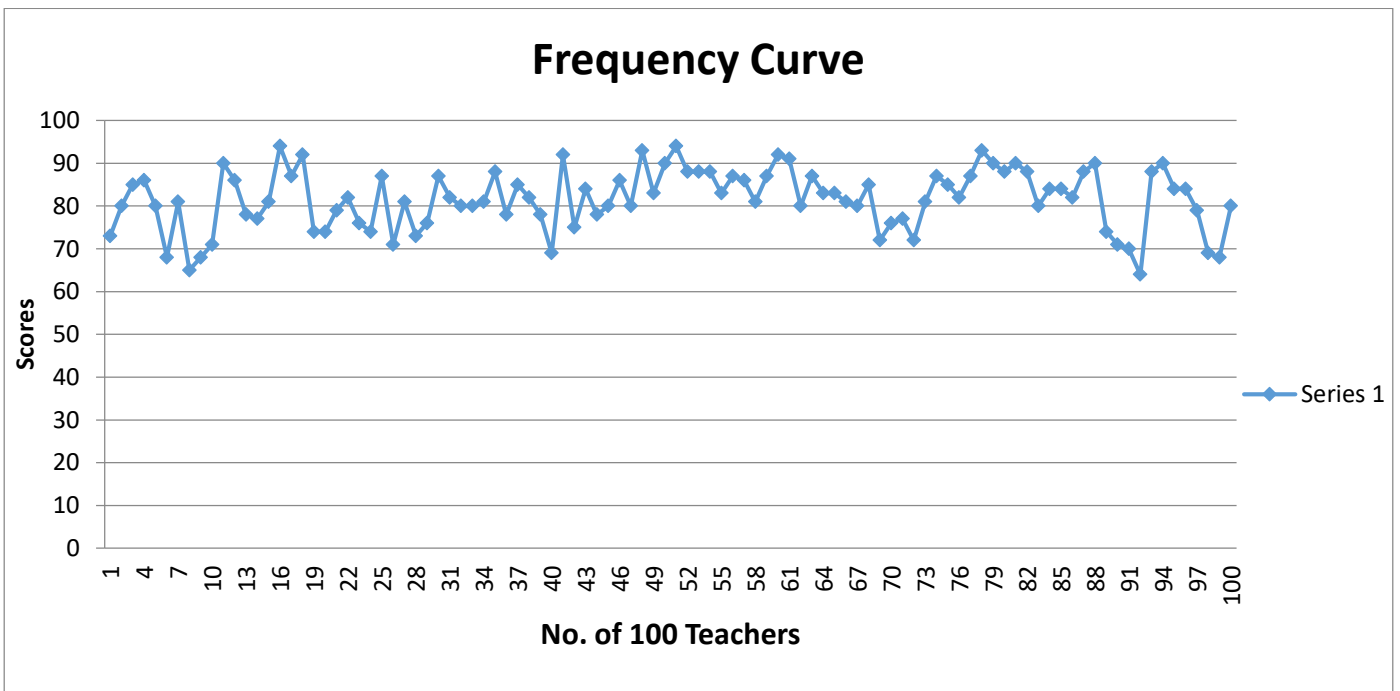
TABLE 2: Data Analysis of 100 Teachers Opinion on The Necessity of Value Oriented Education at our School education Curriculum.

Class limit	Class boundary	Class mark (x_i)	Freq (f_i)	Rel.freq. (p_i)	Cum. Freq. < >		uifi	Uifi^2	$\dfrac{x_i\text{-}A}{n}$ ui
61 - 65	60.5 – 65.5	63	02	$\dfrac{2}{100}$	02	100	–06	36	–3
66 - 70	65.5 – 70.5	68	06	$\dfrac{6}{100}$	08	98	–12	144	–2
71 - 75	70.5 – 75.5	73	12	$\dfrac{12}{100}$	20	92	–12	144	–1
76 – 80	75.5 – 80.5	78	21	$\dfrac{21}{100}$	41	80	00	00	0
81 - 85	80.5 – 85.5	83	25	$\dfrac{25}{100}$	66	59	25	625	1
86 - 90	85.5 – 90.5	88	26	$\dfrac{26}{100}$	92	34	52	2704	2
91 - 95	90.5 – 95.5	93	08	$\dfrac{8}{100}$	100	08	24	576	3
Total :			100				71	4229	

$\sum x_i f_i = 126 + 408 + 876 + 1638 + 2075 + 2288 + 744 = 8155$

$\therefore \bar{x} = \dfrac{8155}{100} = 81.55 \qquad \bar{u} = \dfrac{71}{100} = 0.71$

$u_i = \dfrac{x_i - A}{h} \qquad \therefore x_i = A + h u_i$

or, $\sum x_i = nA + h \sum u_i$

or, $\dfrac{1}{n} \sum x_i = A + h \times \dfrac{1}{n} \sum u_i$

or, $\bar{x} = A + h\bar{u}$

or, $\bar{x} = 78 + 0.71 \times 5$

or, $\bar{x} = 78 + 3.55$

or, $\bar{x} = 81.55$

X median

First we find $\frac{n}{2}$ and search where cumulative frequency < class it lies.

Here, $\frac{n}{2} = \frac{100}{2} = 50$, so it lies in the 3rd class i.e,.

Here, $x_i = 80.5$, $fm = 21$, $cf = 41$, $h = 5$

$$x_i + \frac{\frac{n}{2} - c.f}{f.m} \times h$$

$$= 80.5 + \frac{\frac{100}{2} - 41}{21} \times 5$$

$$= 80.5 + \frac{50 - 41}{21} \times 5$$

$$= 80.5 + \frac{9}{21} \times 5$$

$$= 80.5 + \frac{9 \times 5}{21}$$

$$= 80.5 + \frac{45}{21}$$

$$= 80.5 + 2.14$$

$$= 82.64$$

X mode

Find the class where highest frequency lies. So it lies between 3rd class i.e

$x_i = 85.5$, $f_0 = 25$, $f_1 = 08$, $f_{-1} = 25$, $h = 5$

$$x_i + \frac{f_0 - f_{-1}}{2f_0 - f_1 - f_{-1}} \times h$$

$$= 85.5 + \frac{26 - 25}{52 - 08 - 25} \times 5$$

$$= 85.5 + \frac{1}{19} \times 5$$

$$= 85.5 + \frac{1 \times 5}{19}$$

$$= 85.5 + \frac{5}{19}$$

$$= 85.5 + 0.26$$

$$= 85.76$$

Conclusion:

According to the opinions of intellectuals and supplied by the concerned authorities, our education has reached its highest peak numerically in the modern era. It is quantitative change but qualitative change is still absent. Students acquire external knowledge without acquiring values. Indian education policy makers should take efforts to develop value based education curriculum in schools as possible subjects. Keeping this view in mind the New Education Policy 2020 was drafted. The draft amendments were invited from various intellectuals including the views of educational institutions at all levels, education related departments, panchayat and municipal based views and the views of the governments of various states and Union Territories. Based on that the final Education Policy 2020 was adopted. A review of the implementation of the previous year 2021-2022 has also been published. The future will be able to tell whether this education policy is based on values or not?

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Internalization of White aesthetics by the Black race in *The Bluest Eye* by Toni Morrison

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Keyword	Abstract
Internalization, Racism, Suppression, Marxism, Afro-Americans	Between kindergarten and first grade, children develop socially, emotionally, and academically through the use of primers, such as an alphabet book or a story book. It is the initial step in the mental development of a child. The study examines an excerpt from Dick and Jane's primer, which revolves throughout the novel focusing on the ideal White society. The novel makes use of the abstract in three distinct ways, the first of which features a well-structured excerpt emphasizing the White people's beautiful and joyful world. The second abstract is an exact replica of the first, except it lacks correct punctuation and capitalization, emphasizing the fact that people of color are continually seeking White community's acceptance. The final one is completely unstructured and devoid of spaces, reflecting the oppressed Black community's chaotic existence. This study investigates the internalization of White aesthetics by a variety of Black characters who fit within these categories.

Introduction :

The novel opens with the abstract of Dick and Jane's tale, which is an elementary school reading primer, and it opens with a stereotypical portrayal of a happy, middle-class white family. In words of Gurleen Grewal, it works as " the hegemonizing force of an ideology, the supremacy by which a dominant culture reproduces hierarchical power structure" (24). In *The Bluest Eye*, the cultural and racial domination is exemplified through the educational system through which the ruling group exerts its control and hegemony. Pecola, the novel's protagonist begins to despise her black identity and culture at a very young age as a result of the white cultural and ideological discourses of ultimate truth and tradition that were taught and read to her at school. This school primer of Dick and Jane is used by Morrison as a structural technique in the book. Pecola was unable to relate to the tale of Genesis since she, her family, and her race were totally missing from the narrative. However, the story penetrates her thoughts and imagination, resulting in confusion and self-negation. There are three repetitions of the text, with less spaces and punctuation everytime "until a tightly woven fabric is created, a fabric which will run threads through the unconscious too deep to eradicate" (Armstrong 146).

Nancy Larrick observed, after analyzing almost five thousand books on children published between Nineteen sixty two and Nineteen sixty four and found that "only three hundred and forty nine of those thousand books includes even one black child in the illustration or the text" (Rosenberg 435). The information demonstrates how Anglo-Saxon ancestry and experiences are valued, whereas the absence of Black Africans

from educational resources demonstrates the opposite. The omission of African Americans in prescribed school primers and textbooks is a means by which cultural values, knowledge, message, and wisdom permeate in a governmental or institutional manner. Antonio Gramsci asserts that the ruling group or class always exercises its influence and disseminates its values and ideas across society through educational institutions. Education is not merely a means of inculcating ideals or imparting information; it is also a system through which a person, and especially a child, constructs principles and stereotypes at an early age. The cultural artefacts imparted to a young mind throughout its early years are absorbed unintentionally. This is rightly examined by Marxist critic Louis Althusser by focusing on Ideological State Apparatus, where 'ISA' works though the educational institutions by incorporating only those values in the students which benefits them. Whereas the texts and history books should be designed in the manner by which a student should be aware of both pleasant as well as unpleasant world. The ruling class utilizes this authority and the availability of these institutions to disseminate the values and ideology that sustain their place in society by silencing other narratives and perspectives.

In the course of evaluating the impact of white ideologies and their influence on the enslavement of black culture and its people, it became clear that the subjugation of black culture and its people was the direct result of white ideology. Isobel Armstrong states, "if there is no place at which the self within discourse, the result is a form of self-annihilation which beginning in the mirror of white society, becomes a conscious and then an internalized activity" (147). William Elson and William Grey's elementary school storybooks were so popular in the 1930s and 1940s that their iconic image endures to this day. These were the textbooks that students in the middle of the twentieth century read in school. The book by Elson and Grey shows the sufferings of the American people throughout the war, such as economic difficulties. "This is problematic because studies show that the elementary school experience is central to the information of political orientation" (Sallach 43), and "when alternative, controversial, or 'deviant' perspectives are excluded, students attain only one perspective and the perspective is often 'white, protestant, Anglo Saxon" (Sallach 43). The ideologies of ideals of whiteness, the perfect family stratum, and, most importantly, capitalism prepare black subjects, as Morrison demonstrates via characters who naturally evaluate themselves against Dick and Jane's aspirations. Morrison also presents the perfect world of Dick and Jane as a myth by placing the reader in a scenario where they are compelled to compare their life to that of Dick and Jane.

Dick and Jane's primer is scattered throughout the work, and the only thing that appears to contradict it is Claudia's story, in which she fights this white civilization and its aesthetics. The abstract from the primer at the beginning of each chapter shows what is missing from the lives of the Black characters that have been seen as actual bliss in the lives of white people without understanding whether these people or characters need those aesthetic values in their lives or not, but it is present above each chapter as an ideal setup that must be matched, and a reader can see that the black characters in the novel are a long way from achieving that ideal. The exact, anchored vision of Claudia reveals how the valorization may be rejected and simultaneously questioned. Claudia's narration provides a solid foundation for Pecola's tale. It also gives an alternative to Jane's idealized world, since the novel's four sections are contained inside her narrative framework. Her interrogation of white aesthetics, beliefs, and hegemony "exposes the fallacy of happily ever after storybook life" (Furman 19).

The preamble is immediately followed by Claudia's narration: "Quiet as it's kept, there were no marigolds in the fall of 1914…Because Pecola was having her father's baby that the marigolds did not grow" (3). By juxtaposing these prologues at the very beginning of the work, Morrison suggests a cultural debate between Dick and Jane's narrative and Pecola's horrible story. As the four sections progress, the destructive nature of the two becomes much more explicit and clear, demonstrating the effects of white ideology on Black culture and the desire of Black people to conform to the norms established by whites without considering the consequences in order to be like the master and receive his love, respect, and affection. As one of the novel's

major themes develops, Claudia asserts "there is really nothing to say-except why. But since why is difficult to handle, one must take refuge in how" (4).

The first excerpt of Dick and Jane's tale displays the image of a white idealistic family with the most beautiful and well-structured house with brilliant colors that represent or mimic pleasure. The family consists of a father, mother, daughter, brother, and a friend, as well as a cat and a dog. In the story, this ideal world is symbolized by the fisher family where Pecola's mother, Pauline Breedlove, works as a housekeeper. This idealized image of a constantly caring, loving, affectionate, attentive, loving, and joyful family and home reveals the strain under which Black people live in order to achieve this ideal world.

The second version of the abstract of Dick and Jane is an identical duplicate of the first, except punctuation and capitalization. This version depicts the world of individuals with lighter skin tones than blacks, which is yellowish and represents the worlds of Maureen Paul, Soaphead Church, and Mrs. Geraldine. Morrison demonstrates throughout the essay the assimilation of white aesthetics by the Black community. These characters discard their own origins and Black identity in order to gain white approval, demonstrate superiority over their black colleagues, and feel better about themselves. In this process, however, they do not belong to either their own race nor the white race. As they enable them to imitate them but never allow them to be equal to them, the white class remains at the centre, and regardless of what the other races accomplish, they will always be inferior to them. This group's inferiority complex is always present when they are unable to be slandered at the same level as their master race, and when they are unable to channel the power they desire, so they use this power on the people they believe are inferior to them, even though they themselves belong to this group.

In the schools that Geraldine and her peers attended, they were taught white aesthetic principles that portrayed the white culture as courteous, polite, and gracious, while the Black culture was portrayed as horrible and horrific. Geraldine spends the most of her life seeking to rid herself of the darkness and ugliness that link her with the black class in order to acquire civilized principles. People like her will continue this fight till they reach their own graves. In addition to suppressing their emotions in attempt to reduce the characteristics that link them with their Blackness, they suppress their physical characteristics. They create a life that is devoid of emotion and structured like a mathematical formula. They then lead a life without much to feel or touch and erect an impenetrable wall so that reality cannot penetrate and reveal that they are not what they are attempting to become. All the things that may represent her reality are tossed out the window, along with her Blackness; Their home looks just like the one in the Dick and Jane tale. Her emotional and intellectual isolation allows her to indoctrinate her kid with harmful prejudices about Black people, such as that they are unclean and loud, while people of other colours are clean and quiet, like white people. To secure their enrollment in the former group, Geraldine prevents Louis Junior from playing with Black children and keeps him "brushed, bathed, oiled, and shod" (71).

The finest evidence of Geraldine's internalization of White aesthetics is her obsession with the immaculately clean home with the blue-eyed cat. The cats cleanliness is also associated with the concept of internalization of these white cultural values, where the black body of the cat with blue eyes clearly demonstrates the aspect of beauty in the black body, a myth which is followed and admired by the Black community, and which they in fact simultaneously aspire to. In essence, depict the same "blue eyes in the black face" (Morrison 74), that Pecola wished for every day. Those dark eyes reveal to Pecola the answer to her prayers and their potential. Geraldine's passion for the cat is so great that even her kid is aware that the cat is more important to his mother than he is. She does all of the housework as ideal women in society should, but she has never shown the same level of affection for her husband or kid as she does for the cat. Her dedication to white ideological ideals is adored and praised by the cat, not her family, since it is "as clean and quiet as she is" (70). Geraldine's cleaning disorder suggests that she has cleansed her Black identity, consequently, her opinions on Pecola were not unexpected as seen in *The Bluest Eye*:

She had seen this little girl all of her life . . . Hair uncombed, dresses falling apart, shoes untied and caked with dirt. They had all stared at her with great uncomprehending eyes. Eyes that questioned nothing and asked everything. Unblinking and unabashed, they stared up at her. The end of the world lay in their eyes, and the beginning, and all the waste in between. (75)

Geraldine associates with and commits herself totally to White aesthetics and beliefs on the basis of Pecola's expressionless, emotionless eyes. This internalization has gotten to such a degree that she regards persons like Pecola as danger to civilization that is commonly linked with the Black community; in their eyes sits the threat, anarchy. The eyes are so powerful that they heighten Geraldine's uneasiness and despondency. Pecola's entry into her home brings disarray and, ironically, the death of her cat, a danger that was really posed by her own son. Moreover, the disorder resides in her own house, which she views as a symbol of perfection but is actually far from it. She pressures her kid to absorb the ideological principles of white culture, which he may or may not like to adopt, posing a harm to his sense of self and culture. She conflates Pecola's identity with that of the whole black community and portrays her as the disorder prevalent in the black community. Maintaining her white aesthetic philosophy, she urges Pecola to leave her home and refers to her as a "nasty black bitch" (ibid 38).

Unlike Geraldine, Soaphead Church takes Pecola's aura into account, since he was able to comprehend her yearning and the rationale for her craving for the blue eyes. Soaphead Church believes himself to be superior to other beings, even God. When he considers it, he cannot recall a moment when he did not despise humanity. Early in his studies, he discovers the term 'misanthrope', which he finds soothing since it matches his perception of the world. He gives advice to people whom he considers above him because they are "Reader, Advisor, and Dream Interpreter" (130). He also obtains this hate from his family and school because he is not entirely Black, but rather a lighter shade. To protect their lineage from the influence of darkness, they easily engaged and wed inside the white bloodline. Their hatred for their race is comparable to Geraldine's, and by the time Soaphead was born, he had no choice but to engage in this self-destructive behaviour. The last section describes black people and their history of oppression. There is no capitalization, punctuation, or space between the sentences in this rendition, which represents the cluttered and chaotic environment of the impoverished Blacks. This version illustrates Pecola's dysfunction and moral ruin at the hands of her father. As readers, we are able to see Pecola's uncertainty when reading and rereading the abstract and then trying to draw parallels between it and her own culture and identity; she begins to understand that there is no place for her in this standardized society.

Conclusion

Pecola's world is diametrically opposed to Jane's, while it is evident that Jane's world is full of love and so utopian that even white people may find it impossible to accomplish. Therefore, for a Black girl to dream of achieving the same becomes unattainable. While Jane's father is shown as strong, loving, and laughing and playing with his children, Pecola's father is the one who raped her; while Jane's mother is so loving and caring, Pecola's mother is entirely devoted to the White family. Kadiatu Kenneh, evaluating the effect of institutional education that channels white values on Black culture, states "if there is no place at which to position the self within discourse, the result is a form of self-annihilation which beginning in the mirror of white society, becomes a conscious and then an internalized activity" (Kenneh 47). Pecola has a strong desire to accomplish the beauty and love standards of Jane's society, despite the fact that it is almost impossible for her to achieve them. Throughout the part, Pauline's character is shown to be someone who has suffered and is alienated from her family and society. She does not get any kind of affection, and she was unable to pass on any form of affection to her daughter since she never had motherly tenderness and love from her own mother. This solitude is what pushes her to be a frequent consumer of the world of movies, where she was able to find pleasure, and where she learns and unintentionally internalizes White ideals and beliefs.

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ROLE OF GENDER ON THE DEVELOPMENT OF DEPRESSIVE SYMPTOMS AND ANXIETY

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Keyword	*Abstract*
Depressive symptoms, Stress and anxiety, Mental health, Gender development.	The study has shown the impact of genders in terms of its influence on depressive symptoms among people. The aim of the study id to analyze how gender and its constructs can influence the stress and anxiety levels of Indian population. The methodology of the study has selected 179 participants for evaluating the collected data and information in the study. The results of the research have found that the alternative hypothesis has been proved with the high reliability. Moreover, the study has been able to create an impact on the society by maintaining the ethics during the study execution.

Introduction :

Background of the research

Gender plays a vital role in determining the level of stress and anxiety among people on a global basis. The stress and depression levels in India have been seen to be escalating with time and the analysis should be done on the basis of primary research.

Figure 1: Gender distribution regarding stress and anxiety in India in 2019: *(Source: Statista, 2022)*
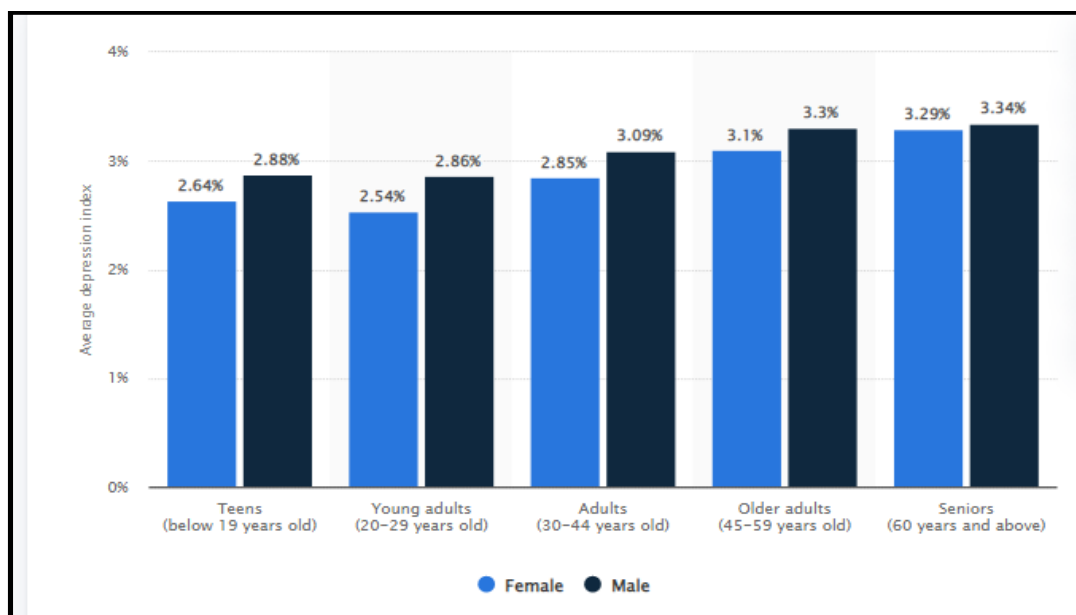
Figure 1 has shown the Indian gender distribution of depression and stress in 2019. It has been reported that the age group of 20 to 29 due to stressful events in their lifestyle and constant changes (Statista, 2022). Moreover, genetic vulnerability and medical history can also be responsible for creating such effects on them.

Problem statement

The major problem in India has become decreasing health condition of people due to excessive mental pressure. Stress and depression can be seen as the root cause behind this situation which should be controlled with effective initiatives.

Figure 2: Mental health disorders among people in India in 2021: *(Source: Statista, 2022)*
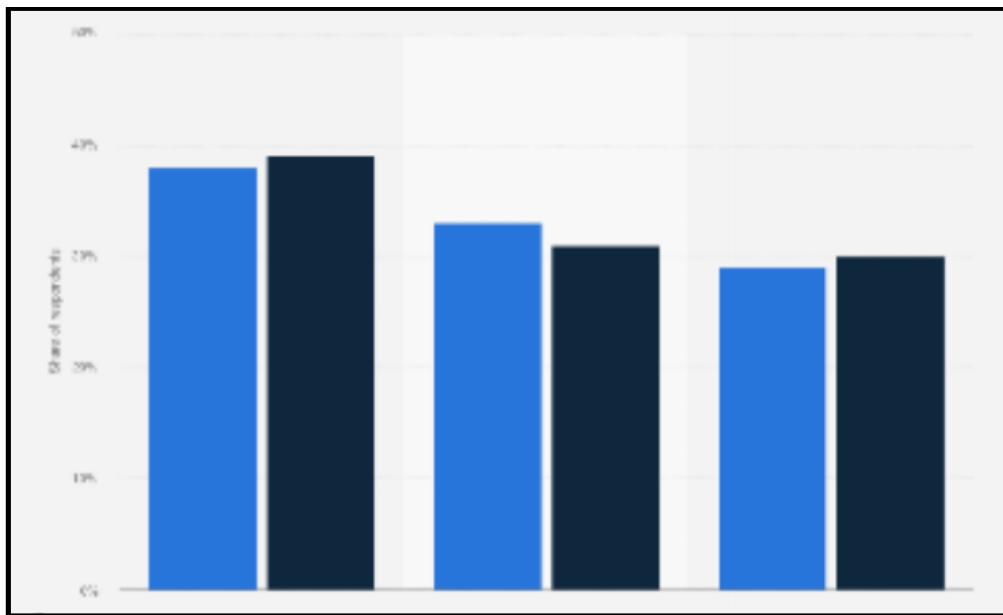
Figure 2 has demonstrated the rate of mental health issues among people of India in 2021. The study has shown that 39% of Indians are suffering from stress disorder along with 30% from anxiety disorder (Statista, 2022). Furthermore, 33% of the male population had depression whereas, 31% of the females had the same issue.

Aim and objectives

The aim of the study is to analyze the role of genders in evaluating the impact of stress and depressive symptoms among the Indian population.

RO1: To discuss the role of gender in the development of depressive symptoms and stress

RO2: To identify the factors influencing mental stress and depression among the Indian population

RO3: To pinpoint the challenges faced by the genders involving anxiety and mental stress

RO4: To conduct a primary quantitative survey for collecting data and recommend according to the research problems

Research questions

RQ1: What is the role of gender in developing depressive symptoms and stress among Indians?

RQ2: What are the elements impacting mental stress and anxiety among the population of India?

RQ3: What are the challenges that the genders are facing regarding depression and anxiety?

RQ4: How has the primary quantitative method helped in data collection and recommendation?

Significance of the study

The study is significant in its respective field as it has addressed a relevant issue from today's world. The changing lifestyle of people is causing rapid transformation in mental health and people are suffering from stress and anxiety at a higher rate. According to Phillips et al. (2018), a study should approach an issue that has a broad spectrum of discussion and is related to the current situation. On the other hand, the primary data and information in this study have also provided evidence to prove facts which have increased its validity.

Literature review

The role of gender developing a higher depressive and anxiety symptoms

Depressive disorders have become a common issue among the population in India where gender also plays a crucial role. There are several reasons that can cause depressive symptoms among people of different age groups. As per the view of Danneel et al. (2019), the phase of adolescence has been observed to be most affected by the symptoms of anxiety. It has been reported that a total of 74% of the Indian population are suffering from stress along with 88% of them having anxiety (The Indian Express, 2022). The mental stress level is increasing at an alarming rate for the population which is creating a severe effect on them. The psychological issues and the impacts on other health matters should also be a matter of concern for the country.

Factors influencing depression and anxiety based on the gender

Gender can differentiate the rate of depression and stress after puberty which has become a promising topic to discuss. As mentioned by Serpytis et al. (2018), females have been seen to be prone to anxiety and depression after puberty. It has a typical reason for females to enter the phase of puberty before males. Hence, it can be constructed that this gap can potentially create challenges regarding mental health among the population.

