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India and East Asia: Strengthening Convergences

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ABSTRACT

India's ties with the East Asia date back to many centuries. Indeed, India's civilizational influence to its east has significantly marked many modern East Asian nations. During the colonial period, India's long established autonomous ties with East Asia were weakened, although many Indians migrated to various other British Asian colonies. India has achieved incremental progress in building political, economic, and even limited security ties to countries in East Asia. India, however, is still not an integral part of the region's international relations or a critical bilateral relationship for Southeast Asia, China, or Japan. India's relationship with East Asia in this way stays the most fragile connection when contrasted with the other major partners. This research exercise examines India's policy towards East Asia.

Introduction:

Contemporary global politics is witnessing lots of structural and operational changes of unprecedented manner, which are affecting different global power centers in general and India's foreign policy in particular. The shift of global politics from Euro-Atlantic to Asia-Pacific and now Indo-Pacific led to the building of a new kind of permutation and combination in international relations.¹ Indian engagement of East Asia in the post-Cold War era has, indeed, assumed significant proportions and remains a top foreign policy priority for the Indian leadership. India is now a full dialogue partner of the Association of South East Asian Nations (ASEAN) since 1995, a member of the ASEAN Regional Forum (ARF), the regional security forum since 1996 and a founder member of the East Asian Summit launched in December 2005. India is also a summit partner of ASEAN on par with China, Japan and South Korea since 2002. Over the years, India has also come to have extensive economic and trade linkages with various countries in the region. In the security arena, India is regularly conducting large scale joint naval exercises off the coast of the Bay of Bengal with the navies of

the US, Japan, Australia and Singapore. India, also very recently began joint military counterterrorism exercises with China, termed historic as it is first of its kind after the 1962 Sino-Indian border war.²

India has, indeed, emerged from the margins, at the end of the 1980s, to become one of the key pillars and players in East Asia at the beginning of the 21st century. In fact, a leading Indian strategic analyst pointed, as early as 1998, that India's growing links with this region 'seems to be pushing India in the direction of an East Asian identity'.

Historical Perspective:

India's influence on East and Southeast Asia, as well as some of the Asia-Pacific region, has been extensive. Hinduism and Buddhism spread throughout Asia from India, initially along trading routes. While Hinduism found its way across much of Indonesia, Malaysia, and Thailand, Buddhism reached Japan and Vietnam through China and Korea, and also flourished in countries closer to India, such as Burma, Cambodia, and Thailand. As Indian trading patterns expanded and religious ties spread throughout Asia so did cultural elements including language (particularly Sanskrit), social customs, styles of art, and architecture. Great Indianized kingdoms arose over the centuries throughout Asia and particularly Southeast Asia. However, aside from the solitary instance of invasion of the Srivijaya kingdom in Sumatra by the Indian King, Rajendra Chola, in the eleventh century AD to protect Indian commercial interests, India did not show any imperialist ambitions in Southeast Asia.³ As one non-Indian, former Prime Minister of Singapore Lee Kuan Yew, noted, 'Historically India has had an enormous influence on South-east Asia; economically and culturally too. The Ramayana story is present all over South-east Asia in different versions. The civilizations in the region were really Indian in origin...'⁴

The earliest Indianized kingdoms of Southeast Asia (founded early in the Christian era) were located in the Malay Peninsula, Cambodia, and Annam and on the islands of Java, Sumatra, Borneo, and Bali. Along with the traders that traversed the region, Brahmins (priests) from India introduced Indian rituals, scriptures, and literature among the elite in Southeast Asia. They introduced Indian court customs, administrative organization on the Indian pattern, and laws based on the Code of Manu, the Indian lawgiver. Indianization also included the alphabetical basis of Southeast Asian scripts, the incorporation of Sanskrit in vocabularies along with the adoption of the Hindu-Buddhist religious beliefs, and an Indian concept of royalty.⁵

In maritime Southeast Asia, Srivijaya on Sumatra, between the seventh and thirteenth centuries, was a centre for Buddhist studies and of Sanskrit learning. Moreover, the renowned maritime Southeast Asian dynasty of Sailendra, which became the dominant maritime and land power in Malaysia by the eighth century, is believed to have originated in the Indian state of Orissa. The last Hindu kingdom in the Southeast Asian region was Majapahit, which flourished between the thirteenth and fifteenth centuries on Java. From the fifteenth century onwards, with the rise of the kingdom of Malacca, Islam spread throughout the region. For their part, Indian traders from Gujarat, Malabar, Tamil Nadu, and Bengal helped the spread of Islam in Southeast.

India's connections with Southeast Asia more recently flowed from British colonial expansion in the region. Sir Stamford Raffles arrived in Singapore in 1819 to establish a trading station, ideally located by the Straits of Malacca, as a base from which to protect and resupply East India Company ships carrying cargoes between India and the region, and beyond to China. Later, given this connection, Singapore was governed from Calcutta., India's interaction with Malaya (today Malaysia) encouraged large-scale migration of Indian (particularly Tamil) labor to Malayan plantations. More than 1.5 million ethnic Tamils from South India were enumerated in 1931 in other British colonies. Today, with over two million persons of Indian origin, Malaysia is home to one of the largest Indian Diaspora communities abroad.

India and East Asia in Cold War Period:

It is against the above backdrop that India's evolving policies and relations must be assessed. In some aspects, India was eager to renew its relations with East Asia in the early 1990s; however, it had always enjoyed vibrant and enduring relations for several centuries before the onset of colonialism, which not only disrupted these links but in fact severed them, as they were unsuitable for colonial masters who wanted to have exclusive monopoly. As is evident from a flood of scholarly works that came at the height of India's independence movement, awareness of India's strong influence was acute; there was not a single country in the entire East Asian region that was not influenced by India in one way or another. This played a key role among enlightened Indian nationalist leaders, especially from the early 20th century, in generating interest about developments in the region. That could be said to be the beginning of the first phase of India looking east. India's interest in East Asia was reflected in a series of events that took place from the late 1940s onwards. The most prominent was the convening of the famed Asian Relations Conference in New Delhi in March 1947, before India formally gained independence later in August the same year. It was the first ever attempt to bring together Asian countries on a platform to express solidarity with each other and to evolve a common strategy to fight colonialism and imperialism. As part of this approach, India had also organized a special conference on Indonesia in January 1949 in support of its fight against the Dutch colonialists. Prime Minister Nehru also extended strong support to other independence movements, especially in Vietnam, and enthusiastically welcomed the emergence of the People's Republic of China under the communist party leadership. India also contributed troops for UN peacekeeping operations in Korea. Because of its neutral position and political standing in the newly unfolding Cold War atmosphere and its active participation in East Asian regional affairs, India was made the Chairman of the International Control Commission, which was set up under the 1954 Geneva Accord to ensure the smooth transfer of power in Vietnam. India's proactive policy was most visible in the convening of the Afro-Asian Conference (also called the Bandung Conference) in April 1955. As a result, India's initial foreign policy was heavily influenced by developments in East Asia. This could be considered another phase of the Look East policy. Unfortunately, with the Cold War taking deeper roots, engulfing virtually the entire region, India's role began to diminish. Compelled by a series of wars from the early 1960s onwards that it had to fight with China (1962) and Pakistan (1965 and

1971), India had