Challenges faced by the genders developing anxiety and depressive symptoms

Figure 3: Barriers between the genders in developing stress and anxiety: *(Source: Influenced by Chodzen et al., 2019)*
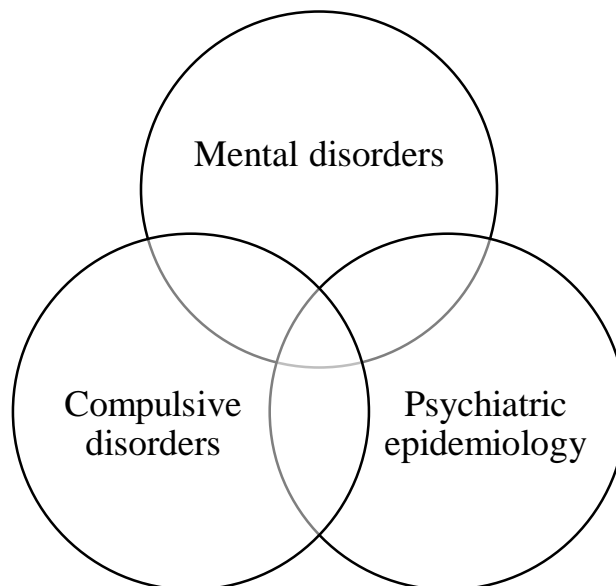
Figure 3 has presented the major challenges that create problems among the stressed and anxious people in India. Mental disorders have been observed to be a common issue that arises from the stress levels people. As suggested by Chodzen et al. (2019), the findings of psychiatric epidemiology can be seen as a major reason behind conducting this discussion. As a result, different compulsive disorders can also be seen in them which cause additional health issues. On the other hand, different parameters can also be problematic in this case and can be the reason for anxiety disorders.

Theoretical underpinning

Lazarus and Folkman's model of stress

Figure 4: Lazarus and Folkman's model of stress: *(Source: Influenced by Avcıoğlu et al., 2019)*
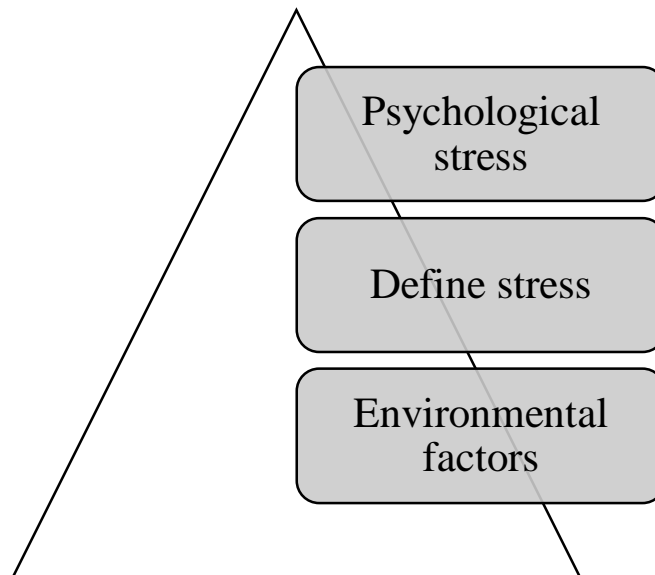
Figure 4 has represented a theory that can define stress on the basis of different factors influencing it. The theory has suggested that psychological stress in a person can come from different environmental factors. As commented by Avcıoğlu et al. (2019), the well-being of people can be endangered if a dire situation due to stress comes. The three elements of this theory comprise harm, challenge, and threat. Hence, Obbarius et al. (2021) have suggested that the impact on an individual should be evaluated for having valuable insight into their work. Moreover, a coping strategy has also been proposed by the theorists involving self-control, confrontative coping, and acceptance of responsibility.

Literature gap

The study has found some gaps that can be depicted for understanding the significance of conducting this study. Going through existing studies have found that they have not much included primary data in their data collection and data analysis method. As depicted by Danneel et al. (2019), primary information is predominant in a study for analyzing them in a methodical way. As a result, the study has tried to mitigate this gap from the existing studies. Furthermore, previous studies have lacked in providing theoretical knowledge which has been represented in this study. The incorporation of the theories has shown their relevance to the work and determination of the success of the study.

Methodology

The study has selected a primary quantitative method which has conducted a survey among some chosen participants. The study collected primary data from 179 respondents belonging to India. As stated by Saunders (2012), primary studies are helpful in gathering an authentic set of information that increases the credibility of the study. Moreover, a questionnaire of 10 open-ended questions has been selected to distribute among the participants to answer them. Additionally, SPSS will be conducted for the data analysis section of the study by performing regression and normality tests. As a result, the chosen hypotheses of the project can be tested along with proving the reliability of the study [Refer to appendix].

Result

The results have been found based on the selected hypothesis of the study which has been measured through a regression test. A normality test has also been performed for observing the reliability and validity of the study which is essential to discovering. The study has chosen some independent variables which can be specified in terms of the labels. IV1.1 denotes psychological changes along with IV1.2 as social anxiety. Moreover, IV2.1 and IV2.2 are representations of social pressure. In this case, it can be mentioned that IV3.1 and IV3.2 have demonstrated the variable of family background. On the other hand, IV4.1 is individual identity and IV4.2 has presented personality exploration.

H1: There is a strong relationship between the constructs of gender and depressive symptoms and anxiety.

H0: There is no relationship between the constructs of gender and depressive symptoms and anxiety.

Regression test

Figure 5: Regression test: *(Source: SPSS)*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.511ª	.261	.244	.431	.261	15.344	4	174	.000

a. Predictors: (Constant), IV1.4.1, IV1.1.1, IV1.3.1, IV1.2.1

ANOVAª

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.404	4	2.851	15.344	.000ᵇ
	Residual	32.328	174	.186		
	Total	43.732	178			

a. Dependent Variable: DSA

b. Predictors: (Constant), IV1.4.1, IV1.1.1, IV1.3.1, IV1.2.1

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.079	.083		25.014	.000
	IV1.2.1	-.160	.029	-.476	-5.526	.000
	IV1.1.1	-.034	.026	-.101	-1.303	.194
	IV1.3.1	-.033	.026	-.097	-1.262	.209
	IV1.4.1	.044	.027	.138	1.612	.109

a. Dependent Variable: DSA

Figure 5 has shown the regression table which is fundamental in observing the relationship among the variables. The primary objective of performing a regression test is to find the relationship between the independent and dependent variables of the study. As observed by George & Mallery (2019), the analytical perspectives of the regression provide statistical evidence in a study which is essential for determining the hypothesis of a study. As a result, the decision-making of the project can be strengthened with the help of this statistical perspective. It is regarded to be an analytical technique that can elaborate and establish relationships among the variables.

The regression test in this study has found that the R square value of the variables is 0.261 which has shown a moderate relationship among the variables. As per the view of Mertler et al. (2021), a multiple regression test allows one to depict the relationships among multiple variables of the study. Hence, the test has been able to conceptualize the interconnection that all the variables hold among each other. As a result, it can be assessed that depression and anxiety are dependent on various other factors which can be termed as other influential factors.

On the other hand, the statistical test has found that the sig value of this study is 0.000 which has helped in accepting the alternative hypothesis of the study. Thus, it can be said that gender has a deep influence on the development of stress and anxiety among the Indian population. As mentioned by Bae et al. (2022), depressive symptoms can arise regardless of age and gender. However, there are several factors that have been identified to work behind the creation of depression among people.

Reliability test

Figure 6: Reliability test: *(Source: SPSS)*

Reliability Statistics	
Cronbach's Alpha	N of Items
.844	11

Figure 6 has presented the appreciation of the reliability test can be found within the establishment of the study in its respective background. The measurement of the obtained data can be done with the help of this particular test in a quantitative study. As demonstrated by Hsu (2019), the data representation and its validity can be appraised by performing a normality test through an effective statistical tool. As a result, the validity of the research project can be represented for future research.

In this case, it can be mentioned that the study has found that the value of Cronbach's alpha is significant to be observed. The value has come out to be 0.844 which is greater than 0.8 and shows that the validity of this study is high. It has helped in having a higher standard for the quantified data and helps in imposing data authentication.

Conclusion

The study has found that stress and depression have grasped the Indian population which has been proved by providing statistical data. The study has proven that several factors are there that work behind gender and its role in growing depressive symptoms in the recent population. Hence, it can be assessed that the implications of gender in terms of various constructs have been measured within the scope of the study. The study has also performed SPSS as a form of statistical analysis which has helped in accepting the hypothesis of the study. Moreover, the methods and future scopes have also been mentioned throughout the discussion of the study.

Future scope

The study holds future scope as it has elaborated on one of the vital aspects of today's population. The focus of the study in a specific country has shown more potential for the research project to fulfilling its particular objectives. As demonstrated by Kim et al. (2019), the study should contribute to its respective field for acquiring a better position in its ground. In this way, this study has also been able to concentrate on the major issue and find out the solutions by collecting an authentic range of data. Future researchers will be able to understand the major concepts and incorporate them within their studies. Additionally, people suffering from these disorders can also get valuable insights from this study.

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INTERNATIONAL JOURNAL OF
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COMPARATIVE STUDY OF A TALL BUILDING WITH CONVENTIONAL AND FLAT SLAB SITUATED ON SLOPING GROUND UNDER SEISMIC FORCES.

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Keyword	*Abstract*
Sloping ground, tall building, conventional slab, flat slab, equivalent static analysis, response spectrum method.	The structures are generally constructed on plain surface, but due to scarcity of plain ground in hilly regions leads to construction of building on a sloping ground. One of the biggest challenges of structural engineer is to design an earthquake resistant building on sloping ground. In present study conventional slab & flat slabs with RC building situated on sloping ground without any change of natural terrain have been considered for the analysis. The modeling & analysis of RC building has been done by using structure analysis tool ETABS 2019, to study the behavior of building for earthquake force. The equivalent static analysis and response spectrum analysis apply on building results were obtained in the form of maximum displacement, story drift, story shear, base shear, time period, axial force, shear force, bending moment.

Introduction

The scarcity of plain ground in hilly areas compels construction activity on the sloping ground resulting in various important buildings such as reinforced concrete framed hospitals, colleges, hotels, and offices resting on hilly slopes. Since, the behavior of buildings during earthquakes depends upon the distribution of mass and stiffness in both horizontal and vertical planes of the buildings, both of which vary in the case of hilly buildings with irregularity and asymmetry due to step back and step backset back configuration.

The presence of such constructions in seismically prone areas makes them exposed to greater shears and torsion as compared to conventional construction. In order to highlight the differences in behavior, this may further be influenced by the characteristics of the locally available foundation material.

The height and gradient of hill slopes depend on the strength and deformation characteristics of soil/rock mass. Improper selection and development of sites, drainage, and variation of bearing capacity are some of the important factors which should be considered in the planning and design of hill buildings.

The RCC framed buildings having different configurations can be constructed on flat and sloping grounds. The buildings on flat ground may have regular or setback configurations. The buildings on a sloping ground may have setback or combination of step back and setback configurations.

Buildings on hill differ from those in plains. The floors of such buildings step back towards the hill slope and at the same time building may also have setbacks. A setback is a sudden change in plan dimension or a sudden change in stiffness along the height of a building. Stepping back of building towards hill slope may result into unequal column heights at the same floor.

Buildings on sloping ground are constructed with minimum possible cutting and fitting of the hill slope. The earth on one side of the building may be in contact with the building at various levels which will be supported

by retaining walls, or by separating the earth from the building by providing retaining walls at different levels. Both the superstructure and the sub-structure of such buildings need to be analyzed completely.

As most of hill areas fall in active seismic belts, the buildings constructed in hill areas are much more vulnerable to seismic hazards. Landslides and unstable slopes can create problems to building on hill slopes. Sufficient information is available for construction of earthquake resistant wooden, stone, brick & concrete buildings in plains.

1.   METHODOLOGY: -

2.1 SOFTWARE CAPABILITY: -

The software used for the analysis in present study is ETABS 2019. It is product of Computer and Structures, Berkeley, USA. ETABS is used for analyzing general structures, buildings, etc. fully integrated program that allows model creation, modification, execution of analysis, and design optimization and result review from within a single interface. ETABS is a standalone finite element based structural program for the analysis and design of civil structures. It offers an intuitive, yet powerful user interface with many tools to aid in quick and accurate construction of models, along with sophisticated technique needed to do most complex projects.

ETABS is object based, meaning that the models are created with members that represent physical reality. Results for analysis and design are reported for the overall object, providing information that is both easier to interpret and consistent with physical nature.

The ETABS structural analysis program offers following features:

1.   Static & dynamic analysis
2.   Linear & Non-linear analysis
3.   Dynamic & static non-linear pushover analysis.
4.   Dynamic response spectrum & time history analysis.
5.   Frame & shell structural elements.
6.   Different types of slab design etc.

2.2 GEOMETRY DATA: -

   In this project, we have selected the G+25 floor building on sloping ground, and the ground condition is medium soil. For this project, we are selecting the conventional slab and the flat slab for designing the building and will also check the behavior of the building.

Table 2.1: - Geometry Data

DATA	CONVENTIONAL SLAB	FLAT SLAB
Plan	30.5m x 36.6m	
Typical story Hight	3.35m	
Sloping angle	20 degrees	
Thickness of slab	150mm	200mm
Thickness of drop	-	345mm
Beam size	Base to S-10= 300mm x 600mm S-11 to S-26=300mm x 450mm	Base to S-2= 345mm x 750mm S-3 to S-26=345mm x 600mm
Column size	Base to S-3=750mm x 750mm S-4 to S-14=600mm x 600mm S-15 to S-26=450mm x 450mm	Base to S-15=750mm x 750mm S-15 to S-26=600mm x 600mm
External wall thickness	150mm	150mm
Floor finish	1.25KN/m^2	1.25KN/m^2
Live load	4KN/m^2	4KN/m^2

Earthquake zone	Zone-III (Type of Medium Soil)	
	Importance Factor=1	
	Response Reduction Factor=5	
	Damping Ratio=0.05	
Grade of concrete	M-50	
Grade of steel	Fe 550	

2.3 LOAD CALCULATION: -

Unit weight of A.C.C. block concrete = 8.0 KN/m^3

Unit weight of concrete = 25 KN/m

- ➢ Wall load: -

  External Wall Load Thickness of Wall = 150m
  All floor Unit Weight of Brick X Thickness of Wall X (Floor Height – Beam   Depth)
  = 8.0 X 0.150 X (3.35-0.6)
  = 3.35 KN/m
  Terrace floor Unit Weight of Brick X Thickness of Wall X (Floor Height – Beam Depth)
  = 8.0 X 0.150 X 0.90
  = 1.20 KN/m

- ➢ Dead Load: -
Floor Finish = 1.25 KN/m (As Per 875 Part I)
Total Floor Load = 1.25kN/m
- ➢ Live Load: -
Total Floor Load = 4kN/m

2.4 EARTHQUAKE CALCULATION: -
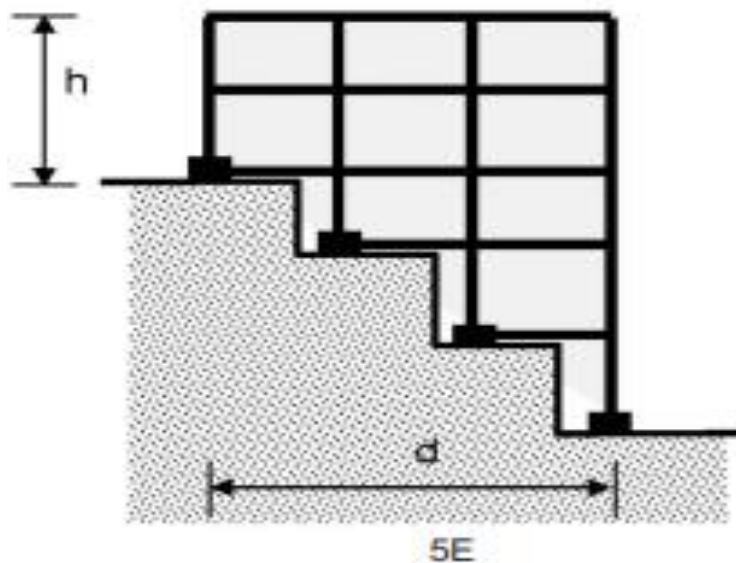
Fig.2.1: - Hight Consider for Time Period as per IS 1893-2016(part-I) pg.22

➕ IN X- DIRECTION: -

Time Period (IS 1893-2016 Part-I, Pg. No. -21)

$$T_a = \frac{0.09h}{\sqrt{d}}$$

$T_a = 0.09 \times 87.1/\sqrt{36.5}$

   $= 1.29$

➕ IN Y- DIRECTION: -

Time Period (IS 1893-2016 Part-I, Pg. No. -21)

$$T_a = \frac{0.09h}{\sqrt{d}}$$

$T_a = 0.09 \times 87.1/\sqrt{30.5}$

   $= 1.41$

2.5 LOAD COMBINATION: -

Design Of the Structures Would Have Become Highly Expensive in Order to Maintain Either Serviceability and Safety If All Types of Forces Would Have Acted on All Structures at All Times. Accordingly, The Concept of Characteristics Loads Has Been Accepted to Ensure At Least 95 Percent of The Cases, The Characteristic Loads Are to Be Calculated on The Basis of Average/Mean Load Of Some Logical Combinations of All Loads Mentioned Above.

Is 456:2000, Is 875:1987 (Part-V) And IS 1893(Part-I):2016 Stipulates the Combination of The Loads to Be Considered in The Design of The Structures. The Different Combinations Used Are:

All These Combinations Are Built in The ETABS 2019.Analysis Results from The Critical Combinations Are Used for The Design of Structural Member.

DL – dead load

LL – live load

EQ-X – earthquake load in x direction

EQ-Y – earthquake load in y direction

3. RESULTS & CONCLUSION: -

In This Section Results Obtained from Analysis of Building with Conventional Slab & Flat Slab Situated on Sloping Ground Using ETABS Software Have Been Formatted.

In equivalent lateral analysis and response spectrum analysis modals to check the Performance and Behavior of Both Structures on Different Criteria Like Story Displacement, Story Drift, Story Shear, Base Shear, Time Period, axial force, shear force and bending moment Has Been Analyzed and Discussed as Follows.

Where represent,

M1: - equivalent lateral analysis for conventional slab building in x- direction

M2: - equivalent lateral analysis for conventional slab building in y- direction

M3: - equivalent lateral analysis for flat slab building in x- direction

M4: - equivalent lateral analysis for flat slab building in y- direction

M5: - response spectrum analysis for conventional slab building in x- direction

M6: - response spectrum analysis for conventional slab building in y- direction

M7: - response spectrum analysis for flat slab building in x- direction

M8: - response spectrum analysis for flat slab building in y- direction

3.1 STORY DISPLACEMENT OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -
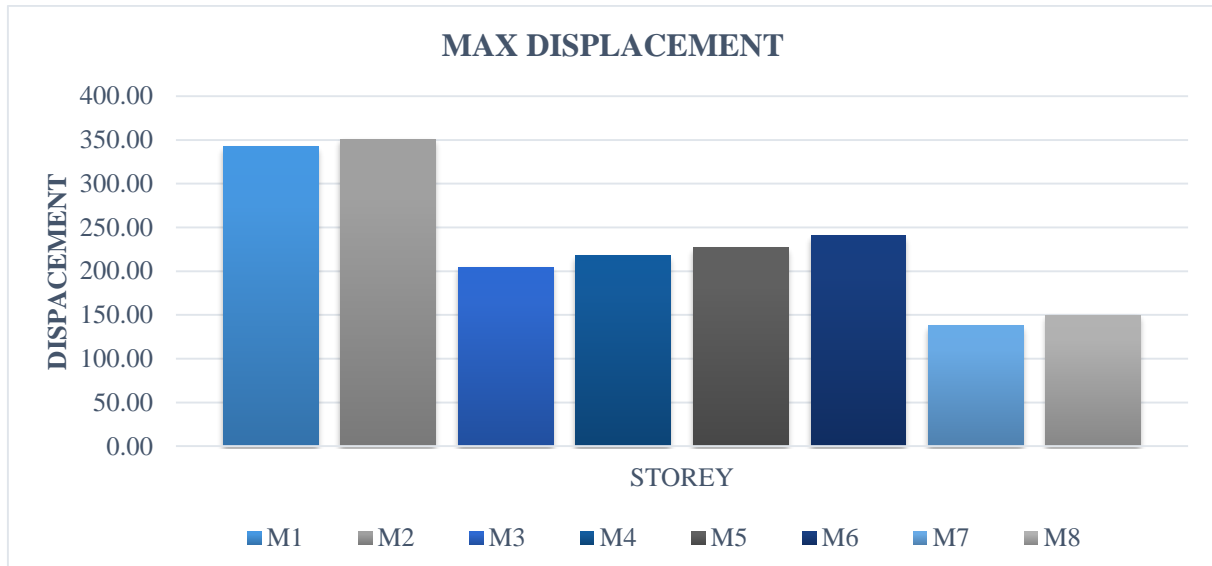
Fig.3.1 Max. Displacement
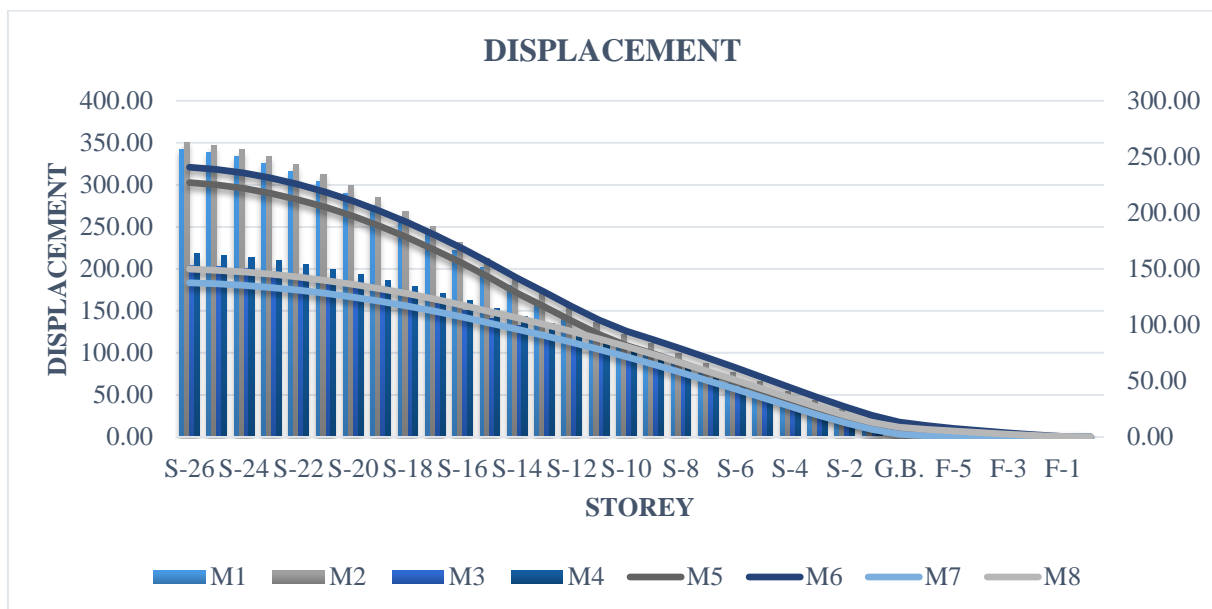
Fig.3.2 Displacement of all storey

1. The equivalent static analysis in x- direction is observed that maximum displacement in conventional slab building is 40.24% more than flat slab building.

2. The response spectrum analysis in x- direction is observed that maximum displacement in conventional slab building is 39.34% more than flat slab building.

3. The conventional slab building in x- direction is observed that maximum displacement in equivalent static analysis is 33.71% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum displacement in equivalent static analysis is 32.71% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum displacement in conventional slab building is 37.83% more than flat slab building.

6. The response spectrum analysis in y- direction is observed that maximum displacement in conventional slab building is 37.79% more than flat slab building.

7. The conventional slab building in y- direction is observed that maximum displacement in equivalent static analysis is 31.36% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum displacement in equivalent static analysis is 31.31% more than response spectrum analysis method.

3.2 STORY DRIFT OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -

Fig.3.3 Max. Story Drift

Fig.3.4 Story Drift in all storey

1. The equivalent static analysis in x- direction is observed that maximum story drift in conventional slab building is 10.53% more than flat slab building.

2. The response spectrum analysis in x- direction is observed that maximum story drift in conventional slab building is 10.77% more than flat slab building.

3. The conventional slab building in x- direction is observed that maximum story drift in equivalent static analysis is 23.98% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum story drift in equivalent static analysis is 24.18% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum story drift in conventional slab building is 7.37% more than flat slab building.

6. The response spectrum analysis in y- direction is observed that maximum story drift in conventional slab building is 12.78% more than flat slab building.

7. The conventional slab building in y- direction is observed that maximum story drift in equivalent static analysis is 21.53% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum story drift in equivalent static analysis is 22.53% more than response spectrum analysis method.

## 3.3 STORY SHEAR OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -

Fig.3.5 Max. Story Shear

Fig.3.6 Story Shear in all storey

1. The equivalent static analysis in x- direction is observed that maximum story shear in flat slab building is 5.67% more than conventional slab building.

2. The response spectrum analysis in x- direction is observed that maximum story shear in flat slab building is 6.99% more than conventional slab building.

3. The conventional slab building in x- direction is observed that maximum story shear in equivalent static analysis is 12.83% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum story shear in equivalent static analysis is 11.59% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum story shear in flat slab building is 5.71% more than conventional slab building.

6. The response spectrum analysis in y- direction is observed that maximum story shear in flat slab building is 6.77% more than conventional slab building.

7. The conventional slab building in y- direction is observed that maximum story shear in equivalent static analysis is 13.03% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum story shear in equivalent static analysis is 12.03% more than response spectrum analysis method.

3.4 BASE SHEAR OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -
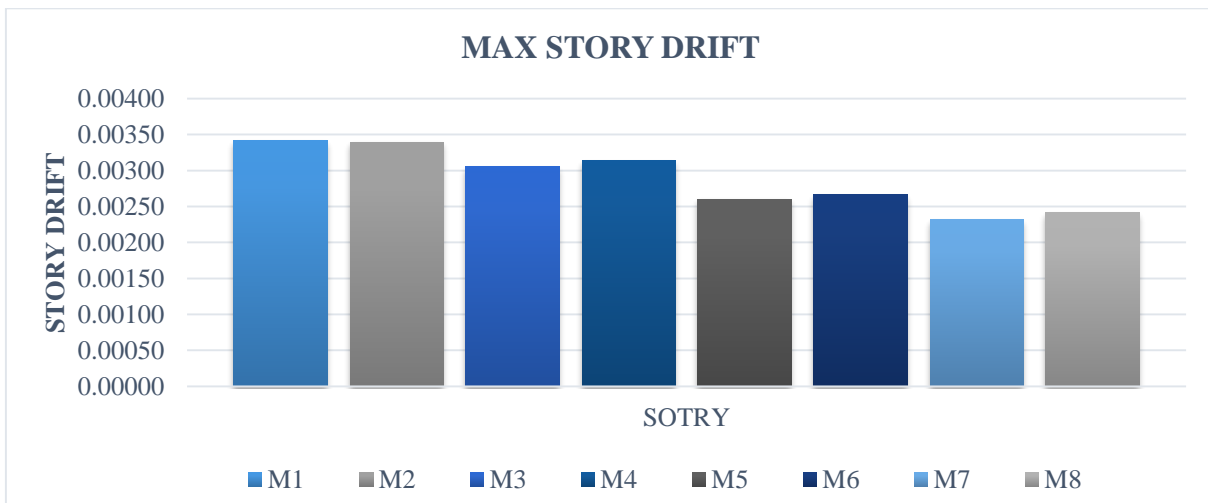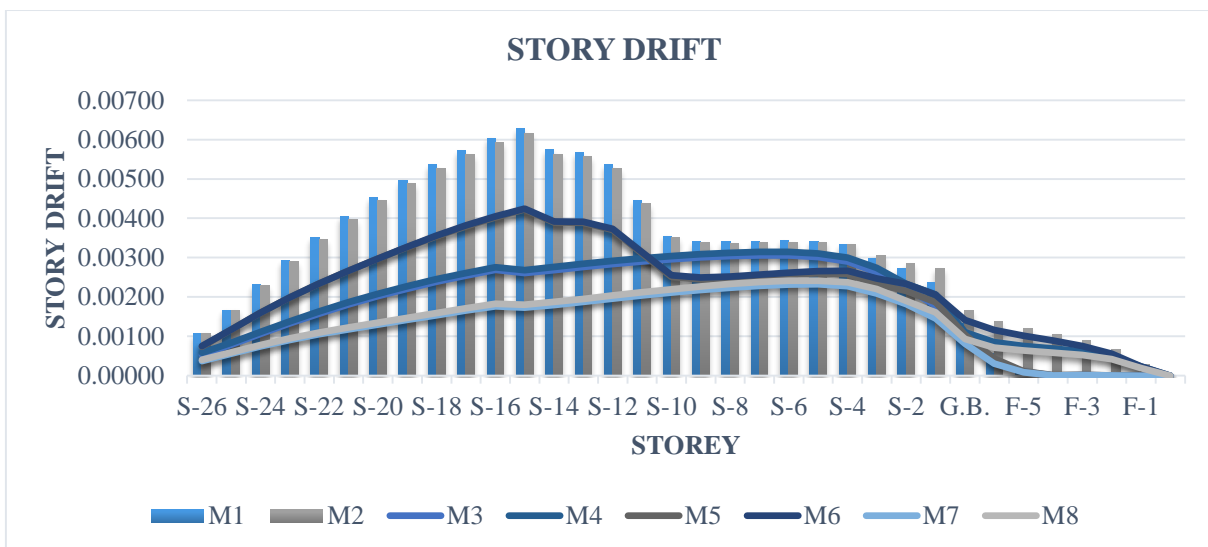

Fig.3.7 base Shear

1. The equivalent static analysis & response spectrum analysis in x- direction are observed that maximum base shear in flat slab building is 9.86% more than conventional slab building.

2. The conventional slab & flat slab buildings in x- direction is observed that base shear is same in equivalent static analysis & response spectrum analysis method.

3. The equivalent static analysis & response spectrum analysis in y- direction are observed that maximum base shear in flat slab building is 9.86% more than conventional slab building.

4. The conventional slab & flat slab buildings in x- direction is observed that base shear is same in equivalent static analysis & response spectrum analysis method.

3.5 TIME PERIOD OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN DYNAMIC RESULTS:
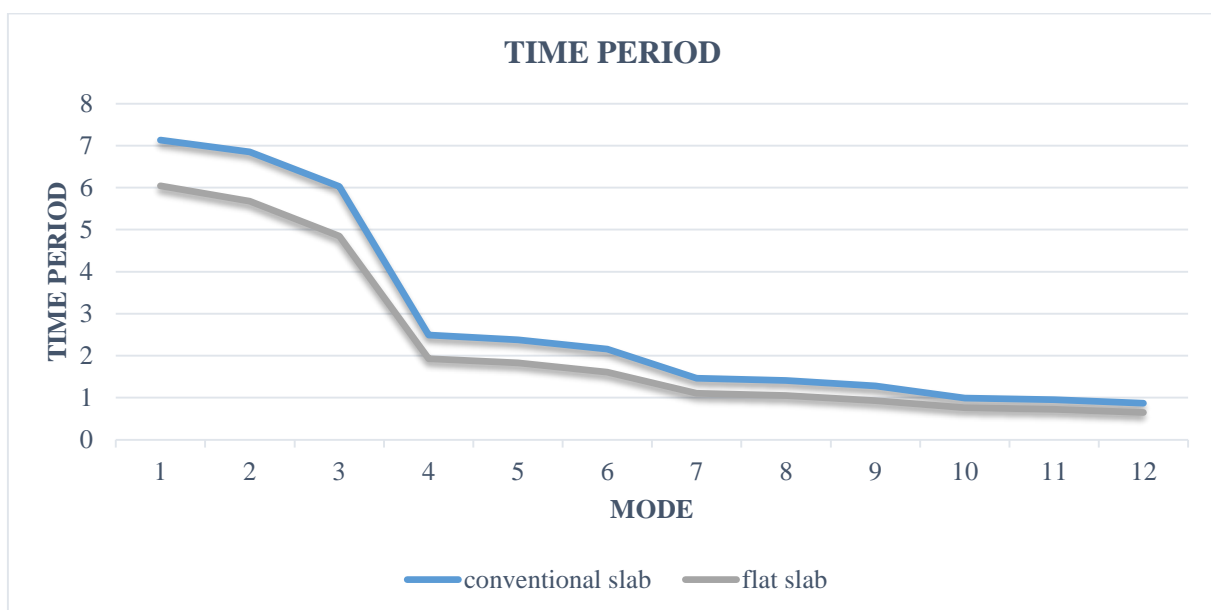
Fig.3.8 time period

Time required for undamped system to complete one cycle of free vibration is the natural time period of vibration of system in unit of second. The response spectrum analysis is observed that maximum time period in conventional slab building.

3.6 AXIAL FORCE OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -

Fig.3.9 axial force in beam

1. The equivalent static analysis in x- direction is observed that maximum axial force in flat slab building is 4.18% more than conventional slab building.

2. The response spectrum analysis in x- direction is observed that maximum axial force in flat slab building is 6.45% more than conventional slab building.

3. The conventional slab building in x- direction is observed that maximum axial force in equivalent static analysis is 22.03% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum axial force in equivalent static analysis is 20.14% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum axial force in conventional slab building is 17.16% more than flat slab building.

6. The response spectrum analysis in y- direction is observed that maximum axial force in conventional slab building is 18.84% more than flat slab building.

7. The conventional slab building in y- direction is observed that maximum axial force in equivalent static analysis is 18.46% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum axial force in equivalent static analysis is 20.11% more than response spectrum analysis method.

3.7 SHEAR FORCE OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -
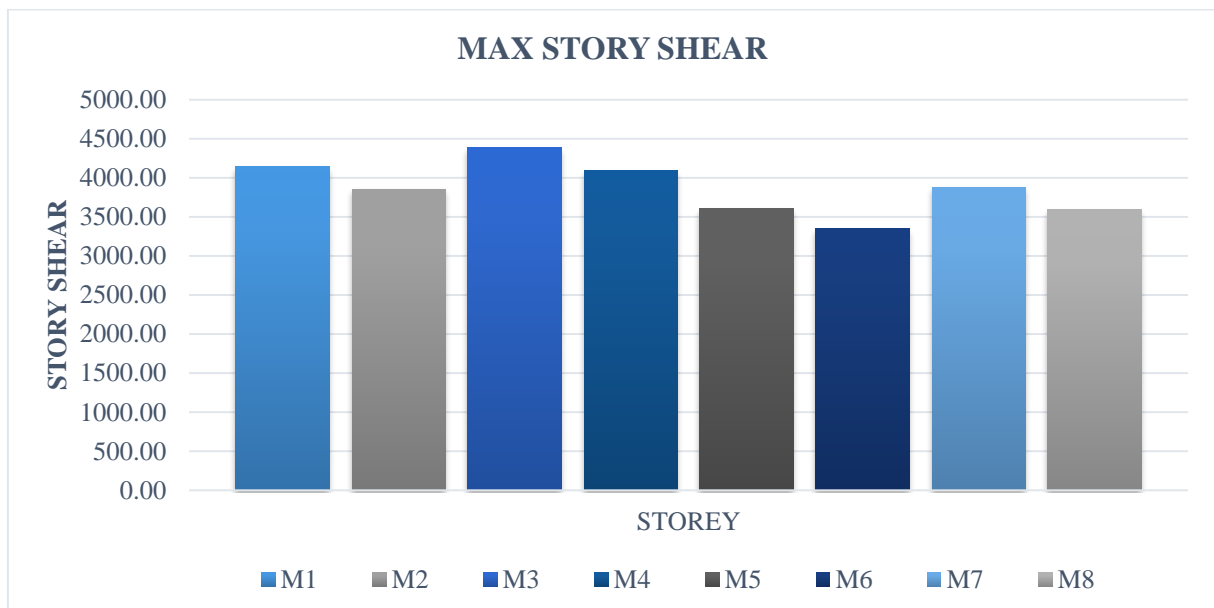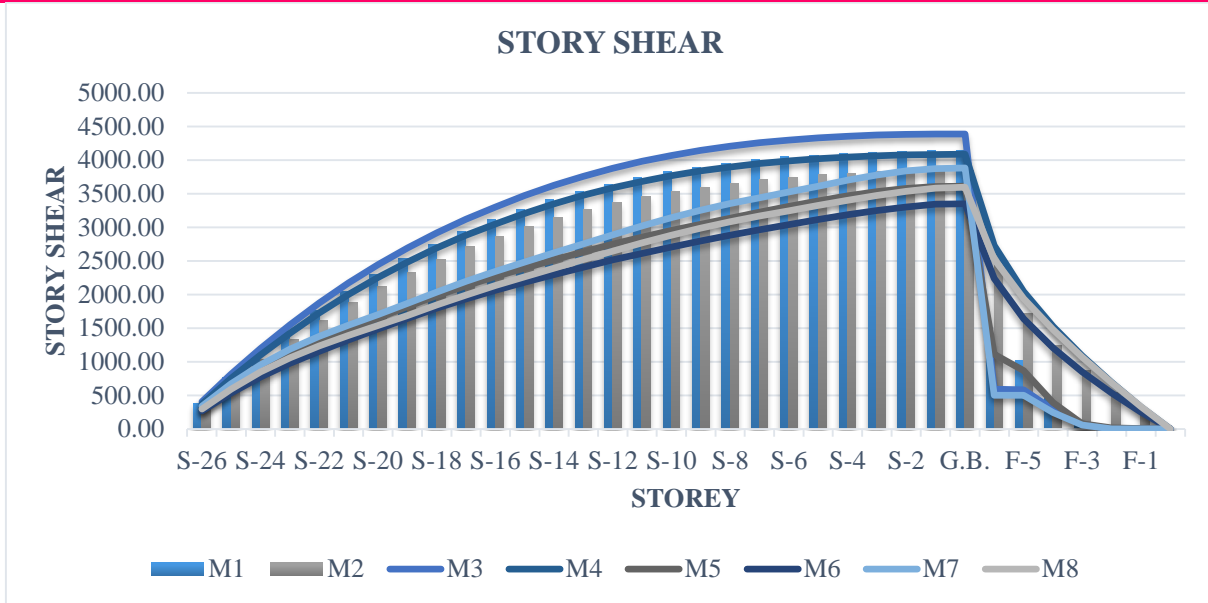

Fig.3.10 shear force in beam

1. The equivalent static analysis in x- direction is observed that maximum shear force in flat slab building is 23.34% more than conventional slab building.

2. The response spectrum analysis in x- direction is observed that maximum shear force in flat slab building is 31.08% more than conventional slab building.

3. The conventional slab building in x- direction is observed that maximum shear force in equivalent static analysis is 27.56% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum shear force in equivalent static analysis is 19.42% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum shear force in flat slab building is 26.90% more than conventional slab building.

6. The response spectrum analysis in y- direction is observed that maximum shear force in flat slab building is 34.08% more than conventional slab building.

7. The conventional slab building in y- direction is observed that maximum shear force in equivalent static analysis is 26.91% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum shear force in equivalent static analysis is 18.94% more than response spectrum analysis method.

3.8 BENDING MOMENT OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -
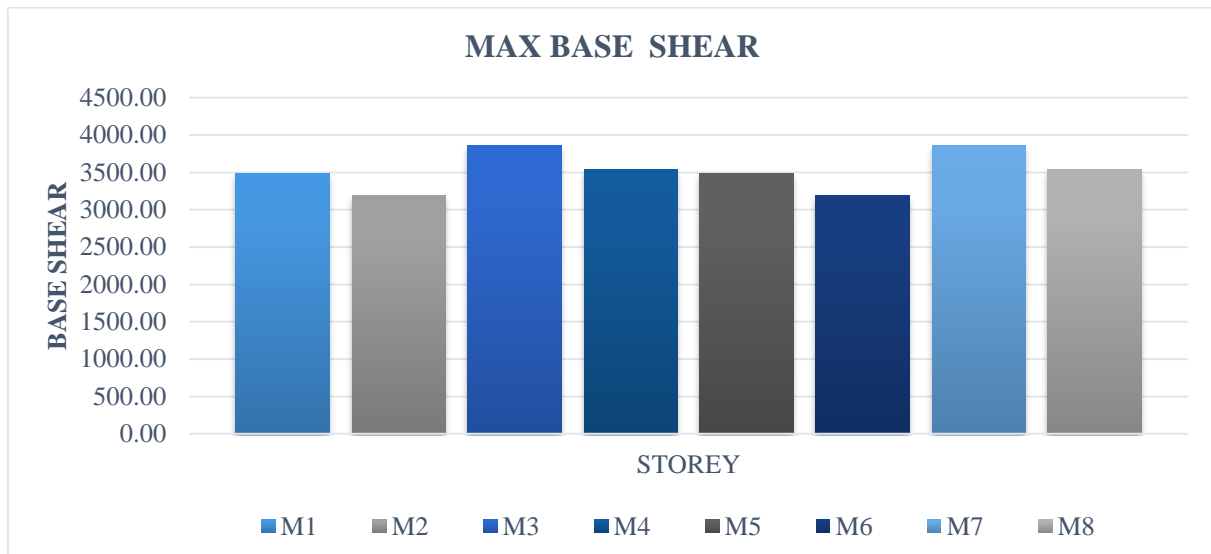

Fig.3.11 bending moment in beam

1. The equivalent static analysis in x- direction is observed that maximum bending moment in flat slab building is 28.25% more than conventional slab building.

2. The response spectrum analysis in x- direction is observed that maximum bending moment in flat slab building is 36.57% more than conventional slab building.

3. The conventional slab building in x- direction is observed that maximum bending moment in equivalent static analysis is 28.73% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum bending moment in equivalent static analysis is 1.66% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum bending moment in flat slab building is 31.04% more than conventional slab building.

6. The response spectrum analysis in y- direction is observed that maximum bending moment in flat slab building is 38.74% more than conventional slab building.

7. The conventional slab building in y- direction is observed that maximum bending moment in equivalent static analysis is 28.08% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum bending moment in equivalent static analysis is 19.08% more than response spectrum analysis method.

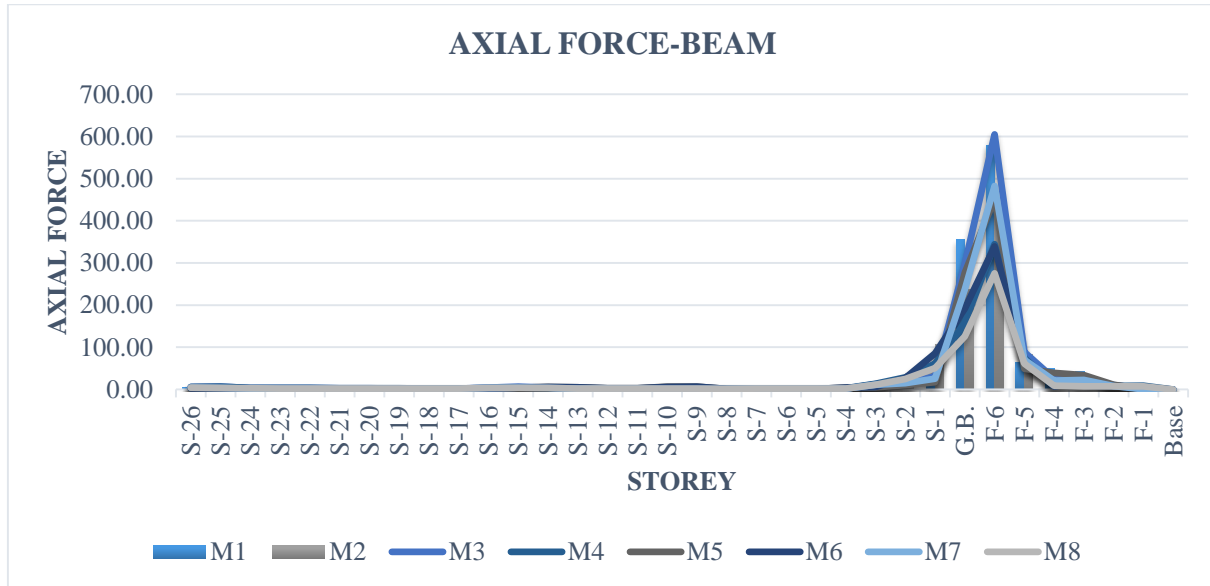**3.9 AXIAL FORCE OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -**

Fig.3.12 axial force in column

1. The equivalent static analysis in x- direction is observed that maximum axial force in flat slab building is 5.10% more than conventional slab building.

2. The response spectrum analysis in x- direction is observed that maximum axial force in flat slab building is 7.77% more than conventional slab building.

3. The conventional slab building in x- direction is observed that maximum axial force in equivalent static analysis is 29.24% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum axial force in equivalent static analysis is 27.18% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum axial force in flat slab building is 6.38% more than conventional slab building.

6. The response spectrum analysis in y- direction is observed that maximum axial force in flat slab building is 6.11% more than conventional slab building.

7. The conventional slab building in y- direction is observed that maximum axial force in equivalent static analysis is 27.62% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum axial force in equivalent static analysis is 27.83% more than response spectrum analysis method.

3.10 SHEAR FORCE OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -
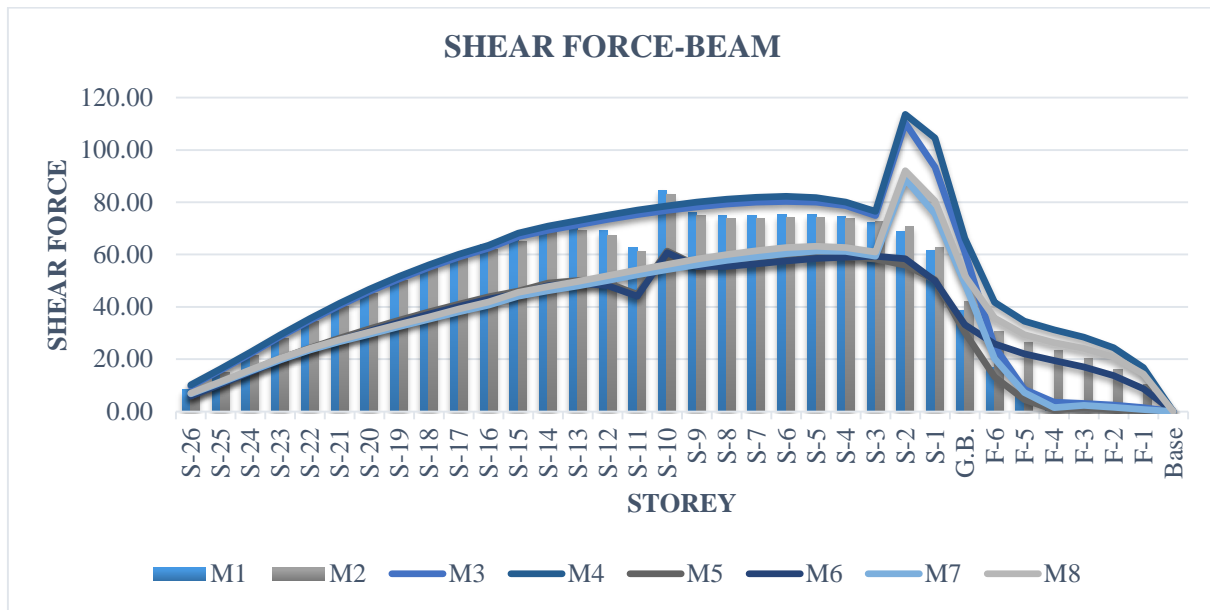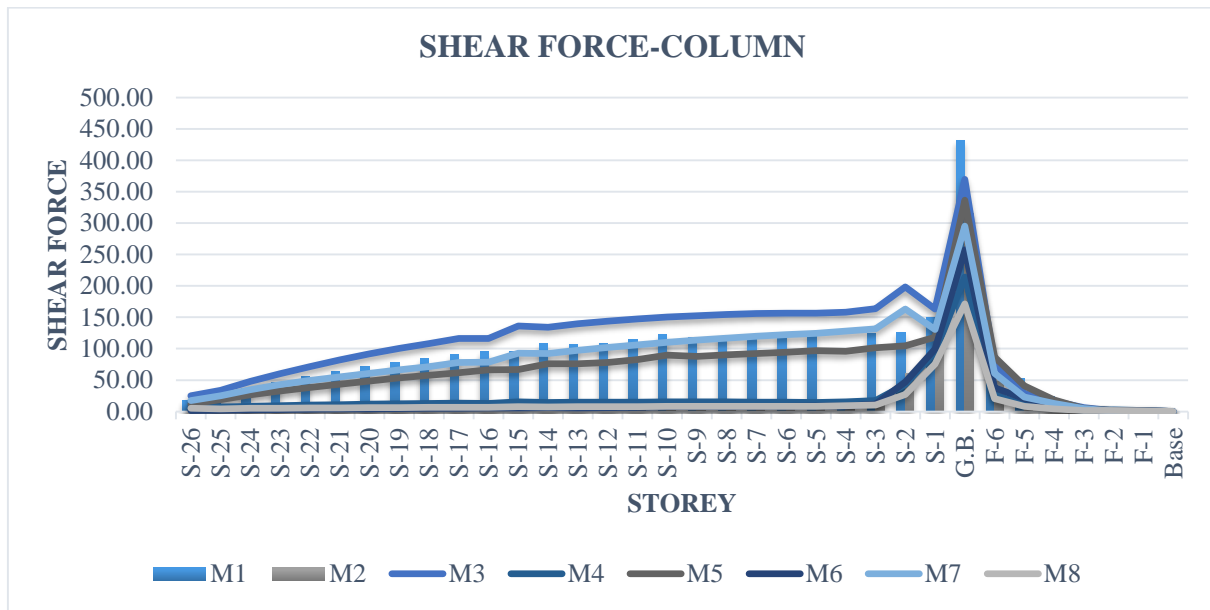

Fig.3.13 shear force in column

1. The equivalent static analysis in x- direction is observed that maximum shear force in conventional slab building is 14.27% more than flat slab building.

2. The response spectrum analysis in x- direction is observed that maximum shear force in conventional slab building is 12.28% more than flat slab building.

3. The conventional slab building in x- direction is observed that maximum shear force in equivalent static analysis is 21.94% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum shear force in equivalent static analysis is 20.13% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum shear force in conventional slab building is 32.10% more than flat slab building.

6. The response spectrum analysis in y- direction is observed that maximum shear force in conventional slab building is 33.43% more than flat slab building.

7. The conventional slab building in y- direction is observed that maximum shear force in equivalent static analysis is 18.39% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum shear force in equivalent static analysis is 19.98% more than response spectrum analysis method.

3.11 BENDING MOMENT OF CONVENTIONAL AND FLAT SLAB BUILDINGS IN STATIC AND DYNAMIC RESULTS: -
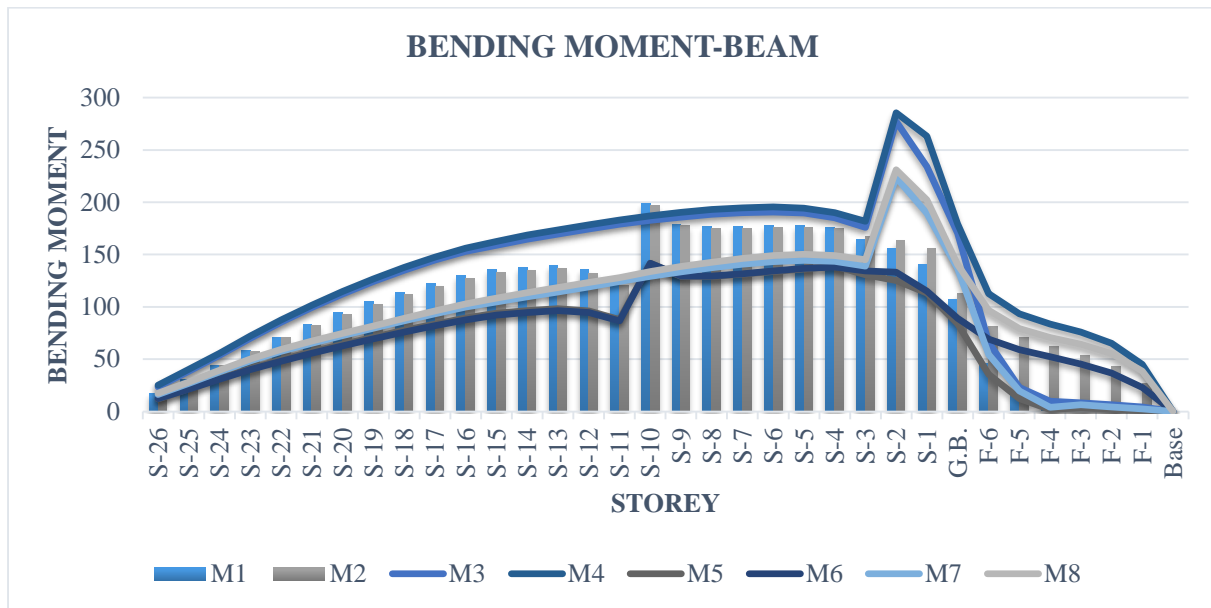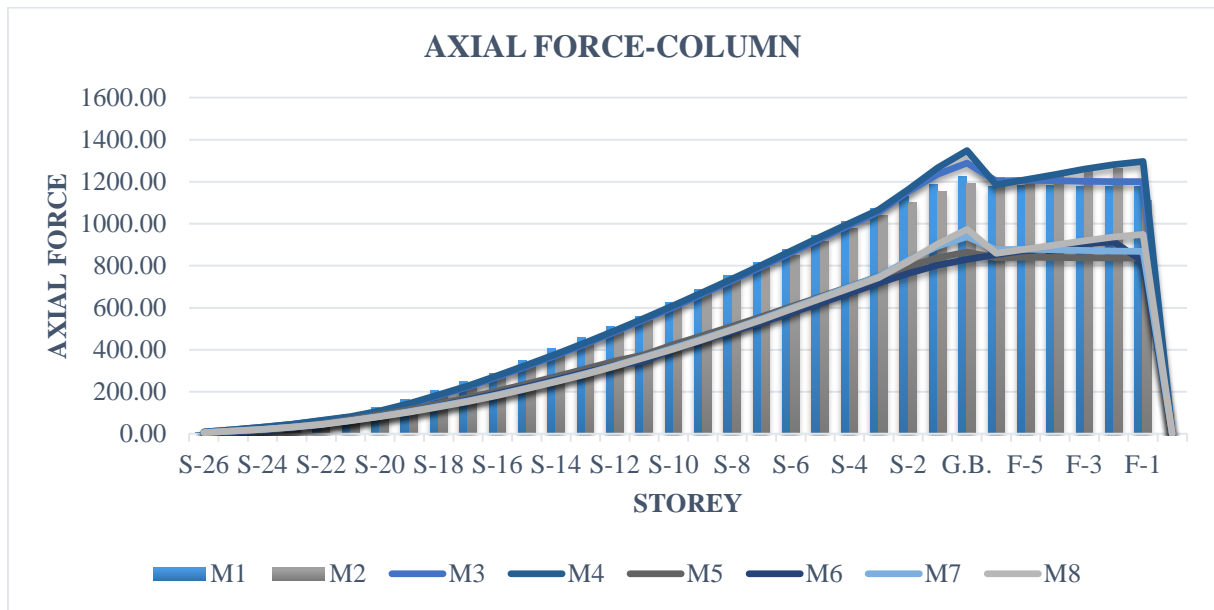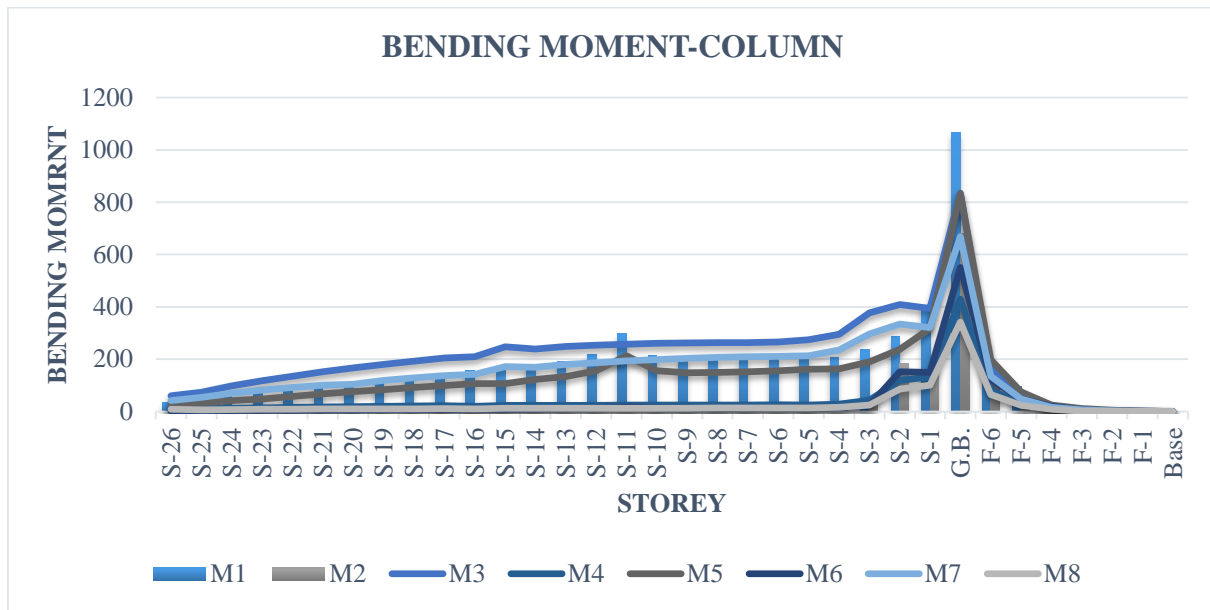

Fig.3.14 bending moment in column

1. The equivalent static analysis in x- direction is observed that maximum bending moment in conventional slab building is 21.66% more than flat slab building.

2. The response spectrum analysis in x- direction is observed that maximum bending moment in conventional slab building is 24.35% more than flat slab building.

3. The conventional slab building in x- direction is observed that maximum bending moment in equivalent static analysis is 21.82% more than response spectrum analysis method.

4. The flat slab building in x- direction is observed that maximum bending moment in equivalent static analysis is 19.98% more than response spectrum analysis method.

5. The equivalent static analysis in y- direction is observed that maximum bending moment in conventional slab building is 18.86% more than flat slab building.

6. The response spectrum analysis in y- direction is observed that maximum bending moment in conventional slab building is 38.05% more than flat slab building.

7. The conventional slab building in y- direction is observed that maximum bending moment in equivalent static analysis is 18.86% more than response spectrum analysis method.

8. The flat slab building in y- direction is observed that maximum bending moment in equivalent static analysis is 20.60% more than response spectrum analysis method.

4. FUTURE SCOPE OF STUDY: -

- The structure can be analyzed in different seismic zone and soil conditions.
- The structure can be analyzed with shear wall or bracing or damper.
- The structure can be analyzed in different sloping ground conditions.
- Comparison of conventional slab & flat slab with using post-tension cable.
- The structure can be analyzed in different types of slabs.
- The structure can be analyzed with using FRP steel bars.

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INTERNATIONAL JOURNAL OF
MULTIDISCIPLINARY RESEARCH & REVIEWS

journal homepage: www.ijmrr.online/index.php/home

Impact of COVID 19, in Centrally Sponsored Schemes (CSS) for Skilling youth: Rajasthan prospect

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Keyword	Abstract
Vocational Training, Skilling, online training, Skill India, Employment, Employability	**Background**:- Skilling youth of a nation is an outset of the social as well as economic development of the nation. As India is a youngest nation of the world with average age of the workforce is 29 years and initiated Skill India, Digital India & Make in India programs to maximize the demographic dividend and match the demand & supply gap. COVID-19 and the consequential boundaries have had a considerable impact on skilling or vocational training and employment, mostly centrally sponsored schemes for BPL, Rural Poor and marginal & dropout youths. Even Vocational Education is recognized as a priority area by our National Policy for creating sufficient number of quality jobs for all unemployed youth in the formal and informal sectors. **Aim** - In this study, we are analyzing impact of COVID-19 in training and placement through the down-fall in the actual training imparted and placement provided by training providers under center sponsored schemes like DDU_GKY and PMKVY in Rajasthan **Methods** – Secondary data composed from skill department for top 10 training partners in the state, imparted training under DDU-GKY and PMKVY schemes in the State in-between 2017 to 2021 (in last 5 years) and select 100 students through random sampling from both schemes. Primary data of trainees and training partner's collected via online Google forms. **Results**- Due to covid-19, physical presence of trainees was low in the Skill Development Centres, actual downfall and impact on employment captured. **Conclusions**- The need of design & development of online workshops/labs, to continue such trainings for enhancing hands on skills and match the industry demands in case of any such situations.

1. INTRODUCTION

COVID analysis is something that has become a common course statistic now a days. Every individual is continuously concerned about any information related to different quarters on rise as well as spread of the outbreak which turned into a pandemic, specifically concerning the rising concerns of the impact of the pandemic on the livelihood as well as lives of indusial. Different studies suggest that post pandemic universe

would be the one which would be completely overtaken by the digitized economy. Digitised economy requires a workforce which is well equipped for fulfilling its needs by having right skill set for improving the consumer spending and continuity of business in future (Singhal & Sneader, 2020).

Machine learning, analytics, data science are now the top seats amongst the most in demand skills in the IT-ITeS sector now (NASSCOM B2B, 2019).

University Grants Commission has decided to address and fulfill the need to promote online education as well as distance learning with the help of its institutes. It plans to undertake the work by relaxing the current norms and requirements of eligibility for e-education for all. It would go on to become the new normal in future for imparting education which would also be accessible to everyone. Such decisions related to modes of imparting education in General Education System which would pave the way for transitioning different modes of skilling and skill education to the working force of the nation at large.

The need to up-skill and re-skill across different job roles need to be aligned with career related aspirations of the graduates significantly amongst the disadvantaged youth. The members of workforce might not have an ability of working from home considering a lack of proper space, high speed net facility, laptop, etc. They might even lack digital skills and communication skills for pivoting their previous jobs to the emerging needs amongst different sectors and might be more resistant to adapt to the new models of work and education. They might also need to be up-skilled and re-skilled through the training models which require peer interaction as well as learning opportunities to keep themselves motivated. There might also be benefits in preparing a talent pool in the local areas because of mobility restrictions as well as offering access to the low-priced technology solutions to ensure online education. Especially, the skills that are related to the local economies.

According to a survey conducted amongst the TVET providers, social partners and the policymakers, about 90% of the respondents showed complete closure of the TVET centres in their respective nations as a response to spread of COVID and the containment measures taken by their governments. In approximately 114 nations, complete lockdown was reported by most of the respondents. Partial closure restricted to regions was reported more commonly by the respondents in the Pacific and Europe, while closures restricted to some of the activities were prevalent in the European and the Central Asian countries as compared to other regions. The results have been consistent in terms of stringency of government's response over survey period as was measured by Government Response Stringency Index which has been developed by the Oxford University.

The respondents reporting a complete lockdown were in the nations which on an average had most strict government responses to the pandemic, followed by the ones reporting a partial closure, either for just some activities or parts of the country. The respondents who reported absolutely no lockdown were in the nations with lowest average strict measures.

An urgent need for shifting to online learning modalities was mainly constrained by a lack of sufficient infrastructure. In most of the nations, the challenges pertaining to supply of electric power, online connectivity, poor internet connectivity and a lack of capacity of the network for coping with the rising use of data seemed to only add onto the difficulties to switch to online training modalities. The additional costs of data usage incurred on online learning were borne mostly by students as well as teachers. A digital divide between rural and urban areas was highlighted as a serious obstacle in most of the countries.

Quality of online learning depends mainly on functionality of learning platforms as well as tools which help in delivering the programmes. The pandemic crisis has stressed on the fact that efficient distance education platforms along with remote instructions are not there in the vocational education systems, especially if they must be used on the national scale.

RESEARCH OBJECTIVES

To analyze impact of COVID-19 in training and placement through the down-fall in the actual training imparted and placement provided by training providers under center sponsored schemes like DDU_GKY and PMKVY in Rajasthan

REVIEW OF LITERATURE

As per a report on youth awareness, mobilisation as well as perception regarding the centrally sponsored schemes of the Government of India including DDU-GKY & PMKVY, the youth of states are quite aware about these trainings, even though there is a good scope of improvement which is required in terms of the quality of training, counselling assistance as well as infrastructure (Joshi Ashwani Kumar and Pandey K.N.,2020).

Another paper assessed the importance of these trainings for increasing the productivity of youth in India. Their findings have confirmed the significance of such schemes in enhancing the productivity of the youth. They mainly advocate the skill trainings for building the capabilities of the youth which help in improving productivity and help in earning livelihoods for unemployed youth of the country (Agrawal Mini, Thakur K.S. ,2019).

These papers have also identified that staying in the urban areas, males, the Christian communities as compared to the other religions, people having formal education along with working population from tertiary and secondary sectors are important factors which increase the participation in vocational trainings. They also state that the formal vocational trainings help the participants to get better opportunities of jobs with high wages as compared to the ones who don't have any kind of vocational training.

According to a paper, the gaps have been identified in execution of skill development initiatives. It emphasises more on training quantity and not on the applicability and quality. However, they consider skill development to be an apparent way to exploit demographic dividend.

A drastic decline has also been noticed in total number of youth unemployed who are looking for jobs under short term training initiatives of PMKVY & DDU-GKY scheme during COVID.

PMKVY (Pradhan Mantri Kaushal Vikas Yojana)

Introduced in the year 2015, PMKVY (Pradhan Mantri Kaushal Vikas Yojana) is amongst one of the flagship programmes of MSDE (Ministry of Skill Development and Entrepreneurship) which aims at mobilisation and training of youth as the requirements of different industries. After the relaunch of PMKVY 2.0 during 2016-2020, PMKVY 3.0 envisaged training of about 8 lakh youth between the period of 2020 and 2021 with an outlay of about Rs. 948.90 Cr.

DDU-GKY (Deen Dayal Upadhyaya GrameenKaushalya Yojana)

MoRD (Ministry of Rural Development announced the scheme- DDU-GKYin 2014.It is a part of NRLM (National Rural Livelihood Mission), tasked with double objectives of enhancing diversity to incomes of the rural population and catering to career aspirations of the rural youth population. It is focussed uniquely on the rural youth population aged between 15 to 35 years coming from poor financial background. As part of Skill India Mission, it plays a very important role in to support the economic and social programs of the Government of India like Digital India, make in India, Start- Up India, Smart Cities, etc. More than 180 million or approximately 69% of youth population of the country aged between 18 to 34 years, are living in the rural areas. Out of these, bottom of pyramid youth coming from poor families do not have no to marginal employment of approximately 55 million. Currently, the scheme has been implemented in the 27 states plus 3 union territories in India.

Covid-19 impact

According to the data given by Ministry recently showed that approximately 7,04,220 youth have been placed under PMKVY 2.0 during 2018-19 and approximately 6,08,389 youth have been trained in 2019-20. The number nosedived to approximately 2,16,059 during 2020-21 and about 87,621 during 2021-22. It further plunged under PMKVY 3.0 having just 43 candidates placed during 2020-21 and about 4104 during 2021-22.

The skilling ecosystem in Rajasthan

RSLDC (Rajasthan Skill & Livelihood Development Corporation) in Rajasthan has three centrally sponsored schemes including DDU-GKY, PMKVY and SANKALP. The main objective of implementing these schemes is to cover different segments as well as areas of our society having their focus on disadvantaged groups of our society. RSLDC has been working relentlessly towards wage as well as self-employability by choosing innovative models.

Based on the experiences of PMKVY 1.0 as well as PMKVY 2.0, the Ministry made several improvements in

the latest version of PMKVY for matching the present-day policy doctrine for energising the skill ecosystem that has been impact by COVID.

In 2020, March, when the Government of India imposed a nationwide lockdown as a response to first wave of COVID, it was clear that this health emergency is heading towards a global economic crisis. As India now grappled with the even more disastrous second wave of COVID, it's become even more important ever to know about the social and economic fallout of first. The shocks of first wave of COVID on the labour markets were devastating. According to a study conducted by APU (Azim Premji University), roughly 100 million workers had to lose their jobs during lockdown during April-May 2020(APU, 2021). The young workers had been hit the worst. According to the data by Periodic Labour Force Survey, the rate of unemployment increased from about 21% to a severe 36% during Apr-June 2020 in comparison to similar quarter of 2019. Amongst them, the youngest migrant workers were vulnerable the most. The most disappointing images of first wave of COVID were those of the migrant workers losing their livelihood and jobs in cities, walking down hundreds of miles to their hometowns. As per Import, 2020 in all 11 million migrant workers returned to their hometowns after the lockdown of the first wave.

RESEARCH METHODOLOGY

Data Collection

Secondary data collected from skill department for top training partners in the state, imparted training under DDU-GKY and PMKVY schemes in the State in-between 2017 to 2021 (in last 5 years) and selected 100 students through random sampling from both schemes. Primary data of trainees and training partner's collected via online Google forms

TOOLS USES

Used MS-XLS for analysis and interpretation.

Overall training, placement and certification of trainees under DDU-GKY from 2017 to 2023 is as under (date collected from DDU GKY official website http://ddugky.gov.in)

Table - 1

Year Wise Training, placement , certification Details					
SN	FY	Trained	Placed	Assessed	Certified
1	2017-18	142391	63612	124871	102382
2	2018-19	241509	137251	200707	157155
3	2019-20	247215	150214	166016	130316
4	2020-21	38314	49563	19421	15067
5	2021-22	97006	45612	58510	77549
6	2022-23	71839	23097	14652	46291

Year Wise Training, placement, certification Details

No of Youth -->

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
◆ Trained	142391	241509	247215	38314	97006	71839
■ Placed	63612	137251	150214	49563	45612	23097
▲ Assessed	124871	200707	166016	19421	58510	14652
✕ Certified	102382	157155	130316	15067	77549	46291
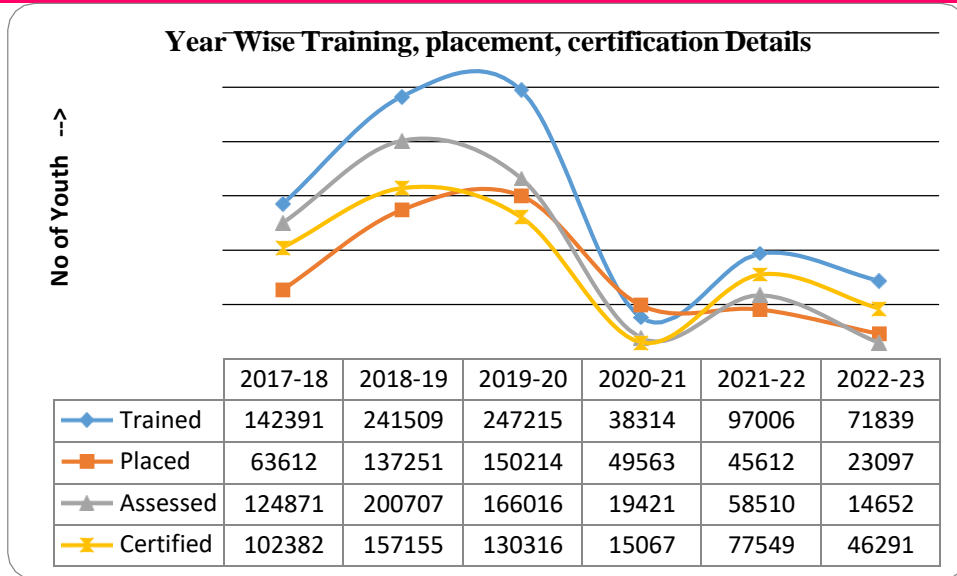
Figure-1

ANALYSIS AND INTERPRETATION OF DATA: (data received from RSLDC)

Table-2.1 : Year wise training under DDU GKY Scheme

Scheme Name	DDU-GKY
Year	Total Trained
2017	12332
2018	12779
2019	11794
2020	1786
2021	6148
2022	865
Grand Total	45704

Training under GoI - DDU-GYK Scheme
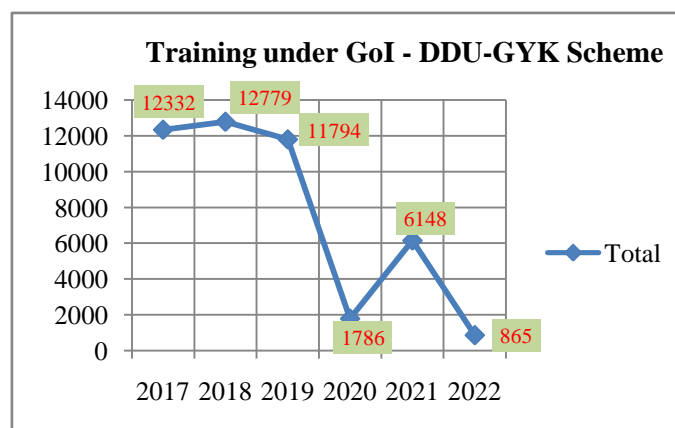
Figure-2.1

Table 2.2 - Year wise training under PMKVY Scheme

Scheme Name	(PMKVY1.0 , 2.0)
Year	Total Trained
2018	14975
2019	16762
2020	786
2021	4159
Grand Total	36682
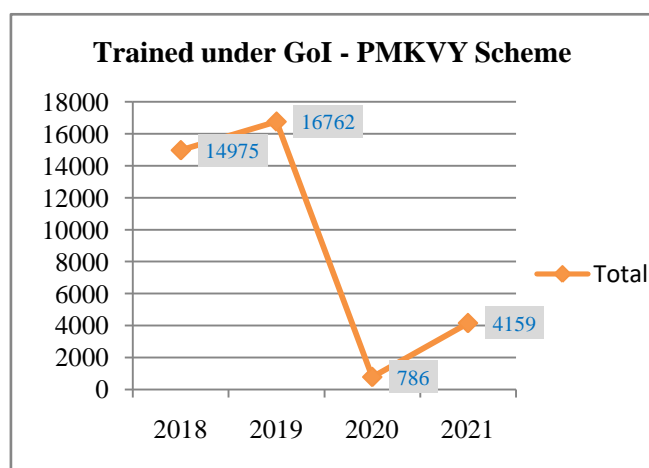
Figure 2.2

Table 3.1

Sector wise training under DDU- GKY Scheme

SN	DDUGKY Scheme	
	Sectors	Trained
1	Information & Communication Technology	18793
2	Retail	13545
3	Apparel Madeups & Home Furnishing/ Garment Making	6825
4	Hospitality	6117
5	Health Care Medical & Nursing	5385
6	BFSI & Commerce	3542
7	Logistics& Supply Chain Management	3773
8	Security	3404
9	Fashion Designing	2962
10	Electrical	2427
11	Electronics & Hardware	2322
12	Telecom	2016
13	Courier & Logistics	2031

14	Tourism and Hospitality	1230
15	Construction	1207
16	Automotive	891
17	Fabrication	301
18	Renewable Energy	365
19	Beauty Culture & Hair Dressing	266
20	Plastic Processing	140
21	Textiles	189
22	Leather	140
23	Production & Manufacturing	140
24	Green Jobs	111
25	Power	105
26	Capital Goods	103
27	Food Processing & Preservation	89
28	MATERIAL MANAGEMENT	66
29	Solar	64
30	Wood Work	70
31	Banking Financial Services & Insurance	42
32	Agriculture	27
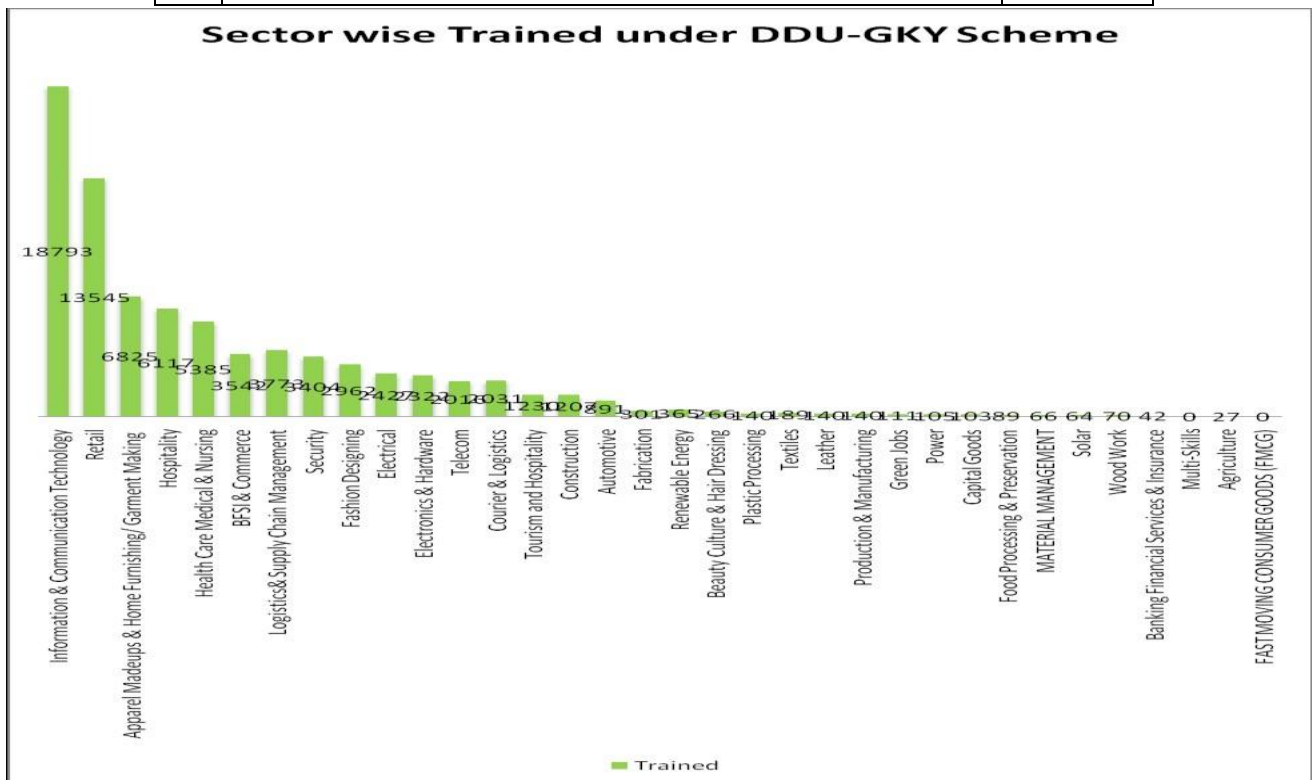
Figure 3.1

Table 3.2 : Sector wise training imparted under PMKVY Scheme at Rajasthan

PMKVY Scheme		
SN	Sectors	Trained
1	Electronics & Hardware	12777
2	Apparel Madeups & Home Furnishing	11726
3	Retail	2343
4	Logistics	1724
5	Power	1724
6	IT-ITES	1375
7	Construction	1437
8	Beauty Culture & Hair Dressing	860
9	Textiles & Handloom	475
10	Media & Entertainment	453
11	Healthcare	446
12	Telecom	334
13	Tourism and Hospitality	286
14	Automotive	180
15	Management - Security	173
16	Food Processing	133
17	BFSI & Commerce	90
18	Banking Financial Services and Insurance	86
19	Agriculture	60
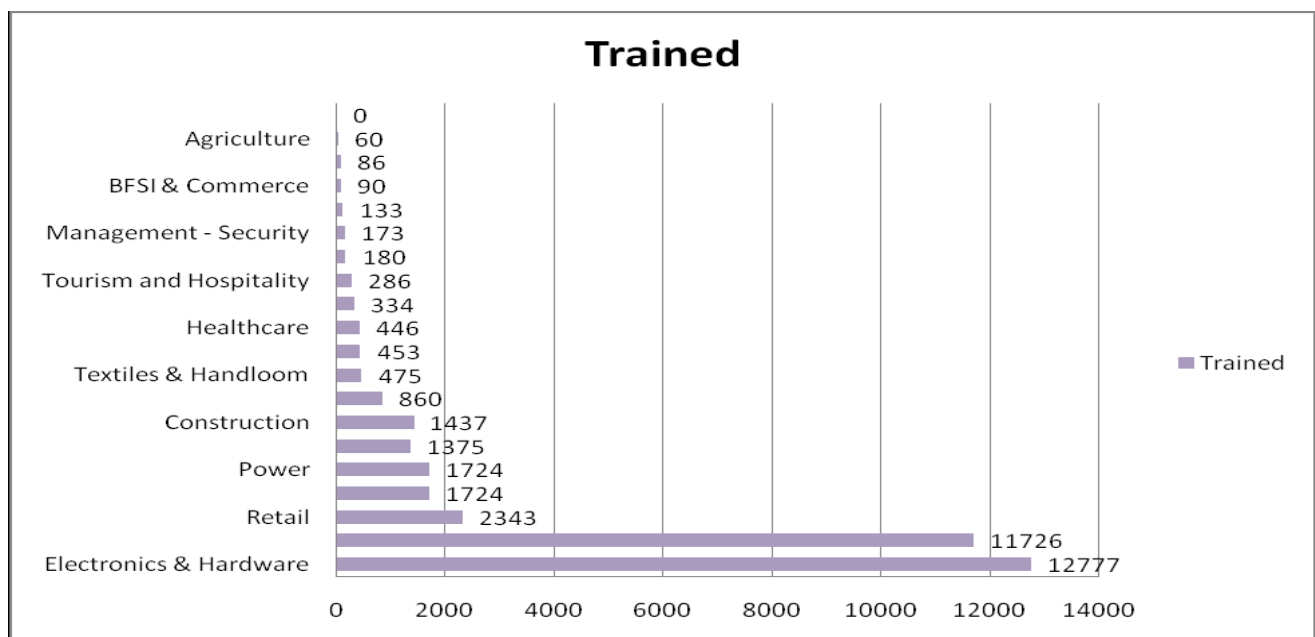
Figure 3.2

Table 4 : Scheme wise Total Trained Youth in the State in last 5 years

SN	Name of the Scheme		By	Total Trained
1	Deen Dayal Upadhyaya Grameen Kaushalya Yojana	DDU-GKY	GoI	78688
5	Pradhan Mantri Kaushal Vikas Yojana	PMKVY	GoI	36682
Grand Total				115370

Table 5 : Top Training Partners @ RSLDC

SN	Training Partners	Sanction	Trained	%
1	Nifa	19083	16815	88%
2	Basics Ltd	12386	11206	90%
3	Nexus Security	8932	8479	95%
4	IndiaCan	8890	8410	95%
5	ICA	7792	6638	85%
6	Balaji	6555	5594	85%
7	Bhanwarlal Nahata Smriti Sasnthan	6467	5856	91%
8	Mahendra Kumar Sons	5354	4754	89%
9	Clifford	5334	5079	95%
10	CL Educate	4677	4402	94%
11	GRAS Academy	4664	4255	91%
12	LBS Shiksha Samiti	4553	4228	93%
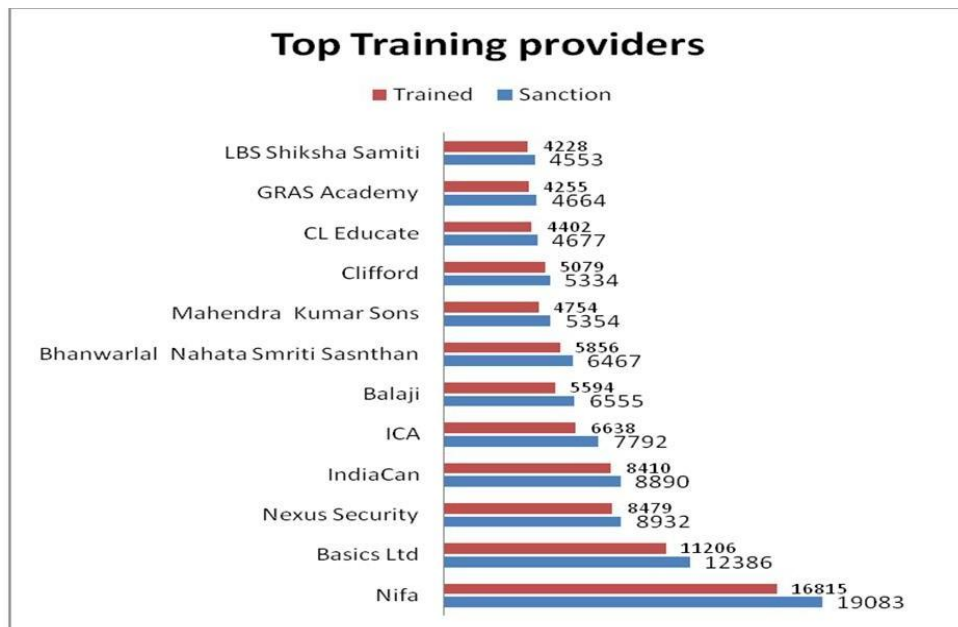
Figure -5

Table -6 :Training & Placement Ratio

SN	Training Partners	Trained	Placed	Placement %
1	Agarwal Sales Corporation, Kota	300	180	60%
2	AISECT	460	287	62%
3	Apollo Technical Education Foundation	293	180	61%
4	BHATIA AND COMPANY	398	216	60%
5	Evergreen Motors, Beawar	180	90	50%
6	Green Line Systems Pvt. Ltd.	1333	628	47%
7	JAGTAMBA ITI	149	73	49%
8	Lords International School	210	116	55%
9	Mahendra kumar & Sons Construction Company, Churu	657	320	49%
10	Maheshwari motors	150	110	73%
11	Muskan Sansthan Dungarpur	627	431	69%
12	NEW SHREE NATURAL HUMAN WELFARE SOCIETY	300	150	50%
13	Satyam Auto Sales	47	24	51%
14	SOHAR Shikasha Sansthan	800	555	69%
15	Sumit Maruti	60	36	60%
	Grand Total	5964	3396	57%
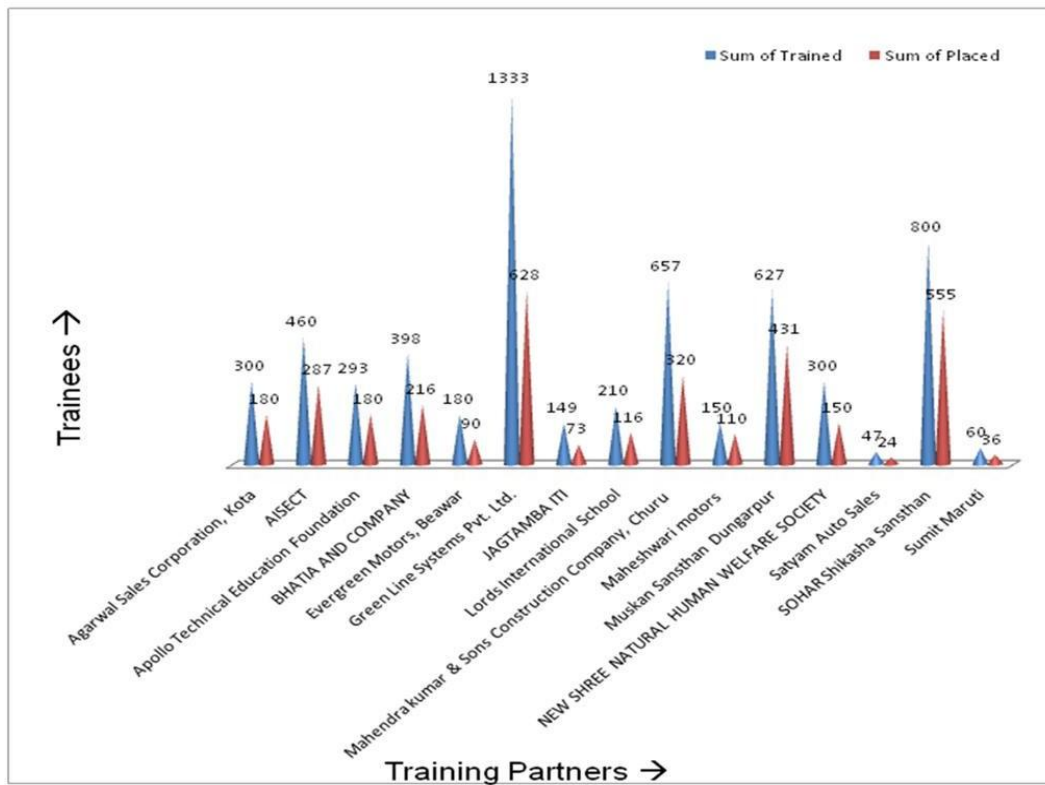
Figure-6

Table –7 : District wise Training details under DDU GKY and PMKVY in the State

District	Grand Total
Ajmer	5712
Alwar	6444
Banswara	1538
Baran	3488
Barmer	1974
Bharatpur	3216
Bhilwara	3448
Bikaner	1159
Bundi	1332
Chittorgarh	2362
Churu	2616
Dausa	3684
Dholpur	1811
Dungarpur	3613
Ganganagar	1924
Hanumangarh	4173
Jaipur	19625
Jaisalmer	673
Jalore	1504
Jhalawar	1652
Jhunjhunu	3944
Jodhpur	3748
Karauli	1862
Kota	6189
Nagaur	2917
Pali	868
Pratapgarh	1048
Rajsamand	1118
Sawai Madhopur	1923
Sikar	9043
Sirohi	1562
Tonk	3728
Udaipur	5472
Grand Total	115370

Figure-7
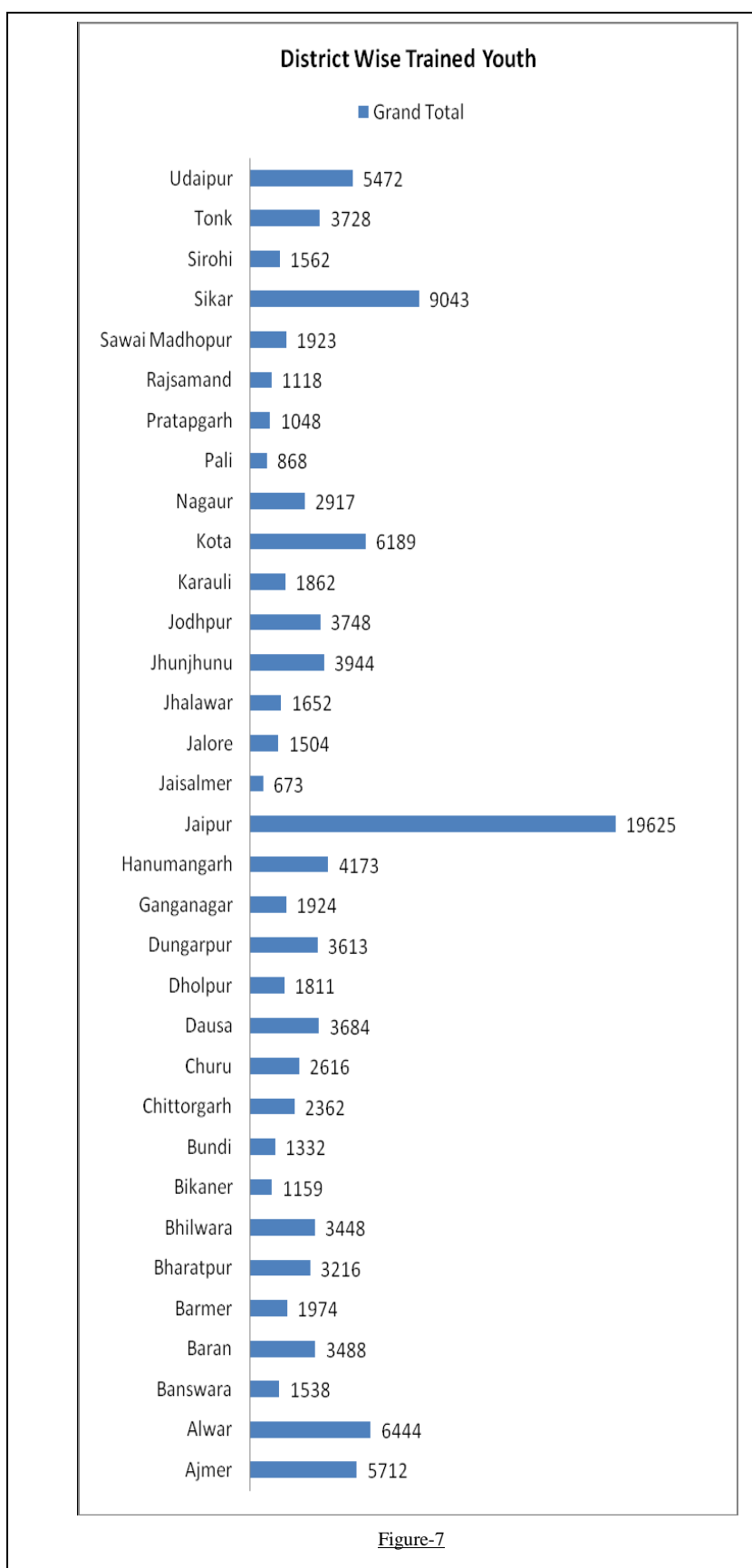
CONCLUSION & RECOMMENDATIONS

So far, the paper has succeeded in examining the impact of COVID-19 pandemic on skilling through centrally sponsored schemes, training goes down drastically. In view of the objective and occasions of Vocational Training Programmes sponsored by GoI in the state of Rajasthan, we may have to conclude the followings

- Training is gradually slowed down, due to pandemic, to enhance skill hands on training in the lab is mandatory Sector specific training is needed to uplift as per local level demand.

- Training is imparted as per the identified sectors through industries in the district level will add value. To overcome such pandemic, govt must add online labs through industries, placed in the state.

- Design and development of online learning content and self learning virtual lab tutors must be part of each and every vocational training program

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THE EMERGING ALTERNATIVE MEDIA PLATFORMS IN INDIA: AN ANALYSIS OF ITS OPPORTUNITIES AND CHALLENGES

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Keyword	Abstract
Mainstream media, Alternative media, Citizen Journalism, Innovation in Journalism	*"Whoever controls the media controls the mind," said Jim Morrison, the legendary singer, songwriter, and poet. The media, as the "fourth estate," influences the "first," "second," and "third" branches of government in diverse ways. Many different schools of media theory recognise the vital role the media plays in shaping public opinion and determining national agendas. The right to freedom of the press is guaranteed to all Indian citizens under the country's constitution. By disseminating knowledge and enlightening the public, it fosters the development of well-informed communities. India, the world's largest democracy, is home to hundreds of Mainstream, established, or dominant media outlets, some of which are just now starting to feel the pressure from the rise of alternative media.*

I. INTRODUCTION

Free and diversified news media are essential to the health of any democracy, as they serve as the primary means by which citizens are kept informed, powerful actors are held accountable, and public discourse on important issues is fostered. According to the available literature, quality journalism may motivate politicians to serve their citizens better, reduce corruption, and raise awareness about political issues. There is a direct correlation between the institutional framework of a country's media environment and the degree to which its news media are free, diverse, and able to foster democracy. Recent technological and market shifts are impacting these media environments, particularly concerning the proliferation of digital media. The spurt in Mobile Journalism (MoJo) with the coming of mobile devices has given a boom in citizen journalism and access to online journalism has become much easier with cheaper rates. However, certain apparent, overarching similarities provide both possibilities and problems for journalism, media organisations, and public discussion, even if the exact type of change in the media environment differs significantly from nation to country. The three most significant advancements caused by technical and commercial factors today are [1]—

1. The shift toward a more digital, mobile, and social media environment with intense competition for attention has pressured traditional media to develop new digital business models as their traditional operations decline or stagnate. "This is especially true for news outlets such as broadcasters and newspapers, which remain important as news producers but are becoming relatively less important as distributors."

2. Increasing reliance on a handful of large tech companies for "(a) news distribution and (b) digital advertising as a result of their services makes it easier and more appealing for billions of users around the world to navigate and use digital media in ways like search, social networking, video sharing, messaging, etc." [2].

3. Those most interested in news take advantage of these new opportunities to get, share, and comment on the news. "However, a larger number of people opt for more casual and passive forms of use, reflecting the rise of a high-choice media environment in which internet users have access to more and more information in convenient formats and often for free, across a range of increasingly sophisticated personal and mobile devices."

All nations with widespread access to digital media have seen these three changes. They are made possible by technological advancements, and some of the most significant concomitant problems to journalism are related to the commercial consequences. However, it is crucial to remember that media consumers are the ones who ultimately push these trends forward. Viewers' and marketers' adoption of new technologies is driving significant shifts in the media and media industry. Technologies make progress possible. Individuals and institutions make adjustments. The effects on media plurality and informational variety, two pillars of free speech (here defined as the right to send and receive ideas), are complicated. The opportunity for consumers to utilise various sources and encounter various viewpoints has grown as the media landscape has become more digital.

Concurrently, a small number of very large players dominate the environment, and mergers and cutbacks elsewhere in the media landscape threaten to diminish media pluralism by eroding the variety of news production, particularly in smaller markets, less lucrative niche issue areas, and at the local level. The proliferation of online resources has democratised access to knowledge. The advent of search engines and social media has been instrumental in expanding published content's reach, utility, and interest. However, their popularity amongst viewers and advertisers threatens many traditional media outlets, particularly news outlets [3].

Aim of the study-

This review paper aims to explore studies that have examined the shift from Mainstream Media (MSM) to Alternative Media and how Alternative media platforms are becoming a trend or we can say 'dominant paradigm' in news media sector and their role in democracies, highlighting both the benefits and the dangers that have arisen as a result of these shifts. At the same time, we also consider trends in other areas with high per capita incomes and widespread usage of digital media.

Objectives of the study-

- To identify various alternative news media platforms in India.
- To discuss the role of new media in bringing the shift from Mainstream media to Alternative media platforms.

II. ALTERNATIVE MEDIA

Let us begin by exploring what the term "alternative" really means. Alternative, as used here, refers to anything other than the standard or expected course of action; it is a departure from the norm. At what point in our life do we start considering other options? When we are unhappy with the path we are currently on, we tend to explore other options. If you are unhappy with your phone's functionality, you may start searching for a different phone or some other configuration that would improve its performance.

Similarly, "another option to the mainstream media" describes alternative media. You may find alternatives to the mainstream media in various formats, including newspapers, magazines, newsletters, radio, television, movies, new media, wall paintings, graffiti, and street art. In other words, when people get dissatisfied with what they hear in the mainstream media, they turn to niche outlets for more nuanced coverage. It is either them making their alternative media or consuming it. *Herman and Chomsky's "Manufacturing Consent"* (1998) discusses the growth of the radical press in Britain during the first half of the nineteenth century. According to the author, "this alternative press was successful in sustaining class consciousness; it united the workers because it promoted an alternative value system and framework for looking at the world," which inspired them to take collective action. At one point, this radical press posed a danger to the established media and the government. Unlike traditional media, alternative outlets provide unique perspectives on society and culture. It is important to highlight that, contrary to popular belief, alternative media outlets actively welcome and encourage a wide range of perspectives and ideas. The goal of alternative media is to provide a platform for various viewpoints, as opposed to the singularly negative or widely held one represented by the mainstream media.

In contrast to the mainstream media, alternative outlets encourage the expression of viewpoints that may otherwise be suppressed. The concept of the "public sphere," as outlined by German philosopher and sociologist *Jurgen Habermas*, is conceived of as a social space in which a variety of viewpoints can be voiced, broad issues can be discussed, and collective solutions can be developed, some of which may even influence political action. The public sphere serves as the hub of society's dialogue, but it is important to consider who gets a say in the conversation, what they say, and what they hear. The public sphere of Habermas has been largely superseded by the online world, where extensive discussion and debate have impacted political activity. Movements like India Against Corruption and the Nirbhaya movement are recent instances of how popular discourse may spark political change. In politics, even a single tweet to a minister may start a chain reaction [4].

The Maoist party in India publishes an internal periodical called Jung, also known as Awami Jung, in which they air grievances against the government and the people. Even at the university or college level, student organisations and unions use alternative media to voice their opinions and protests. The Student Federation of India puts out a monthly English magazine called "Student Struggle," a Hindi magazine called "Chatra Sangrash," and many more magazines in regional languages to propagate their message and rally students for social change. Wiki Leaks, founded by Julian Assange, is a well-known international example of a website that seeks to expose government and corporate wrongdoing. Amy Goodman and Juan Gonzales of Democracy Now! are two award-winning journalists from the United States. Senior journalist and political analyst Seema Mustafa believes alternative media is more focused on connecting with rural areas, being devoted to the poor and oppressed, and reporting the truth, despite its smaller size than traditional media. She thinks the media has changed drastically over the last 25 years and that "the takeover of the corporate has resulted in a complete dissociation of the real India from the mainstream media," which is why we need alternate forms of news coverage. Cornia [5] defines two key elements of alternative media: access and involvement. The term "access" refers to the ease with which people from all walks of life, regardless of their location, socioeconomic status, race, or gender, may have access to the information and resources they need to share their ideas and opinions with others.

On the other hand, the emphasis on participation is split between the extent to which people are engaged—from just token to fully invested—and the degree to which they are involved in the design, production, and implementation of media (Fairbairn 2009; Berrigan 1979). Several academics have also emphasised the importance of material's local and cultural relevance in community media. When people can relate to the people behind the scenes of community media, they are more likely to believe what they see and hear. When comparing alternative media to traditional media, Carpentier, Lie, and Servaes [6] find the following features:

Community-focused and modest in size, with special attention paid to the needs of marginalised populations;

- Carry non-dominant discourses and representations, emphasising the significance of self-representation;
- Are horizontally organised to facilitate audience access and involvement within the framework of democratisation and plurality.

More than that, they support a rhizomatic understanding of community/alternative media, which they define as media that "cuts across borders" and "builds linkages and connections among civil society, other community media, the state, and the market" to serve better the community they are a part of without compromising their unique identity.

III. ALTERNATIVE MEDIA IN INDIA

The idea of alternative media is still developing in India and is often seen as an anti-establishment and radical outlet. India's history of alternative media dates back to before independence when Indian media served as an alternative to the dominant British media. Small newspapers in regional languages were routinely produced during the period to support the nationalist effort to overthrow the British raj. There was a thriving underground press and radio network. High-literacy states like Kerala were able to set up their newspapers and presses, which sparked a literary and political revolution throughout the country.

A. Folk Media

It is widely agreed that in rural India, folk media plays the most significant role among alternative forms of media. It has been entertaining and informing Americans for centuries. The form that folk media eventually acquired was determined by the norms and customs of those living there. Examples include the Nautanki of

Uttar Pradesh (UP), the Bhavai of Gujarat, the Tamasha of Maharashtra, the Jatra of West Bengal, and the Ramleela and Rasleela of Rajasthan (two of the most famous puppetry shows in India). Nukkad Natak, also known as Street Play, has gained popularity as a folk media in contemporary India, especially in urban areas and educational institutions. Over the last three decades, street theatre has developed into a platform for many kinds of radical activism. The Communist Party of India founded the Indian People's Theatre Association (IPTA) in the 1940s, making it a unique alternative media.

Social change and resistance to British tyranny were at the heart of IPTA's mission. Through the power of theatre, they educated the public about their liberties and obligations. After the liberation fight, the national media overlooked many of the concerns that IPTA brought to light. KA Abbas, Dr Homi Bhabha, Ismat Chugtai, Sahir Ludhianvi, and many more were all IPTA members who worked side by side with regular people to make a difference. Upon gaining its independence, India's government recognised the significance of folk and traditional media and created the Song and Drama Division. This team promotes government initiatives and programs via live, in-person folk performances at community events. Herzog [7], a prominent feminist author, wrote a case study titled "Women and Alternative Media (India)", in which she studied the many alternative media outlets for women in India. She spoke on how the Yatra was utilised by the Kerala Shastra Sahitya Parishad (KSSP) to reach out to the community and engage them via means like speeches, puppet shows, musical performances, plays, posters, and more. A similar movement, "Save Narmada Yatra," opposed the construction of the Narmada and Saradar Sarovar Dam in Central India.

B. Small-Scale Newspapers

There has always been a need for an alternative voice in India, but until recently, the only real options were underground publications and journals published by radical organisations. A non-governmental organisation (NGO) located in Delhi called "Nirantar" launched a newspaper called "Khabar Lahariya" in 2002. It is an eight-page weekly newspaper published in the Indian states of Uttar Pradesh and Bihar and is written in several different regional languages. Topics covered include the operation of local governments and panchayats, educational and healthcare systems, and social and civic issues. Women from underrepresented communities are taught the skills necessary to contribute to the newspaper in various editorial capacities, including reporting, editing, design, illustration, and photography. They even sell and distribute newspapers in corner stores, tea stands, and community centres. "It has 40 members, Khabar Lahariya team distributes 6,000 copies in 600 villages of Uttar Pradesh and Bihar to a readership of 80,000 every week," claims the website khabarlahariya.org. Khabar Lahariya was originally published solely in Bundeli, but it has now expanded into publishing in Bhojpuri, Awadhi, Hindustani, and Bajjika".

C. Community Radio

Radio stations from All India Radio may be heard nationwide in urban and rural areas. The network is a public service broadcaster; hence it features local and human-interest shows. While commercial radio is focused on news and information, private radio only focuses on enjoyment. As the name implies, community radio stations (CRS) fill the void left by public and commercial radio and are a powerful new form of mass communication. CRSs serve a 5-10 km radius, intending to serve the public good by expanding access to information. Universities, NGOs, freelance journalists, and media organisations are the main CRS owners and operators (not part of any big corporate). They air programs relevant to locals and highlight social concerns that commercial channels sometimes gloss over. It is the goal of community radio to foster community growth by meeting the informational requirements of its listeners. "The programming of community radio should be of direct importance to the community and attention should be on topics about education, health, environment, agriculture, and rural and community development," as stated in the Community Radio Guidelines 2006. Also, fifty per cent of the material must be contributed by community members using their native tongue. For instance, studio-based debates and discussions, call-in shows, conventional music marketing, etc. People-generated material is valuable since it reflects audience sentiment and may be used to create a more in-depth show. Although the material created in all the media mentioned above channels is sometimes crude, it captures the spirit of the alternative media. Therefore, community radio may be thought of as people's media since it is a platform that serves the people and is created by and for the people. Another community radio station (CRS) serving the underserved, migratory workers from neighbouring states and rural residents of the business centre of Gurgaon is Gurgaon ki Awaaz Samudayik Radio Station. Popular languages and dialects like Hindi, Haryanvi, and Bhojpuri are used since they are spoken by the peasants who create the material. Keeping in mind

the preferences and comprehension of the area's marginalised groups, radio stations broadcast various musical programs, from musicals to discussions and debates, in chaupal style [9].

D. Citizen Journalism

Private companies and corporations have become dominant in India's broadcasting industry. The proliferation of 24–hour news channels in recent decades have reduced government oversight, yet these commercial broadcasters sometimes silence dissenting viewpoints rather than giving them a platform. Dasu Krishnamoorthy, a former journalist and scholar, emphasised the failure of mainstream media to fulfil the job of mass communication and enlighten society in a 2003 article titled "Defining alternative media in the Indian context." He said that the government and traditional media do not give much weight to public opinion and that alternative outlets should instead focus on preparing their staff to take on traditional media. Videos on citizen journalism that air on the private national news channel may also be categorised. Citizen Journalist is a CNN-IBN show where viewers may submit videos recorded about social issues, human rights violations, etc., and the network will consider airing them if they are deemed appropriate. When folks see something, it usually happens in their immediate area, but it may also have broader societal implications. Many mainstream newspapers now include a citizen journalism section; together, these efforts constitute what can be called "alternative media" [10].

IV. NEW MEDIA AND ALTERNATIVE MEDIA

The lines between traditional media, user-generated content, and independent media have blurred thanks to the rise of New Media. New media may be categorised as either mass or personal media; however, some who support alternative media see it as a significant alternative medium since it gives individuals a platform to express themselves. The advent of social media, also known as Web 2.0 and including those websites that allow users to produce and share content, has given rise to a new wave of alternative media by giving a voice to previously marginalised groups. Blogs, social networking sites, micro-blogging sites, etc., have made it possible for anybody to express their dissatisfaction with the current system, not only members of radical groups or student unions. Regarding reaching the people and generating asymmetrical engagement, alternative media relies heavily on the many mainstream media formats. However, unlike mainstream media, alternative media information is not presented in a polished manner. One probably already know that trained experts manage the mainstream media while amateurs staff the alternative media. So, the substance is unprofessional, and the presentation may not be great either. One of the major criticisms levelled against alternative media is that it is too independent to be controlled by any one ideology or set of influential interests. Instead of catering to the interests of corporations and special interest groups, alternative media outlets seek to enlighten and educate the public. It stands in opposition to the mainstream narratives spread by mainstream media. In addition to its less-than-professional content, alternative media also benefits from smaller budgets and cheaper operating expenses [10].

A. Independent News Websites

Over the last decade, New Media's popularity as an alternative media outlet has skyrocketed. This is the cheap initial investment needed to begin a venture in this medium. Doing so has made it easier for young businesspeople to launch their own media companies. In addition, it is the hub of all media since it combines the interactivity of print (text and images), radio (sound), and television (visuals). With their instantaneous character, new media have diluted the delayed feedback aspect of traditional mass media. In response to the establishment of media, several independent journalists/organizations have launched their websites. Goodnewsindia.com, Infochangendia.org, and Lokmanch, a Hindi-language website, Gaon Connection, PARI, IndiaSpend, Village Square, Video Volunteers, are few examples of critical and analytical alternative media outlets in India. Khabar Lahriya has also created its website, accessible at http://khabarlahriya.org, where they publish accompanying multimedia, including videos, audio, and images, to its written news stories. Founded in 2006, Merinews.com has become India's most popular citizen-based news service. Its editors have begun publishing a city-centric tabloid and are doing more reviews of citizen submissions [11].

B. Social Media as Alternative Media

People may now have their voices heard in modern debates and conversations because of the widespread distribution of social media. Twitter has become as reliable as television news for some people as their primary

source for immediate updates. They see Twitter as a platform for voices that would be marginalised by more established news outlets to be heard. The mainstream media would have hidden many significant and controversial stories half a decade ago. However, with the power of social media, it is increasingly difficult to hide knowledge. By publishing content such as blog posts, tweets, status updates, articles, etc., social media enables the average person to take on the producer role. The large initial investment required to launch a newspaper or television network made such ventures seem unrealistic in the past. However, the emergence of new forms of media—especially social media—has paved the way for many young journalists to forge successful careers as business owners. Exactly how many individuals use social media? Is it not still primarily focused on the metropolitan elite? How often does a problem that mostly affects rural areas become the topic of greatest debate in cyberspace? Is it now used for advertising? Indeed, all these concerns are valid, and there are instances when social media serves more as a promotional tool than a forum for dialogue and debate. Whether or not any material posted on social networking networks can be trusted has been called into question. There might be catastrophic repercussions from hastily posted data. If you believe anything, you need to double-examine the facts. Producing anything for social media requires high social responsibility and sensitivity, even if just one person is involved. [12]

V. FUTURE OF ALTERNATIVE MEDIA

Users, journalists, and media outlets are essential to developing alternative media. There has to be an investigation into whether the purpose of journalism is to serve the public interest via its articles or the financial interests of corporations. Journalists need to be aware of the goals and functions of the media and place special emphasis on problems of social progress and individual liberties. For alternative media to thrive, the next generation of communication tools is just as important as the responsibility of journalists today. In only ten years, new forms of media have revolutionised human interaction. No longer are journalists the only ones with a vital weapon to express their opposition; now, the general public does, too. As was said in the introduction, the websites mentioned above, blogs, micro-blogs, and social networking sites are all extremely inexpensive mediums made possible by the advent of new media. What happens to alternative media in the future depends on how internet users put new technologies to use. People are utilising the Internet in unprecedented ways thanks to portable devices like iPads and smartphones, but so far, it has mostly been the urban elite who have had access to it; thus, there is a pressing need to reach out to rural communities as well. CG Net Swara, established in 2008, is one such organisation that effectively uses technology to become a significant non-mainstream communication channel. Swara means "voice" in Sanskrit, while CG Net refers to the Central Gondwana Network. "it is a voice-based platform, freely accessible by mobile phone that enables anybody to report and listen to tales of local interest," the website proclaims. Journalists oversee the reported content and then make it accessible for replay online and by phone. The media mostly ignore the tribal population in the Central Gondwana area, but this is something that CG Net Swara aims to change. There was a story about this on livemint.com. "The portal consists of four parts: callers, who give missed calls to the portal phone number to report or listen to news; a server that returns the call and collects and stories the audio bytes; moderators who publish the byte on the website; and website visitors, who can be journalists from traditional media outlets looking to cover a story, NGOs looking to extend support, urban activists who follow reported stories, or anyone else interested in the portal's content." The grassroots effect of this alternative media is also clear: many caller complaints are addressed after being brought to the attention of the administration [13].

VI. RELATED WORK

The networks and off-device protocols executed by servers in data centres provide the devices we name "mobile phones" the capacity to offer a wide variety of feature sets and affordances. Applications that use the data channel's SMS, USSD, MMS, still images, video uploading and playing, and the Internet at large have been developed [14]. Their choices must balance accessibility, depth, and cost, which have been hotly disputed. The human voice is the most globally shared method of communication; nevertheless, every mobile device on the globe has a microphone and a speaker. Voice is not a perfect communication medium since it is linear and difficult to search, language is complex yet difficult to learn, and phone calls are expensive compared to other forms of communication. However, speech interfaces provide widespread availability, low cost, and simplicity in many situations [15, 16]. Therefore, it is heartening to witness a proliferation of voice apps that aim to solve

various issues in developing countries and places with limited means. Giving voicemail to the homeless in the United States [17]; providing impromptu group support for non-governmental organisations [18]; disseminating health information [19]; bringing web content to resource-constrained classroom settings [20], and facilitating the exchange of agricultural advice for [21] and by [22] farmers in India are all examples. There are voice projects that emphasise using voice menus, some that use speech recognition, and others that aim to record and save users' contributions. This is where Alternative media blooms. For populations where poor literacy or other circumstances limit access to the usage of other media, these latter systems may be the most intriguing for those looking to encourage participatory processes (from letters to the editor to blogging). The boundaries between mobile phones and community radio are beginning to blur as voice-based implementations make it possible for communities with limited resources to create text-based content to be active participants in the creation and dissemination of the "stories" they want to tell and the agendas they want to set [23]. However, most of these community platforms are still in the testing phase, and widespread implementation of systems for long-term usage in the field is uncommon. From what we can see, very few initiatives we examined communicate back to people through text or speech systems about the information they have acquired," OSI said in its evaluation of citizen media in 2010. The Budget Tracking Tool in Kenya and the African Elections Project are the only initiatives that enable individuals to do more than just submit information from their non-Internet-connected phones, joining CG Net Swara in this regard. [24] (p 35).

VII. CONCLUSION

Journalism's location in the globalised society of the twenty-first century leads us to the inevitable conclusion that how news and public opinion are produced and disseminated are undergoing profound changes. The Internet has revolutionized the reporting, editing, and dissemination of news. People used to only consume media, but today they're actively participating in the production of their own works. When it comes to mass communication, those who were formerly only receivers are increasingly becoming creators and transmitters. Smartphone penetration has increased, allowing news organizations to more easily harness the crowd's untapped journalistic potential. It used to take journalists a lot of effort and time to find out how the general people felt about a topic or subject, but today all it takes is a click. One of the most valuable assets for media outlets around the world is Big Data, which includes a wide variety of data types such as text (from traditional news articles and social media platforms), imagery (including Instagram, professional photographs, satellite imagery, and increasingly aerial imagery captured by UAVs), and video (from television networks, YouTube, Vimeo, and other channels).

Brain McNair [25] argues that the effect of new media and technology has led to the fragmentation of the dominant paradigm of journalism in the twentieth century, exemplified by professional journalists generating objective and accurate information. McNair is certain that journalism will survive in its current climate since it is essential on many different social, political, and cultural dimensions, contrary to the predictions of many other writers. There is hope for the industry of journalism. As it has done so, it will change and develop from the quaint formats of the first newsprint to the slick presentation of today's evening newscast. However, when things change, I wonder whether it will be for the better or worse. ([26], p. 21). Citizen journalism and other types of online reporting have also evolved in recent years. To a certain extent, everyone with access to the Internet is also free to write and discuss their thoughts, which may offer a certain (critical) alternative to the dominating mainstream media. Many people in their 20s and 30s, as well as those in their 40s and 50s, rely on citizen journalism as their primary and constant source of online news.

The media landscape is changing before our eyes, and these trends can be seen in every sector of the news industry worldwide. Economic statistics related to the press market on a global scale, most notably newspaper readership and advertising revenues, imply that the crisis scenarios, according to which the conventional press would cease to exist totally, are likely exaggerated. However, we must embrace the reality that newspapers will never again be the primary news source. To keep up with the ever-changing tastes of your audience, one need to do more than analyse the technical and technological changes in news production. Young people, in particular, seem to have abandoned the long-existing means of mass communication in favour of the small screens of their mobile phones or tablets, with virtually all of them watching or following digital information sources and accounts of the mainstream (and often also alternative or citizen journalism) media producers available via social networks. The value of virtual interaction is increasing rapidly. "Predictions of the future of communication trends based on the European Communication Monitor 2016 indicate that mobile communication will overtake social media and social networks as the primary means of addressing an audience

in 2019". This will be followed by online communication via websites, e-mail, intranets, and press and media relations with online newspapers and magazines ([27], p. 61). The primary tool of recording and sending information to others and post it on social media is through mobile phones largely which is giving rise to new term that is Mobile Journalism. It is safe to say that technology and new media is the change agent and creating a new norm of journalism as alternative media. Alternative media also adds to the diversity of news sources, where the complex idea of diversity is the media's democratic function and the normative ramifications of alternative media across the board. ([28], p. 1)

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Early Warning System In Business, Finance, And Economics: Bibliometric And Topic Analysis

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Abstract

`Society is adversely affected due to the different economic crises such as financial crises, banking as well as a currency crisis. The Economy of the country gets negatively affected due to the crisis and it leads to a high economic crisis. There is a need to develop an early warning system that helps in preventing economic as well as business crises. Early warning systems forecast the unwanted events that lead to the economic and business crisis. Crises can be detected by the early warning system before the damage and rescue the probability of a crisis. In this article early warning system will be a bibliometric analysis, the development of the early warning system, as well as their use in the economic and financial sector, will be also discussed in the article. The role of early warning systems in predicting unwanted and negative events in business, finance, and economic areas has been discussed. The challenge of economic and social development can be solved by the development of an early warning system that has been discussed in the article.

Introduction

Early warning systems are applied in the organization to forecast the unwanted events that lead to financial and business crises. It acts as the most important element in the organization to prevent negative occurrences (Klopotan, Zoroja & Mesko, 2018). The indicators of business and financial fields are the value of exports foreign exchange reserves, the value of imports, the ratio of domestic credit to non-gross domestic product, and industrial production. The main purpose of the early warning system is to predict the negative crisis happening in business, banking, and finance. Both quantitative and qualitative data can be used by the early warning system. All the aspects of the emergency are covered by the early warning systems (Kumar, 2022). Risk awareness monitoring services for providing early warning response capability and communication are the components of the early warning system. In the earlier research, an early warning system was used for disaster management (Yang, Hsu & Kao, 2020).

A warning system has been used for earthquakes, floods, tornados, tsunamis, and land fires. Different early warning systems are required by the different risks. To better control, warm and safe lives different models and technologies are used (Lin, 2021). Multiple logic models, regression, and combining prediction models are the various models on which the early warning system is based (Nayak et al., 2022).

The qualitative methodology has been used for the management of early warning systems. At the end of the 19th century, an early warning system was started to use in the field of economics and finances. To improve the organizational changes most of the companies are using early warning systems, As per Li and Huang (2022), early warning systems also help the company to avoid undesirable events as well as

for future development. The main venue for early warning systems is the investment in human capital as well as information and communication technology (Kuamr, 2022). Operation weaknesses of the company are reduced by using the early warning system and it helps to provide advanced system and structure to the organization. In the present more and more innovative technologies are used by companies (Kakti et al., 2021). Innovative technologies help the company to integrate knowledge, teamwork as well as capital (Feng et al., 2021). An early warning system allows the company to detect problematic events in the areas of finance as well as managerial areas such as public relations, physical media, and project management.

Business and economic crises harm society and in the last few decades, the concern regarding the business crisis has increased. The development and usage of early warning systems have increased in the last decades due to the negative impact of the economic crisis in business and society. In this study we will abalone the biometric trends of the early warning system in the business and finance area (Feng et al., 2021).

Materials and methods

Journal articles from the database of SCI (Science Citation Index) has, Arts and Humanities and Social science citation Indexes have been used in the article to malaise the trends of bibliometric analysis of early warning systems in the business and organization ()Monterio et al., 2022). At first, the keywords early warning system were used to search, In this study, secondary data collection methods have been used to collect the data therefore only peer review has been used in this study. Bibliometric or Statistical data miner has been used in this article as a method to conduct the research (Feng et al., 2021). To enrich our research bibliometric analysis was applied by exploring the palace, time, and context. Statistical data miner was used for conducting topic mining (Gupta et al., 2021). According to the type of crisis, retrieval papers have been analyzed. Macroeconomic, as well as stock exchange crises, have been identified by quantitative analysis.

Result and discussion

The geographical area of the country has been examined by the bibliometric analysis on the early warning system. In the given table 1 the result of the geographic area for every article has been given (Braslina et al., 2021).

Countries/ territories	Country/ number of pages
Europe	Canada (2), United States (30), Ukraine (20), Austria (2), Greece (1)
North America	Canada (1), United States (30)
Aisa	South Korea (2), Taiwan (3), Japan (1), India (1), Philippines (1). Kazakhstan (1)
Australia and Oceania	Australia (1)
South America	Paraguay (1), Bolivia (10)

Table 1: Geographical area of the authors of the papers
(Source: Klopotan, Zoroja & Mesko, 2018, p.10)

The institutions of the authors are presented in table 2.

Organizations enhanced	Number of papers
International Monetary Fund	3
European Central Bank	4
Federal Reserve Bank Cleveland	5
University of Regensburg	6

Table 2: Most frequent institutions of the authors of the paper
(Source: Klopotan, Zoroja & Mesko, 2018, p.10)
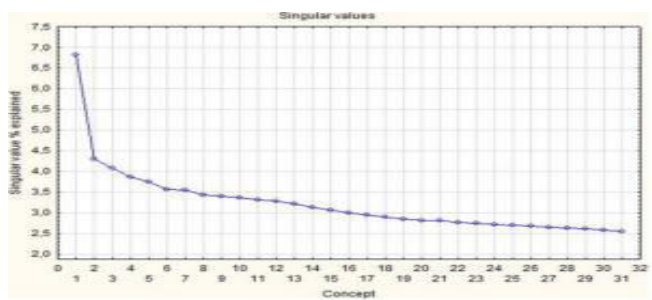
Figure 1: Screen plot of topics extracted with singular value decomposition
(Source: Klopotan, Zoroja & Mesko, 2018, p.10)

The framework has been recommended by Fu (2022) that help in creating early warning systems for preventing the banking crisis. The unwanted issues in the banks are dealt with by the early warning system. Two issues have been dealt with by the Ndary and Soeisetio (2021), related to the banking crisis (Zhu, 2021). Macroeconomic problems as well as more attention to the microeconomic topics are the two issues that are dealt with by the early warning systems. Monetary policy in the banking crisis has been investigated. Researchers have tried to predict insolvency in the insurance sector (McCutcheon et al., 2019).

Bankruptcy predictions have been developed by Hong et al., 2018 that help is used in the early warning system. Researchers have combined different principal components to analyze the portfolio impairment of the banking system. Three years later the researchers have made research on the development and usage of early warning systems in the banking system. After2010, many researchers have researched the early warning systems in the finance and business sector (Pitera, 2021).

Conclusion

Early warning systems play an important role in the organization to rescue the losses before any kind of unwanted event occurs. The early warning system predicts future unwanted events and minimizes the loss as they belong to the content of risk management. In this study bibliometric trends of early warning systems in business and finance crises have been discussed. This article has helped to bring more

knowledge regarding the development and usage of early development systems in various fields including the economic and financial sector. The early warning system is a new technology that provides low-cost predictions to the organization regarding unwanted events.

The organization needs to gain a competitive advantage before gathering knowledge regarding early warning systems. Through the study, we have got a road map that helps in understanding the early warning system. The findings of the study help the company to understand the development of early warning systems. Only a few databases have been used in this study; however, in the future, more databases can be used for bibliometric analysis of the early warning system. In future studies, a deeper investigation will be done regarding the topic.

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AN IMAGE RETRIVAL ANALYSIS BY USING A PATTERN SIMILARITY SCHEME

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Abstract—In this paper, we propose a novel scheme for efficient content-based medical image retrieval, formalized according to the PAtterns for Next generation DAtabase systems (PANDA) framework for pattern representation and management. The proposed scheme involves block-based low-level feature extraction from images followed by the clustering of the feature space to form higherlevel, semantically meaningful patterns. The clustering of the feature space is realized by an expectation–maximization algorithm that uses an iterative approach to automatically determine the number of clusters. Then, the 2-component property of PANDA is exploited: the similarity between two clusters is estimated as a function of the similarity of both their structures and the measure components. Experiments were performed on a large set of reference radiographic images, using different kinds of features to encode the low-level image content. Through this experimentation, it is shown that the proposed scheme can be efficiently and effectively applied for medical image retrieval from large databases, providing unsupervised semantic interpretation of the results, which can be further extended by knowledge representation methodologies. Forum (CLEF). Since 2004, a medical image retrieval task has been added. Goal is to create databases of a realistic and useful size and also query topics that are based on real{world needs in the medical domain but still correspond to the limited capabilities of purely visual retrieval at the moment. Goal is to direct the research onto real applications and towards real clinical problems to give researchers who are not directly linked to medical facilities a possibility to work on the interesting problem of medical image retrieval based on real data sets and problems. The missing link between computer science research departments and clinical routine is one of the biggest problems that becomes evident when reading much of the current literature on medical image retrieval. Most databases are extremely small, the treated problems often far from clinical reality, and there is no integration of the prototypes into a hospital infrastructure. Only few retrieval articles specifically mention problems related to the DICOM format (Digital Imaging and Communications in Medicine) and the sheer amount of data that needs to be treated in an image archive (> 30:000 images per day in the Geneva radiology).

1. INTRODUCTION

ONE of the primary tools used by physicians is the comparison of previous and current medical images associated with pathologic conditions. As the amount of pictorial information stored in both local and public medical databases is growing, efficient image indexing and retrieval becomes a necessity. During the last decade, the advances in information technology allowed the development of content-based image retrieval (CBIR) systems, capable of retrieving images based on their similarity with one or more query images. Indicative examples of such systems are QBIC [1], SIMPLicity [2], and FIRE [3]. It is interesting that more than 50 CBIR systems are surveyed in [4].

The benefits emanating from the application of content-based approaches to medical image retrieval range from clinical decision support to medical education and research [5]. These benefits have motivated researchers either to apply generalpurpose CBIR systems to medical images [3] or to develop dedicated ones explicitly oriented to specific medical domains. Specialized CBIR systems have been developed to support the retrieval of various kinds of medical images, including highresolution computed tomographic (HRCT) images [6], breast cancer biopsy slides [7], positron emission tomographic (PET) functional images [8], ultrasound images pathology images and radiographic images.

Common ground for most of the systems cited earlier is that image retrieval is based on similarity measures estimated directly from low-level image features. This approach is likely to result in the retrieval of images with significant perceived differences from the query image, since low-level features usually lack semantic interpretation. This has motivated researchers to focus on the utilization of higher-level semantic representations of image contents for content-based medical image retrieval. Recent approaches include semantic mapping via hybrid Bayesian networks semantic error-correcting output

codes (SECC) based on individual classifiers combination and a framework that uses machine learning and statistical similarity matching techniques with relevance feedback. However, these approaches involve supervised methodologies that require prior knowledge about the dataset and introduce constraints to the semantics required for the image retrieval task. Content{based visual information retrieval (CBVIR) or content{based image retrieval (CBIR) is an extremely active domain in the multimedia and computer vision _elds [1, 2, 3, 4]. An ever{increasing amount of multimedia data (images, video, music, ...) is produced and made available in digital form. Almost every modern computer user has most of its hard disk _lled with multimedia data (images, video clips, mp3 music, ...) but tools to manage these data well are scarce. Most web pages become increasingly mixed{media documents integrating images, animations, texts, etc. The medical _eld is no exception to this trend. There is an increasing amount and variety of visual data being produced for the diagnostic process and the role of images in the diagnostic process is increasing. Currently, these visual or multimedia data are mainly used for the treatment of a single patient, only. Much of the diagnostic process of medical doctors (MDs) is based on comparing a current case with experience from past cases. To support the memory concerning images, many medical doctors store interesting or typical cases with a textual description and the images on their hard disk or in a teaching _le such as myPACS1 or casimage 2 [5]. Having a larger source of images and descriptions available for all medical doctors can make this stored information and experience available to a larger audience, but the rising number of images requires good tools to not only store the data. Quick search and retrieval tools are needed for these growing databases to _nd relevant information quickly. Then of course, tools are necessary to anonymise the images as the use of images out of the pure diagnostic or treatment planning process is often not permitted, even within a single institution.

2. AXES OF RETRIEVAL EVALUATION

This section explains several of the axes that we regard as important for creating the tasks for ImageCLEF to satisfy various research directions but also to stick to our goal by creating a research environment to prepare medical image retrieval for the use in a real{world setting. Much of the outline and form of the ImageCLEF evaluation is based on the experiences of the TREC workshops and will not be detailed in this article.

2.1 User– vs. system–centered evaluation

User{centered evaluation is evaluating how a user judges the results of an information retrieval system. This includes more than only technical aspects as the user judges what he receives as a result interactively, and a large number of factors together influence the user's judgement on the entire retrieval system. Query speed and ease of use and layout of the interface are extremely important (an example interface for visual queries can be seen in Figure 1). On the other hand, the evaluation can be subjective as several users might judge the same result in a different way. Even the same user might judge the same result differently at different times. User{centered evaluation is also relatively \expensive" as it does include the time of real system users and cannot be automated. Each new setting of parameters requires a new interaction circle with the users. System{centered evaluation is less costly as it can be automated and does not necessarily require user interaction. Normally, query topics are formulated in advance, and then system developers can tune their system and submit results that are subsequently evaluated against a ground truth, which is usually created after submission. This means that a large number of system variations can be evaluated with low cost but on the other hand only a part of the system parameters is taken into account, the technical parameters, and important parts such as query speed and the user interface are not analysed at all. Both TREC and CLEF run mainly system{centered tasks.

2.2 Visual vs. textual vs. mixed retrieval

One of the first questions regarding image retrieval is to choose whether a purely textual image retrieval based on available meta data is planned or whether visual data is to be used for the retrieval [1]. Based on the chosen application scenario, only one or the other is really possible. If only very limited meta data is available for retrieval and if many images do not contain any annotation, a keyword search will not be successful but a search with an image example can allow navigation in the database. If good meta data is available text allows to search for semantics and concepts which is usually what a user is looking for. Purely visual retrieval is currently limited to extremely simple concepts and a fairly limited number of concepts as well. On the other hand, visual content and textual context of the images are most often very complementary. Even if the query is only in one media, the other media can be used in a combined visual/textual approach to improve the final results.

2.3 Multilingual vs. monolingual retrieval

Most experience in information retrieval is de nitely available on monolingual and mostly on English retrieval. Still, in elds such as web search a large number of users existwho might want to use a query language other than English but still retrieve English documents. Most image collections are actually understandable without the text, so searching in a multilingual collection for images is also possible, even if the language can not be understood. In multi{lingual environment such as the European Union or Switzerland, multi{lingual information retrieval is indispensable.

2.4 Classification vs. Information retrieval

An often discussed topic is whether information retrieval is basically the same thing as classification or not. Often, we can see an information retrieval problem as a two{class problem with the class of relevant and the class of non{ relevant items maybe with a third class of partially relevant items, and without having any learning data. Still, in most cases, when we think about information retrieval, we have very large collections in mind on which we do not have have much information concerning the content, groups of images or documents, etc. Then, we would like to satisfy the information need of a user and nd documents that (s)he is interested in for a particular search. Through the use of frequency{based feature weights some information on the distributions of words or features within the database are extracted in an automated fashion. Judgement of the entire collection for relevance is often impossible due to the large size, so incomplete relevance sets are often based on pooling methods.
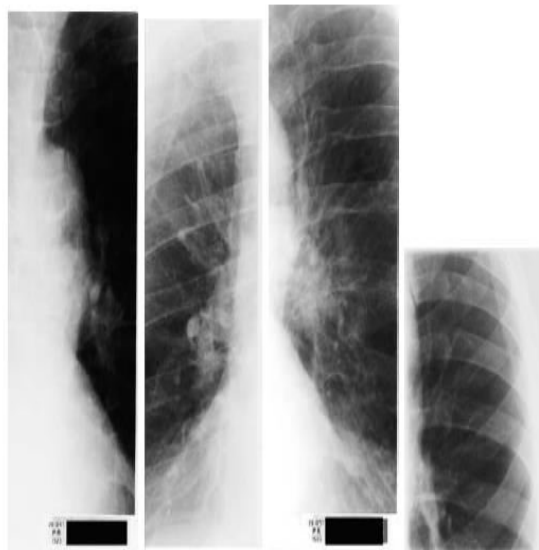
Figure 1: Images representing one of the smallest classes in the IRMA task of ImageCLEF 2005. Most often for classication, information on class membership of the entire collection is known and well defend, which allows the use of machine learning techniques and system optimisations. An example for images belonging to the same classes is Figure 1 taken from ImageCLEF 2005. To evaluate algorithms there are several methods that are commonly used based on the available training data. Leaving{

one{out means that algorithm training is done on all images but the image under test, making available a maximum of test data. The process is repeated such that all images serve once as tests, and the mean error rate over all experiments can be determined. Classification error rate can be used as performance measure for these completely annotated databases .

2.5 Object recognition vs. visual appearance

These two fields are both very active in the domain of computer vision for a variety of application, and both can be very beneficial for image retrieval. Whereas object recognition tries to identify a generally limited number of concepts or objects in an image and label them by techniques such as template matching.

Similarity search by visual appearance in contrast to this takes into account either global features representing the

entire image or features representing the layout of an image such as a smaller representation of the image itself. Segmentation can also give access to visual appearance search based on regions.

3. RESOURCES MADE AVAILABLE

One of the biggest problems when working on medical image analysis is the access to data. As all images are patient data, we need to be careful with them to respect their privacy and everything used for research needs to be anonymised carefully. The advent of the digital radiology and cheap storage capacities have made the exchange and

sharing of images much easier than in the film{based days. Teaching _les are created in many medical institutions and quite a few of these are made available publicly. One of the larger initiatives to publish images on the Internet is the MIRC12 (Medical Image Resource Center) project. In this project, a common access method to teaching fles is created based on the XML standard. Software for clients and servers is made available free of charge and cross{platform in the form of a Java program. Currently, more than 15 databases are accessible in this format to be searched by keywords via the MIRC web page.

Show me all x–ray images showing fractures.
Zeige mir Röntgenbilder mit Brüchen.
Montres–moi des radiographies avec des fractures.

Figure 2: A query that requires more than visual retrieval but visual features can deliver some hints to good results as well.

Still, often images are only stored on local hard disks and much knowledge could be extracted from these images if they were available. One of the databases that is accessible via MIRC is the casimage dataset that contains almost 9.000 images of 2.000 cases and that was used in the ImageCLEFmed 2004 competition [5]. It is also part of the 2005 collection. Images present in the data set include mostly the radiology department, but also photographs, powerpoint slides and illustrations. Cases are mainly in French, with around 20% being in English. We were also allowed to use the PEIR13 (Pathology

Education Instructional Resource) database using annotation from the HEAL14 project (Health Education Assets Library, mainly pathology images). This dataset contains over 33.000 images with English annotation, with the annotation being in XML per image and not per case as casimage. The nuclear medicine database of MIR, the Mallinkrodt Institute of Radiology15 was as well made available to us for ImageCLEF. This dataset contains over 2.000 images mainly from nuclear medicine with annotations per case and in English. Finally, the PathoPic16 collection (Pathology images) was included into our dataset. It contains 9.000 images with an extensive annotation per image in German. Part of the German annotation is translated into English, but it is still incomplete. This means, that a total of more than 50.000 images was made available with annotations in three different languages. Two collections have case{based annotations whereas two collections have image image{based annotations. Only through the access to the data by the copyright holders, we were able to distribute these images to the participating research groups. The automatic annotation task was organised by the IRMA group and based on their datasets. This database is an-notated according to the four{axes IRMA code. To simplify the task in the first year of existence, a subset of 57 classes was chosen that all have at least 5 images in the class. The database contains a total of 10.000 images. 9.000 images representing the 57 classes were given out with class labels as training data. The remaining 1.000 images were given to participants without a class label for classification. The IRMA code in English and German was also made available to the participants.

4. APPLICATION OF THE AXES
4.3.1 User vs. system–centered
ImageCLEF has an interactive (user{centered, non{medical) task since 2004, but participation is still fairly low containing s2{5 submissions, mostly due to the high cost of user involvement and the lack of experience in this domain. The task measures how many steps a user needs to find several images by keyword search and using relevance feedback. Still, most of the tasks are clearly system-centered, and all the medical tasks currently are.

4.3.2 Textual vs. visual vs. mixed
ImageCLEF covers all three fields but has a main focus on mixed retrieval as this is a field where still a lot of research is needed and much less experience is currently available. To ease such a combination, visual retrieval results were made available and in the next year it is planned to make also textual retrieval results available to all topics for participants mainly

working in one of the two fields. In 2004, the medical task had an image as query, only, as shown in Figure 3, whereas the ad hoc query task was a text accompanied by a single image. In 2005, a purely visual medical image annotation task was added (IRMA task). On the other hand, the medical retrieval task contains one or several images plus text in three languages (English, French, German) and has thus a small visual component. Several topics are expected to be solvable with a visual system such as the example in Figure 4, whereas other topics are more semantic and text processing appears to be necessary. This focus towards more semantic queries was based on critics in 2004 with the goal to have more realistic topics that are useful in a clinical setting. The 2005 topics are based on a real user survey among medical professionals.

4.3.3 Multilingual vs. monolingual

The medical task in 2005 models the scenario of a collection in several languages, currently English, French and German. This is also a fairly common and realistic scenario as medical doctors often annotate their cases in their mother tongue, whereas they might understand enough in another language as well to use the images of a case. Thus, for the medical retrieval task 2005, query topics were made available in the same three languages as the collection, and queries also contain one or several query images (Figure 4). Techniques for multilingual retrieval include the translation of the queries to a unique language, translations of the documents or the extraction of concepts in multilingual ontologies such as MeSH (Medical Subject Headings).

4.3.4 Classification vs. information retrieval

In the context of ImageCLEF, the classification task is actually called automatic annotation task, which is a very similar problem because the classes actually correspond to a text that can be added to the image collection. The IRMA code [45] to which the classes correspond actually exists in several languages, so such a classification and annotation can further{on be used for multilingual retrieval as well. We distribute a learning set of images and then an evaluation set that the evaluation is performed on, so participants have no idea about class memberships of the images to be categorized but can use the entire training data for system optimisation. The main retrieval task is a typical information retrieval task with 25 query topics that correspond to an information need of a user from a very large data set. The relevance judgements are done on the first N = 40 images of all system submissions so results stay comparable even if relevance is not judged on the entire dataset. As training data, only the topics from 2004 were made

available that were not really corresponding to the 2005 topics and underline the character of an information retrieval task.

Figure 3: An example query from the 2004 medical task, with the goal to retrieve all images of the same anatomic region, viewing angle and modality. Here, all lung CTs independent of the pathology are expected as result.
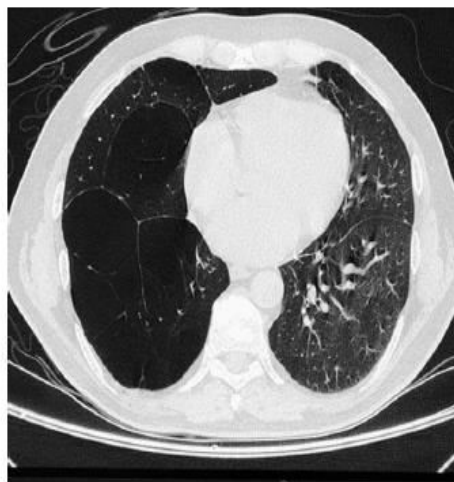
Figure 4: An example of a query that is solvable visually, using image and text as query. Still, the use of the annotation can augment the retrieval quality. The query text is presented in three languages.

4.3.5 Object recognition vs. visual appearance

In ImageCLEF 2005, both of these techniques have very useful applications and can well improve retrieval quality. A typical example for an object recognition topic can be seen in Figure 7, where all images showing faces are wanted as a response. For

several other queries, object recognition can be useful through very specific detectors but in general the variability of medical images in our database and the variability of query topics is extremely large and constructing one detector per topic is tedious. Thus, for most of the topics, query by visual appearance can deliver overall acceptable results in addition and as complement to the textual queries, although query by visual appearance is much less specific. Many of the queries are very hard for object recognition as well as for search by visual appearance, which makes the use of text important to complement the two. Whereas object recognition can be important if almost no annotation is available to extract semantics, the visual appearance is important where textual information is available. This can for example be used to rank images within a group of semantically related images, such as ranking all images with a text containing the word emphysema based on the similarity with a lung CT.

CONCLUSION

We presented a novel scheme for efficient content-based medical image retrieval. This scheme utilizes rich-in-semantics *pattern* representations of medical images, defined in the context of PANDA, a framework for representing and handling data mining results. The theoretical contributions of this paper are validated by comprehensive experimentation on the IRMA reference collection of radiographic images. The results advocate both its efficiency and effectiveness in comparison with state of the art.

Future perspectives of this paper include: 1) systematic evaluation of the proposed scheme for the retrieval of various kinds of medical images, such as endoscopic [29] and ultrasound images [43] according to their pathology; 2) the enhancement of the retrieval performance by using image indexing techniques based on specialized data structures; and 3) the integration of the proposed scheme with ontology-based information extraction and data mining techniques for the retrieval of medical images using heterogeneous data sources. By storing the semantically rich patterns along with low-level features in a unified way, according to the PANDA framework, will enable the extension of the CBIR methodologies with knowledge representation techniques for semantic processing and analysis.

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MULTIDISCIPLINARY RESEARCH & REVIEWS**

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WILLIAM SHAKESPEARE'S 'HAMLET': A SAGA OF TRAGEDY

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Keyword	*Abstract*
Hamlet, Shakespeare, Shakespearean tragedy, Poetics, Aristotle, Ancient Greek Tragedy, Revenge Tragedy, Tragedy of Thought	*The Tragedy of Hamlet, Prince of Denmark*, widely known as *Hamlet* by Shakespeare, is popular for its tragic elements as well as its themes of revenge and internal conflict of the protagonist that has created a story worthy of applause. In this paper, a thorough analysis of Shakespeare's *Hamlet* as a tragedy is presented. The motivation for the study was to analyse the different elements present in the play that establishes it as a unique tragedy through the amalgamation of diverse elements of the ancient and the modern. Thus, the true nature of it as a tragedy can be manifold which is considered the research problem in this paper. An empirical study design is adopted for the article, using Formalism as the primary critical theory to analyse each part of the text and unearth the elements of tragedy- both in the ancient Greek and modern Shakespearean sense. The results of the paper indicate that *Hamlet* is a unique synthesis of the ancient notions of tragedy and a modern tragic hero with internal conflicts and self-doubt as well as a revenge tragedy by virtue of its primary theme. It is concluded that *Hamlet* is rooted in ancient Greek principles in terms of plot and dramatic devices yet the theme makes it a revenge tragedy and its modified character sketch establishes it as a tragedy of thought.

Introduction

Consideration of a play distinctly as a tragedy is traced back to the ancient Aristotelian times, where the distinction between an epic and tragedy first contributed to developing a definition of tragedy, used by scholars even today. The definition of tragedy found in his is *Poetics,* which considers the primary characteristic as "an imitation of an action that is spiderman", followed by the basic tenets that tragedy shares with an epic, namely, the grandeur of language, completeness and magnitude. However, unlike an epic, it is acted rather than narrated. The final clause by Aristotle is the rise of pity and fear among the audience, leading to the catharsis of such feelings (Kelly, 2). Thus, in this paper, Shakespeare's famous play, *Hamlet*, is analysed as a tragedy, to indicate what the core characteristics of the ancient Aristotelian definitions of tragedy imply to the play.

The Tragedy of Hamlet, Prince of Denmark, widely known as *Hamlet* by Shakespeare, was written between 1599-1601 and performed first in 1602. It is also considered the longest play by Shakjepeasre, consisting of around 30,000 words, which gained popularity during the early 17th century by its revengeful plot, appearances of ghosts, insanity and melancholy. The play's title in itself holds the word *tragedy*, however, in Shakespeare's writing, certain characteristics of the ancient dramatic unities mentioned by Aristotle are not observed completely. Furthermore, the essence of tragedy is transformed by the playwright to portray the inner

turmoils of the protagonist more intricately than describing the outer grandeur of a Prince. In essence, this play is often categorised as a revenge tragedy, constituting a modified amalgamation between the ancient tragedy and the modernised revenge tragedy, presented by an author, equipped with tremendous creativity.

The definition of tragedy has changed with time, despite the core characteristics of the Aristotelian definition being the same or similar. The play can be considered as a Tragedy of Thought-a representation of inaction-making it a Tragedy of Action (Verity, 35). Thus, the play provides a wide spectrum of analysis where the true nature of it as a tragedy can be manifold which is considered the research problem in this paper.

To address the problem of the research , the researcher considers three elements in hypothesis such as *Hamlet*   is a synthesis of the Aristotelian and Shakespearean sentiment of a tragic play; also a revenge tragedy which reflects   the tragedy of thought and action.

The tragedy in *Hamlet,* is the tragedy of the protagonist himself, as we use the term 'tragedy' in the modern literary sense of melancholy, despair and misfortune. The play is essentially the portrayal of a prince (a protagonist of high birth and great magnitude) dealing with internal conflicts, the pretence of madness and plotting for revenge after being informed of the truth of his father's murder by his uncle by the ghost of his father himself. Such a summary fails to illustrate the expertise showcased by the playwright in describing the internal deterioration of a Prince, confused and maddened by the burden of revenge.

The long-elaborated plot for revenge which ends in the death of Hamlet, Laertes, Claudius and Gertrude, compels the audience to internalise feelings of pity and fear, for a protagonist whose long-awaited vengeance is ended in misery. This brings about the question of life and death and how both are uncertain and trivial in the face of fate. *Hamlet* is described as one of a kind- "a tragedy of thought inspired by the continual and never-satisfied meditation on human destiny and the dark perplexity of the events of this world, and calculated to call forth the very same meditation in the minds of spectators." (Rolfe, 16). The initiation of internal conflict within Hamlet is a reflection of a tragic fate that destroyed the innocence of a young prince and replaced it with a dreadful responsibility to seek revenge within his own royal family.

The well-constructed principles of a tragic play are present in the play yet the representation of horror and evil in the play indicates the characteristics of a revenge tragedy, made famous in the 17th century, to startle the audience with the deepest, darkest desires of human beings enacted on the stage. Hamlet rejects Claudius as a king, however, Shakespeare ensures that his opinion is not substantiated by others in the play, portraying a strong stubbornness to accept his uncle, fuelling his act of revenge (Dunne,106). The characteristics of a revenge tragedy, being present in the play, since the first appearance of the late King's ghost, are amplified by Hamlet's plot to unearth the truth by producing a play to provoke his uncle. Therefore, the tragedy of Hamlet in the play is a tragedy of revenge as the plot for vengeance is accomplished by the death of the innocent and the sinners. On the other hand, it does not carry the structure of an ancient Greek play, by observing the unity of time, place or action either. However, it is reflective of a tragic story of high magnitude or seriousness, devising the fall of a great man from happiness to despair.

The title of a tragic hero is allowed to Hamlet as he embodies all the characteristics that are essential and rather required according to the ancient Greek tradition. Hamlet, the prince of Denmark, is a person of high rank, operating against his positional law and regulations yet being met with a tragic end ordained by the inescapable fate. He experiences revelation and reversal of fate- experiencing the worst of events due to his indecisiveness. In 1998, penguin edition of Shakespear's **Hamlet,** it is stated that a tragic hero stands responsible for settling in motion the events that ultimately lead to his destruction, as seen in King Lear and Macbeth (36). Hamlet stands responsible for initiating the revenge plot, being influenced by the ghost of his murdered father that ultimately leads to his destruction and death as well.

On the other hand, the intersection of ancient and modern sentiment is prominent in the character of Hamlet as a tragic hero. Hamlet is described as the most modern of Shakespearean heroes, immersed in doubt and self-questioning, similar to the 20th-century sentiments while the most primitive notion of blood revenge constitutes the central plot of the play (Cantor, 9). Compared to the ancient tragic heroes such as Achilles of *Iliad,* Hamlet seems to be more introspective, doubtful and inquisitive when plotting for revenge as opposed to a courageous and bold representation of a tragic hero. Hence, Hamlet as a tragic hero set a new trend for the genre of tragedy, which can also be indicated as the first traces of a modern hero, aware of his internal turbulences.

A creative synthesis is seen in Hamlet as a tragic hero whose tragic fall represents the futility of life and death in a world where the selfish agendas of individuals dictate their actions. His pretence of madness may also be questioned as his mental deterioration/can be a sign of genuine madness as his lust for blood revenge grows as the play progresses. Thus, it is necessary to acknowledge Hamlet as a tragic hero bearing traces of modernism.

The study is designed as an empirical study based on secondary data collected from various books. The paper adopts a deductive and qualitative approach for data collection and analysis, leading to a comprehensive assessment of the topic. The deductive approach to the topic has benefited to construct evidence-based research for hypothesis formation and analytical discussions. On the other hand, the secondary data collected from various books were sampled using purposive sampling to ensure relevant information selection, analysis and presentation. The overall methodological structure has contributed largely to the establishment of a study capable of addressing the intricate literary questions of tragedy in the paper.

The primary critical theory utilised in this paper is the formalist or formalism theory. Formalism helps in analysing the inherent characteristics of a text for proper analysis and interpretation as opposed to establishing relationships with external factors for a meaning generation. The formalist approach in this paper has contributed to an objective analysis of the content of the text itself based on which conclusions were drawn. Formalism resides in the development of critical ideas that are essentially based on the aesthetic and form of the text, which can be traced back to the tenets of cultural theory (Verena and Tredennick, 8). Using formalism as the critical theory of this paper facilitated a comprehensive analysis of each act and scene, demonstrating the key tragic elements present in the play to allow the title of a tragedy. On the other hand, focusing on the content of a literary work for establishing critical perspectives based on Formalism considers the position of a text as primary. Thus, considering the text as the primary source for critical evaluation, irrespective of other external factors, ensured that the play is a singular piece of work. Despite the limitation of formalism that essentially rejects the influence of any external element other than the text itself, it has aided the study to address the research problem adequately.

Hamlet is widely categorised as a tragedy and it rightly shows all the key characteristics that are required to consider it as such. Shakespeare exhibits his expertise by demonstrating a tragic hero, who is of high rank, faced with tremendous doubt and dilemma, stemming from the obligations to complete the blood revenge as instructed by the ghost of his father yet feeling confused regarding the manner of punishment that would benefit Claudius. For example, in Act III, Scene 3, Hamlet, despite having the chance to kill King Claudius as he is kneeling to pray, the internal monologue of Hamlet describes his indecisiveness, "Now might I do it pat, now he is praying; And now I'll do't. And so he goes to heaven; And so am I revenged. That would be scann'd: A villain kills my father; and for that, I, his sole son, do this same villain send to heaven." (Shakespeare, *Hamlet,* Act III, Sc 3).

The vulgarity and absurdity of the drama arouses shock and horror among the critics, being described as a hazardous piece of English drama with absurd English sentiments. A critical comment from Voltaire's "*Theatre Complet",* 1768, stated, "One would imagine the piece to be the work of a drunken savage. But amidst all these vulgar irregularities, which to this day found in *Hamlet,* by a bizarrerie still greater, some sublime passages worthy of the greatest genius. It seems as though nature had mingled in the brain of Shakespeare the greatest conceivable strength and grandeur with whatsoever witless vulgarity can devise that is lowest and most detestable" (edt Sprague, 13). The vulgarity witnessed in this play goes against the traditional Greek tragedies where the plot of revenge was presented against the backdrop of great conflicts, high in morale. The question of morality is raised in *Hamlet* as the protagonist devises plans that are shrewd and downright absurd. Similar to the later developed and popularised revenge tragedy, inspired by the Roman tragedies of Seneca and authored first by Thomas Kyd for the English stage to be performed c. 1587, the characters of *Hamlet* are driven by an intense inclination towards blood revenge. To right what has been wrong and to ensure justice is served to the killer of the late King, Hamlet was prepared to sacrifice his own sanity. The portrayal of Hamlet as a tragic hero is essentially due to his failure, where he "fails absolutely, fulfilling, indeed, the task laid on him, but fulfilling it at an appalling and needless cost. And this failure is tragic in the highest degree because he is one of whom the highest was hoped" (Verity, 42). Hamlet, maddened by the burden of revenge and the burning rage against his uncle, fails to comprehend the magnitude of his actions on others which leads to the death of his mother and Ophelia.

The tragedy of self is witnessed in the play as the protagonist is submerged in bitterness and self-depreciation, filling his mind with doubt and suspicion. The lack of trust and the drive to seek absolute revenge altered the persona which was introduced at the beginning of the play, which had some semblance of sanity and innocence in him. The constant internal conflict led to inaction for which *Hamlet* is also considered a Tragedy of Thought and Action. His internal monologues portray a deep, intellectual perspective that is clouded by confusion when faced with the responsibility of avenging his father's death. The events that led to the last Act of the play, when analysed as individual pieces, show a disjointed stream of thought, being appalled by the presence of evil in the world to internalising that evil as a means of revenge.

English audiences of the contemporary time enjoyed the enactment on stage, partly due to Shakespeare's popularity and partly due to the changing sentiment. Blood revenge, made illegal in the country, was still acknowledged as an honourable act by the English population. It can be assumed that the tragic elements of the drama were amplified to cater to the audience. As a tragic drama, carrying the characteristics of both modern and ancient dramatic and literary elements, a balanced synthesis can be seen where the character sketch is essentially modern yet the plot is rooted in ancient tragic sentiments. Conflicts of events and feelings portrayed in this drama direct the attention of the audience to the intent of revenge and its execution, at the centre of which the conflict between Claudius and Hamlet rests on shrewd planning instead of a face-to-face duel until the very end of the play.

Hamlet, devoting the majority of his time to plot the revenge by writing and presenting a thought-provoking play for the King and Queen, establishes his inability to act on time. Contrarily, his intent to verify the truth behind his father's messages secretly portrays his ability to evaluate an event properly. The contradictions seen in the character of Hamlet heighten the audience's perception of him. Thus, his fall to despair despite the fulfilment of his revenge plan acts as a cathartic moment for the audience. Goethe, regarding the play had connected in his 1795, *Wilhelm Meister,* "I sought for every indication of what the character of Hamlet was before the death of his father: I took note of all that this interesting youth had been, independently, of that sad event, independently of the subsequent terrible consequences, and I imagined what he might have been without them." (edt Sprague, 13). It can be stated that the portrayal of Hamlet, follows the primary patterns of a tragic hero, while also rousing interest among the audience to gain a glimpse of what he could have been without his tragic fall. His spirit was burdened by the death of his father and his inability to accept his uncle as the new king. Here his intuition is rather correct in assuming that something unusual had taken place. As he was proven right, his plot for blood revenge gains substantial ground yet as a true tragic hero, Shakespeare dooms him to inescapable suffering and death.

Conclusion

The paper analyses various elements of the text, indicating that ***Hamlet*** is a tragedy in multiple senses. The hypotheses presented in the paper are proven to be right as it shows a clear synthesis between the Aristotelian Greek tragedy and the modified and modernised tragedy of Shakespeare. Structurally, the unity of time, space and action are not observed in the play yet, it fulfils the need of a tragic hero, of a high rank, faced with events that ultimately lead to his great fall from happiness to despair. The character of Hamlet also rouses pity and fear as well as initial interest and admiration among the audience which leads to catharsis. On the other hand, it also bears prominent traces of a revenge tragedy, showing elements of horror, blood revenge and absurd vulgarity. The revenge plot, constituting the driving force of the plot and multiple tragic deaths at the end, gives it the status of revenge tragedy as well. Finally, it can be considered a tragedy of thought. The character of Hamlet is a character whose internal monologues show his indecisiveness, bitterness, doubt, self-deprecation and self-questioning. His constant conflicts and confusion, his mental capacity burdened with the burden of blood revenge and his inability to act instantly upon his resolutions make hold traces of an introspective modern hero. His thoughts essentially constitute a greater part of the play, indicating that Shakespeare had incorporated modern elements into an otherwise ancient tragic plot. Thus, it can be concluded that *Hamlet* is rooted in ancient Greek principles in terms of plot and dramatic devices yet the theme makes it a revenge tragedy and its modified character sketch establishes it as a tragedy of thought.

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Nanomaterials: Methods of Preparation, Properties and their Applications

AMARDEEP

MSC PHYSICS, CSIR NET /JRF

Keyword	*Abstract*

Introduction

The formation of nanostructures in the first meteorites marks the beginning of the history of nanomaterials, which dates back to the big bang. Later, many more nanostructures like skeletons and seashells appeared in nature. Nanoscale smoke materials were created by early humans using fire. The scientific history of nanomaterials, however, started considerably later. The colloidal gold nanoparticles created by Michael Faraday in 1857 are among the earliest scientific publications. Precipitated and fumed silica nanoparticles were being produced and offered as an alternative to ultrafine carbon black for rubber reinforcements in the USA and Germany by the early 1940s. Despite the fact that nanomaterials have a lengthy history, significant advances in nanoscience have just recently emerged. Researchers from various academic disciplines, including biology, medicine, chemistry, mechanics, and materials science, collaborate on research on nanoparticles. According to reports, a heterogeneous catalyst was the first nanoparticle-based technology to be created in the early nineteenth century, which was then followed by the usage of silver halide nanoparticles in photography. In Greek, the word "Nano" signifies dwarf. Normally, the prefix "nano" is used to denote a billionth part (10-9) of any unit, such as a second or metre. Approximately the length of a few atoms lined up shoulder to shoulder, a nanosecond is one billionth of a second, and a nanometre is one billionth of a metre. From the extremely small scale of nanometers, a world of objects is constructed. In modern physics, the atom is regarded as the tiniest particle and nanomaterials as the tiniest components of nature. In order to create nanostructured materials, different modulation dimensionalities can be used, such as zero (for example, atomic clusters, quantum dots, and cluster assemblies), one (for example, multilayers), two (for example, ultrafine-grained over layers or buried layers/nanotubes), and three dimensional materials (e.g. bulk materials). Oswald was the first to recognise that materials of this size and shape ought to exhibit unusual and intriguing features. However, inorganic compounds made of a few hundred or a few dozen atoms, known as clusters, have only attracted substantial attention in the recent two decades. Because nanoparticles displayed unique features that set them apart from similar macro-crystalline materials, interest has been expanded to a wide range of metals and semiconductors. It has been widely categorised and fully explained how bulk materials made of atoms and molecules work. Nanomaterials are divided into various categories according to their dimensions, composition, and shapes. These categories are discussed below.

One Dimensional nanomaterials: Nanoscale materials, such as the circuitry in computer chips and the anti-reflection and hard coatings on eyeglasses, are typically thin films or surface coatings. For decades, thin films have been manufactured and employed in a variety of industries, including engineering, chemistry, and electronics. Different techniques can be used to deposit thin films, which can be controlled to grow until they are only one atom thick, or monolayers.

Two Dimensional Nanomaterials Nanometer-scale two-dimensional nanomaterials have two dimensions. Among them are 2D nanostructured films, which have nanostructures securely affixed to a substrate, or nanopore filters, which are employed for the filtration and separation of small particles. Free particles with

diameters in the nanoscale range and a high aspect ratio are also regarded as 2D nanomaterials. An illustration of a 2D nanoparticle is asbestos fibres.

Three Dimensional nanomaterials Three-dimensional (3D) nanomaterials are substances that are nanoscale in all three dimensions. These include colloids, free nanoparticles with different morphologies, and thin films deposition under circumstances that provide atomic-scale porosity.

Nanocomposites Nanomaterials can be composites of many materials or can just have one main constituent ingredient. While pure materials of a single composition can now easily manufactured using a number of techniques, the nanocomposites seen in nature are frequently agglomerations of materials with different compositions. Nanoparticles are essential to modern technology, but their applications are restricted, hence nanocomposites are used to expand the usefulness of materials. It has generated a lot of interest from both a theoretical and practical standpoint. Materials with the necessary reaction can be created by combining the physical features of nanocomposites. When particle sizes are reduced to extremely small dimensions, optical or magnetic properties change, which are generally of great interest in the field of nanocomposites materials. Composites have great qualities like a high melting point, high hardness, low density, low coefficient of thermal expansion, high thermal conductivity, good chemical stability, and improved mechanical qualities like a higher specific strength, better wear resistance, and a higher specific modulus. They also have a good future in a variety of industrial fields.

Nanoparticles uniformity and agglomeration Nanoparticles can exist as suspended/colloids, as agglomerates, or as dispersed aerosols depending on their chemistry and electro-magnetic characteristics. For instance, unless their surfaces are covered with a non-magnetic substance, magnetic nanoparticles have a tendency to aggregate and create an agglomeration state. Depending on the size of the agglomeration, nanoparticles may act like larger particles while they are in an agglomerate form. So it follows that when deciding whether to consider health and environmental regulation of novel materials, nanoparticle aggregation, size and surface reactivity, along with shape and size, must be taken into consideration.

Methods of synthesis of nanomaterials: **Bottom-Up and Top-Down Approaches**

A review of the literature suggests that top-down and bottom-up fabrication processes are primarily used to create nanomaterials. The top-down approach begins with a bulk substance and uses mechanical, chemical, or other types of energy to break it down into smaller pieces. As opposed to the bottom-up strategy, which uses chemical reactions, etc. to create nanomaterials from atomic or molecule species. Researchers, scientists, and engineers are interested in managing the size, shape, distribution, composition, and degree of agglomeration of nanoparticles and nanostructure materials (NMs) for a variety of purposes. While colloidal dispersion is a good illustration of a bottom-up strategy for the synthesis of nanoparticles/nanomaterials, attrition or milling is a typical top-down method for creating nanoparticles/nanomaterials. Three-dimensional photonic crystals can be made on a large scale and at a low cost by using top-down holographic laser lithography in photo resists and bottom-up self-assembly of colloidal sub-micron spheres. Lithography can be thought of as a hybrid method because bottom-up creation of thin films is different from top-down etching, although bottom-up methods are more frequently used in nanolithography and nanomanipulation. There aren't many benefits and drawbacks to these methods. Because it adheres to classic object-oriented design, which contends that complexity is best understood by starting with an abstraction and breaking it down into smaller components, the top-down approach is frequently adopted. Working with an abstraction might be difficult at times, and it is more effective to start small and work your way up. The surface structure is imperfect, which is the main issue with the top-down approach. The processed patterns can suffer severe crystallographic damage from traditional top-down processes like ball milling and lithography, and in the case of lithography, additional defects may be added even during the etching phases. For instance, lithographically produced nanowires have a rough surface and may have several impurities and structural flaws. Given that nanostructures and nanomaterials have a very high surface to volume ratio, such flaws would significantly affect their physical characteristics and surface chemistry.

The term "bottom-up approach" describes the process of creating a substance atom by atom, molecule by molecule, or cluster by cluster. We know that linking different monomers together forms polymers, according to organic chemistry and/or polymer science. After colliding with the growth surface during crystal growth, growth species such atoms, ions, and molecules sequentially organise into the crystal structure. The bottom-up methodology has been crucial in the study of nanostructures and nanomaterials. This is due to a

number of factors. There isn't much room for a top-down strategy when structures are on the nanometer size. A better possibility of obtaining nanostructures with fewer flaws, more uniform chemical composition, and better short and long range ordering is also promised by the bottom-up strategy. This method's main drawback is that an object may be divided into several sections, some of which may cause the item and background to blend together. The aforementioned methods can also be divided into physical and chemical methods. Physical technique is, broadly speaking, based on a method of transferring growth species from a source or target. The process starts at the atomic level and largely excludes chemical reactions. For the elimination of growing species from the source or target, numerous techniques have been devised. However, chemistry is quite rich in chemical technology, and many different kinds of chemical reactions are involved.

Chemical and Physical Methods

Chemical Methods: Nanoparticles are frequently created via chemical processes. The creation of new materials with cutting-edge properties has been greatly aided by chemistry. Chemical synthesis has the advantage of being flexible in the design and synthesis of novel materials that can be improved into the finished product. Since chemical synthesis allows for molecular-level mixing, the main advantage chemical techniques have over other processes is in obtaining good chemical homogeneity. But there are certain challenges with chemical processing. The chemistry in some preparations is intricate and dangerous. Another source of contamination is the byproducts or unintended consequences of a chemical reaction. Agglomeration can significantly change the characteristics of the materials and can also be a major cause of concern at any point in the synthetic process. It is not always easy for all systems, but many chemical processes are ideal for inexpensive production.

Physical Methods: The synthesis of nanostructured materials and their commercial manufacture now employ a variety of physical techniques. This section discusses several experimental methods, beginning with physical methods.

Mechanical grinding

In the "top-down" method of synthesis of nanomaterials, mechanical attrition/milling is a typical illustration. In this method, the material is generated not by cluster construction but rather by the structural disintegration of coarser-grained structures as a result of extreme plastic deformation. In this procedure, tiny steel balls are allowed to revolve inside a drum before falling with the force of gravity onto a solid contained inside the drum. Due to its ease of use, the low cost of the equipment required (on a laboratory scale), and its potential to be used to the synthesis of virtually all kinds of materials, this technique has grown in popularity for producing nanocrystalline materials. The ability to easily scale up to tonnage quantities of material for various purposes is frequently cited as the technique's main benefit. Another important benefit of this approach is that it is low-cost, large-scale, and an old, well-established process with a possible resolution of 2–20 nm. This method has significant drawbacks, including the generation of asymmetric nanoparticles, the introduction of flaws, the entrance of contaminants from the balls, and the introduction of milling additives. Usually, tumbler mills or high-energy shaker planetary balls are used to perform mechanical milling. The amount of energy that refractory or steel balls impart to the powder relies on the rotational (vibrational) speed, size, and quantity of the balls, the mass ratio of the balls to the powder, the milling period, and the milling environment. The brittleness of the powders can be significantly increased during milling in cryogenic liquids, which can affect the fracture process. As with any process that yields high-quality materials, effective measures to stop oxidation are required. Due to the need for the milling to occur in an inert atmosphere and the handling of the powder components in an appropriate vacuum system or glove box, this process is particularly constrained for the synthesis of non-oxide compounds. This type of synthesis can be used to create powders that are either elemental or complex, amorphous or nanocrystalline alloy materials, etc.

Sputter deposition

Sputtering, or ejecting material from a source or "target," deposits thin layers onto a "substrate," such as a silicon wafer, using the physical vapour deposition (PVD) technique. The energy distribution of the sputtered atoms that are ejected from the target is very broad. The sputtered ions can ballistically fly from the target in straight lines and impact energetically on the substrates or vacuum chamber, causing re-sputtering (the re-sputtering is reemission of the deposited material during the deposition process by ion or atom bombardment). Alternatively, at higher gas pressures, they can collide with the gas atoms that act as a moderator and move diffusively, reaching the substrates or vacuum chamber. Frequently, an inert gas is the

sputtering gas. Neon is preferred for sputtering light elements because it is near to the target's atomic weight, whereas krypton or xenon is used for heavy elements since it will transmit momentum more effectively. Compounds can also be sputtered using reactive gases. Depending on the process settings, the compound may be produced on the substrate, in flight, or on the target surface. Sputter deposition is a complicated process, but the availability of numerous controllable parameters gives professionals a great deal of control over the growth and microstructure of the film. Sputtering is widely employed in the semiconductor sector to deposit thin coatings of different materials for use in processing integrated circuits. Sputtering is the best technique for depositing contact metals for thin film transistors since it uses low substrate temperatures. Even materials with the highest melting points can be easily sputtered, but it is impossible to evaporate these materials in a resistance evaporator. This is a significant benefit of sputter deposition. Sputtered films usually adhere to the substrate better than evaporated films. Sputtering's main drawback is that it is more challenging to combine with a lift-off method for structuring the film.

Laser ablation

In this procedure, high-power laser pulses are used to cause the substance to vaporise. Nanoparticles and particulate films have been created using laser ablation on a large scale. The main excitation source of ablation in this method, which produces clusters directly from solid samples for a wide range of applications, is a laser beam. Given that nano-particulate web-like structures have novel features that can be used in new technological applications, the possibility of creating them over a large sample area is particularly intriguing. Line-Spark Atomization (LSA) is a brand-new method of solids atomization that is based on laser spark atomization. In a nutshell, the LSA can evaporate material off a solid target at a rate of around 20 g/s when it is in an argon environment. The LSA is a very effective tool for the fabrication of ceramic materials and coatings due to the small dimensions of the materials and the ability to generate thick films. Additionally, the carrier gas flow rate can be adjusted to change the porosity of the thick films produced by the laser spark atomizer, which allows for control over the microstructure of the coatings. The nanomaterials produced with this method make good candidates for membrane technology, catalysis, and lithium-ion battery applications. Due to the benefits listed above, this method has been mostly employed to create single-walled nanotubes (SWNT).

Ion Beam Deposition Techniques (Ion-Implantation)

Ion-implantation is a method of material engineering in which ions of one material are inserted into another solid, altering the solid's physical characteristics. Ionimplantation is utilised for a variety of purposes in materials science research as well as the manufacture of semiconductor devices and metal polishing. There are numerous instances where the production of nanoparticles involves the utilisation of ions with energies ranging from a few KeV to hundreds of KeV or lower (200eV). A particular ion gun made to manufacture metal ions is typically used to create the ions of interest, which are then accelerated at high or low energy toward a substrate that has been heated to a few hundred degrees Celsius. Different processes, including sputtering and the production of electromagnetic radiation, may occur depending on the energy of the incident ions. This technique can be used to create compounds and alloys of multiple elements as well as nanoparticles of a single element. Sometimes post-calcination is performed to increase the crystallinity of the materials. According to some tests, the ion-implantation approach can be used to produce doped nanomaterials. Making nanoparticles with quick heavy ions (few MeV energy) and ion accelerators like a pelletron accelerator is another option.

Electric Arc Deposition

Using a powerful arc discharge between electrodes, this is one of the most straightforward and practical methods for producing fullerenes and carbon nanotubes on a large scale. The electrodes are kept in a vacuum chamber that is water cooled in order to produce a powerful arc. The source of material is the positive electrode itself. For discharge action, the introduction of inert gas or reactive gas is required. Typically, there is a 1mm gap between the electrodes, and a low voltage power source transmits high current of 50 to 100 amps (12-15 volts). Material for the anode evaporates when an arc is created. As long as the

discharge is kept up, this is possible. As one of the electrodes burns and the gap widens as a result, it becomes imperative to regulate the electrode gap without rupturing the vacuum. The arc between the two graphite electrodes can produce a significant amount of fullerenes, which causes the temperature to increase to as much as 35000C. Compared to the pressure utilised for the creation of nanotubes, fullerens form at a lower helium pressure. Additionally, fullerens are made by purifying soot that has been collected from the vacuum chamber's inner walls, whereas nanotubes are only discovered to form under conditions of high He gas pressure and in the cathode's centre. The chamber walls contain no carbon nanotubes. The area where nanotubes are generated is frequently surrounded by some carbon nanoparticles. This process should theoretically allow for the production of various nanocrystals or tubes made of different materials. However, fullerens or carbon nanotube deposition are discovered to be the most common applications for this technique.

Molecular Beam Epitaxy (MBE)

This method of deposition can be used to deposit quantum dots, wells, wires, and other structures in a very controlled way, whether they are elemental or compound. High vacuum, typically 10–10 torr, is required to achieve high levels of purity in materials. In addition to the ultrahigh vacuum system, MBE primarily comprises of real-time structural and chemical characterization capabilities, such as Auger electron spectroscopy, X-ray photoelectric spectroscopy, and reflection high energy electron diffraction (RHEED) (AES). The growth of films can be transferred to the chamber without being exposed to the environment if additional analytical instruments are added to the deposition chamber or to a separate analytic chamber. Under such a low pressure in the MBE, the evaporated atoms or molecules from one or more sources do not interact with one another in the vapour phase. Molecular beams of the constituent elements are obtained using special deposition sources called effusion cells. In order to achieve adequate element mobility on the substrate and layer-by-layer growth to produce nanostructures, the rate of deposition is kept very low and the substrate temperature is very high. A highly pure film can be easily created since the ultra high vacuum environment ensures the absence of impurity or contamination. The chemical composition of the deposit can be precisely controlled at any given time thanks to individually controlled source evaporation.

Electrodeposition

Electroplated materials have been created using this method for a very long time. The weight of the substance moved can be estimated in accordance with Faraday's rules of electrolysis by carefully regulating the number of electrons transmitted. According to this, the quantity of electrons given immediately correlates to the number of moles of product that the electric current produces. The basic goal of nanoscience and nanotechnology is to electro-deposit a single layer on a surface in a very controlled manner. For accurate findings, the current and time must be precisely monitored, and any additional variables that may affect how currents are consumed, such as contaminants, must be thoroughly understood. The need for extremely clean rooms results from this. Platinum films with nanostructures can be created by electro-depositing liquid crystalline combinations. The films that are produced are incredibly flat, consistent, and lustrous. The idea of electroplating from liquid crystalline mixtures can be applied to various metals, such as semiconductors, palladium (Pd), Ni, and Au oxides. For a variety of uses, including solar cells, batteries, fuel cells, and windows that can disperse heat and change properties depending on the environment, nanostructured films made of liquid crystals are of great interest due to their distinctive nature. The electrode substrate's surface properties have a significant impact on the main benefit of this, and these properties also affect how the deposits are shaped and sized.

Some Important Applications of nanomaterials

Making new, multifunctional products that can be used in a much better way in the future is now possible thanks to materials' ability to drastically alter their properties at the nanoscale. In just a few years, they have made significant entry into the global market because to quick advances in synthesis and in understanding the properties of nanomaterials. Therefore, several significant uses of nanomaterials are briefly covered in this section. The three-dimensional displays, single electron transistors, spin valves, and magnetic tunnel junctions (MTJ) are conceptually novel electronic devices based on nanomaterials. These devices

typically have dimensions of a few nanometers. Crystal at the nanoscale affects how materials behave chemically, electronically, and optically. In the fields of toys and sporting goods, nanomaterials are also crucial. Tennis balls made of nano clay have improved pore filling and air pressure retention capabilities. Balls last longer as a result of this. The toy industry has been prepared to accept nanoparticles. The use of nanoparticles in the textile industry has generated a lot of interest. Nanoparticles are crucial in cosmetics as well. Small, uniformly sized zinc oxide and titanium oxide nanoparticles can absorb UV radiation and shield the skin from it. Given their well-known uses, nano-based cosmetics are growing in popularity. Due to their well-known antimicrobial qualities, silver nanoparticles are employed in refrigerators, air purifiers or air conditioners, water purifiers, and photography. Due to their functional properties, such as the very low density materials known as aerogels, which are excellent for use of various applications in spacecrafts and defence for reducing the weight of application instrument, scientists in the fields of space and defence are also attempting to adopt nanomaterials as alternative materials and to replace the conventional materials by nanomaterials. Aerogels can be used to create specialised lightweight clothing items like jackets, coats, and more since they can be used to create fabrics with poor heat conductivity. The utilisation of nanomaterials causes a significant change in the fields of biotechnology and medical science. Initial test results demonstrate the viability of using nanomaterials for a variety of drug delivery systems, cancer tumour therapy, or cancer tumour detection. Such materials demonstrated a significant impact on the resolution of numerous health-related issues. There is a lot of nanotechnology-based research being done to assist patients with HIV and diabetes. Work is ongoing to better understand how nature operates and mimics human behaviour. Thus, nanoparticles have a number of beneficial uses including the fire-retardancy and UV protection of fabrics.

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MULTIDISCIPLINARY RESEARCH & REVIEWS

journal homepage: www.ijmrr.online/index.php/home

Quantitative and Qualitative Approaches to Accounting Research

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Keyword	*Abstract*
Qualitative research, quantitative research, accounting research, research methodology, mixed method research, auditor's independence.	The key objective of this paper is to assess the application of qualitative and quantitative research techniques in the arena of accounting. While the implications of qualitative research are affected by the researcher's theoretical interests, the conclusion of quantitative research is largely based on actual data. In this study, the numerous qualitative and quantitative research methods in the many domains of accounting research are evaluated. Case studies, ethnographies, grounded theories, action research, and narrative research are just a few of the techniques that can be used in qualitative research to help build theories. Conversely, experimental and survey research is used in quantitative research to test theories developed by qualitative research. This study found that mixed method research, which blends qualitative and quantitative methods, has gained enormous appeal in the field of accounting research in recent years.

1. Introduction

The focus of accounting research is to develop new theories, update existing ones, and apply theories through the logical study of facts and data (Olalere, 2011). Validity and quality are the two primary standards for assessment used in the evaluation of accounting research. While conducting accounting research, qualitative research methods are also important to reach this goal in addition to quantitative research methods (Bass n.d.). Although over time the quantitative method and positivist philosophy have mainly dominated accounting research, a growing number of researchers in the accounting literature are increasingly using the qualitative approach and interpretivism research philosophy (Bonner et al., 2006). However, from an ontological and epistemological point of view, quantitative research methods are different from qualitative research (Olalere, 2011). The researcher's perspective on what constitutes valid information from an epistemological and ontological perspective is also how reality is experienced (Saunders et al., 2012). According to qualitative approach, reality is not only a social fabrication but also a physical structure (Hines, 1988). Additionally, the validity of qualitative research is "formed by the researcher's theoretical interests" rather than being just dependent on empirical data (Ahrens & Chapman, 2006). Nevertheless, the form and goal of the research have a big impact on how research methods and methodology are chosen. For instance, exploratory research can benefit from qualitative research because it entails gathering information and developing theories about a problem as well as identifying potential areas for further investigation (Olalere, 2011). Comparatively, the quantitative approach is helpful in descriptive research because this type of study aims to test accepted ideas to comprehend a true profile of events, people, or circumstances (Saunders et al., 2012). Explanatory studies, on the other hand, are a different kind of research where both qualitative and quantitative methods may be useful. This is so that explanatory research, which fouses on analyzing a situation or a problem, can explain the link between variables (Saunders et al., 2012).

2. Literature Review

2.1 *Method of Quantitative Research*

In contemporary accounting, quantitative research approaches are frequently employed. For instance, many journals use statistical techniques in their research, such as Journal of Accounting Research, European Accounting Review, and Review of Quantitative Finance and Accounting (Gruszczynski, 2009). Quantitative research techniques rely on numerical, objective, and trustworthy data, such as capital market and financial data that are assessed using mathematical and statistical techniques. Furthermore, quantitative researchers work in pre-planned environments. For conducting experimental management research, for instance, researchers utilize proxies like students and mathematical models. Additionally, this method conducts research without speaking to market participants by using historical market data. A further application of the quantitative technique is hypothesis testing, which involves the consideration of theories, the formulation of research questions, and the testing of hypotheses (Olalere, 2011).

2.1.1 *Research Philosophy*

- Quantitative research typically adheres to the positivist school of thought, which maintains that social reality exists despite what the researcher perceives (Saunders et al., 2012). The process of making commercial and economic decisions as well as the usage of financial statements by investors in making decisions are examples of social reality. By creating and testing associations between variables using quantitative methods of data gathering and analysis, the positivist-objectivist paradigm investigates the truth (Olalere, 2011).

2.1.2 *Research Approach*

- As the major objective of this strategy is to test theory, quantitative research methods are typically associated with deductive approach (Saunders et al., 2012).

2.1.3 *Research Strategies*

- Experimental and survey research methods are primarily associated with quantitative research (Saunders et al., 2012).

2.1.4 *Experimental Strategy*

- The subfields of accounting information systems and auditing mostly used the experimental research, according to a study of eleven prestigious accounting publications from 1990 to 2009 (Coyne et al. 2010). When determining the likelihood that a dependent variable will change as a result of a change in an independent variable, researchers employ the experimental research strategy (Saunders et al., 2012). But there are two different kinds of experiments: laboratory experiments and field studies (Olalere, 2011). Human participation is used in laboratory experiments rather than actual subjects in staged environments. Students of accounting, for instance, stand in for working accountants. Real subjects are used in field experiments that take place in authentic organizational contexts. For instance, auditors employed by public accounting companies.

2.1.5 *Survey Strategy*

- Utilizing organized questionnaires, structured observations, and structured interviews, this research technique collects quantitative data from a sizable population (Saunders et al., 2012). These data can also be examined using descriptive and inferential statistics.

2.2 *Method of Qualitative Research*

Despite the fact that quantitative methods are the major emphasis of accounting research, the qualitative approach has a sizable number of supporters in the field of accounting literature in order to develop novel theories that could subsequently be tested by quantitative methods (Bonner, et al. 2006). By observing people's behavior and opinions, the qualitative research approach is used to gathering, evaluating, and interpreting non-numerical data. Researchers concentrate on patterns in data sets, like changes over time, and attempt to discover potential links among variables in order to interpret qualitative data. Additionally, qualitative research is subjective and make use of a range of data collection strategies, namely one-to-one in-depth interviews and focus groups, as well as unconventional questions and approaches (Anderson, 2006). Additionally, the quality of the research's findings is based on the interviewer's expertise and experience because qualitative research is conducted face-to-face with participants in settings that reflect real life, such as business organizations and communities. Furthermore, the formation of theory is the primary goal of qualitative research (Olalere, 2011). For instance, a study on game-based learning methodology revealed some new tools to encourage students to study accounting in a fun way (Abd et al., 2021).

2.2.1 *Research Philosophy* - The philosophy of interpretivism is related to qualitative research since it requires researchers to interpret the varying, socially constructed interpretations ascribed to the phenomenon being studied (Saunders et al., 2012). In this paradigm, the researcher's primary objective is to identify empirical regularities or patterns (Olalere, 2011).

2.2.2 *Research Approach* - Most often, qualitative research is done using an inductive methodology, which focuses on using evidence to generate theories (Saunders et al., 2012).

2.2.3 *Research Strategies* - Case study research, grounded theory, ethnography, action research, and narrative research methodologies are the most frequently used qualitative research techniques (Saunders et al., 2012).

- Case Study - This approach entails employing a variety of sources of evidence to conduct an empirical investigation into a specific current issue (individual, organizational, social, and political) inside its actual setting (Yin, 2009).
- Ethnography - In order to analyze and describe the cultural and social structure of the group, this technique entails researching people in groups that interact with one another and share the same place, such as those who work together, are members of the same organization, or live in the same community (Robson, 2002).
- Grounded Theory - With this approach, a theory is developed or discovered based on the data, and the analysts are required to conceptually identify categories, patterns, and themes as they appear in the data (Glaser & Strauss, 1967). Since majority auditing research focuses on human behavior, the grounded theory approach may be effective for identifying various auditing problems.
- Action Research - This method takes a collaborative and participatory approach to generate solutions to genuine organizational challenges. It makes use of multiple types of knowledge and will have effects on organizations beyond the scope of the study project (Saunders et al., 2012).
- Narrative Research - This approach can be described as a collection of events that participants explain chronologically, demonstrating a flow of connected events and giving the researcher useful data for their research (Coffey & Atkinson, 1996).

2.3 *Mixed Method Study*
A mixed method study design combines quantitative and qualitative research techniques, and it has recently become very popular in accounting research (Olalere, 2011).

2.3.1 *Time Horizon* - It is crucial to decide whether research will be undertaken at a specific moment or over a specific length of time for both quantitative and qualitative methods. Data collection for cross-sectional studies takes place at a specific time. The technique can therefore compare groups based on their current qualities to measure differences. The lack of a time dimension in this method also suggests that it may be helpful in creating correlation (Olalere, 2011). In a longitudinal study, researchers gather information from numerous past or future time periods from either comparable samples or the same samples in order to measure change over time and causation across variables (Olalere, 2011). Accounting study employing historical capital market data is an example of a longitudinal strategy.

2.3.2 *Data Collection Method* - The two basic types of data collection techniques—primary and secondary—can be applied to both quantitative and qualitative research. Interaction between the researcher and the participants is necessary for the primary technique. Survey questionnaires, interview surveys, test and measurement procedures, direct observation, and focus groups and seminars are some examples (Olalere, 2011). For instance, thirty university students at the Diploma level were given questionnaires to complete in order to collect data on the game's effectiveness (Abd et al., 2021). Interaction with participants is not necessary for a secondary technique. Examples include data from archival sources that were gathered by individuals, groups, and researchers in the past. However, the most widely used method of data collecting in accounting research, particularly in financial accounting, is the archival method (Olalere, 2011).

3. Analysis, Findings, and Results of the Study

3.1 *Application of Research Techniques on A Study of Auditor's Independence*

The ability of an auditor to act and be perceived as acting honestly, objectively, and with professional skepticism is known as auditor independence (Moroney et al., 2014). The auditor must retain independent in all facets of auditing services in order to deliver successful assurance services to the clients. External auditors' primary duty is to offer independent opinions about financial statements; if they do not render an independent assurance, there is no need for an external auditor because an internal auditor is capable of performing those duties (Moore et al. 2006). Therefore, all stakeholders, especially investors, lenders, employees, and strategic partners, need independent assurance of financial statements. However, a number of widely reported corporate scandals have raised questions about auditor independence. For example, Andersen's audit of Enron may have been the most noteworthy example of a breach of auditor independence because the financial restatement that caused Enron to collapse lowered the company's profits downward by $650 million (Moore, et al. 2006). Due to those events, investors lost faith in the accuracy and validity of financial statements, and the public's confidence in auditors' assurance on financial statements significantly declined. Thus, a considerable deal of research has concentrated on the effectiveness of auditor independence.

Several factors can compromise an auditor's independence. Examining the various approaches that have been employed to explore the subject and the results is necessary in order to comprehend how various forces have affected auditor independence. Researchers argue that unintended bias is what prevents auditors from remaining objective and impartial, even when they are honest, rather than corruption, which seldom compromises auditor independence (Bazerman et al., 1997). Additional qualitative research on the subject revealed that, despite their best efforts to be impartial and unbiased, auditors' desires are mostly responsible for influencing how they understand information because they instinctively accept data that supports their positions (Bazerman et al., 2002). A new idea has emerged as a result of numerous qualitative and psychological investigations, which suggests that unconscious bias, rather than deliberate corruption or conscious prejudice, is mostly to blame for the deterioration of auditor independence. Additionally, Moore et al. (2006) contend that even though an accounting firm has a motivation to produce an objective report, individual auditors—whose careers may depend on developing relationships with their clients and who may be interested in working for these clients in the future—may have a different motivation. As a result, the incentives may cause accidental biasness, which would violate independence. As a result, it is virtually impossible to conclude that an auditing error was caused by corruption or unconscious bias. One significant drawback of the effect of unintentional biasness on auditor independence is that those researchers base their conclusions on psychological and qualitative research. However, there hasn't been any experimental or quantitative research on this topic, which lessens the reliability of the conclusions. Therefore, a quantitative study on this topic is required to determine whether unintended biasness affects auditor independence and what motivations lead auditors to form unintentionally biased opinions. However, based on the aforementioned justifications and analyses, it may be expected that inadvertent bias is more likely to lead to the damage of auditor independence than intentional bias.

H1: Influence of unintentional biasness is significant on declining auditor independence.
H2: Influence of intentional biasness is insignificant on declining auditor independence.

3.2 *Results*

Since qualitative research approach alone is not sufficient to prove the above hypotheses, the following research methodology can be applied.

In this instance, a quantitative approach might be appropriate because the primary goal of the study is to evaluate a theory that has been previously formed by a number of qualitative and psychological research studies (Olalere, 2011). As the purpose of this research is to test a theory, deductive reasoning can be used (Olalere, 2011). Data type is quantitative in nature. Since the primary goal of the study is to ascertain how unconscious biases affect auditor independence, the sample should be made up of auditors working for accounting companies. Long-term client relationships, potential career opportunities at the client's organization, and familiarity with the client are the root causes of unconscious prejudice, according to Moore et al. (2006). According to Moroney et al., (2014), the following factors are connected to conscious biasness: non-audit services, auditor tenure client type, and client importance. Since the occurrence of both conscious and unconscious bias relys on some independent

variables, an experimental technique would be more suited in this situation. Additionally, as the experiment will be done on auditors working for accounting firms, a field experiment would be appropriate to assess the hypothesis (Olalere, 2011). The statistical analysis of the data would be appropriate because the study technique is experimental and the data type is quantitative. The best option for evaluating the conduct of the auditor, accountants, and non-accountants in the production, distribution, and use of accounting information is archival data gathering, therefore it would be appropriate in this situation (Olalere, 2011). Additionally, archival data collecting strategy is used by the majority of accounting research studies. Here, a longitudinal approach would be ideal since, with this approach, researchers gather historical information about auditor conduct from comparable samples or from the same samples with the goal of determining changes over time and connection between factors (Olalere, 2011).

3.3 *Findings*

Although, many qualitative researchers found that unintentional biasness can hamper the auditor's independence, a quantitative investigation is necessary along with the qualitative approach to evaluate whether unintentional biasness has an impact on auditor independence. Otherwise, it is nearly impossible to determine whether an auditing blunder is the result of corruption or unintentional bias. Therefore, it can be said that a quantitative approach along with qualitative method, archive data, and experimental strategy are required to test the above mentioned hypotheses and to discover whether auditor independence is more or less impacted by unconscious biasness.

4. Conclusion

Quantitative research method has been used extensively in accounting study over the years. However, at present the qualitative research approach is widely used by the scholars of accounting literature. Qualitative research generally uses a variety of techniques, such as case studies, ethnographies, grounded theories, action research, and narrative research techniques to construct theories. Contrarily, quantitative methods use experimental and survey techniques to test theories produced through qualitative research. However, both approaches can use the same data collection method; the differences between them lie in the sorts of data and the ways in which they are used. Recently, there has been a great deal of interest in accounting research for mixed method technique, which combines qualitative and quantitative research approaches.

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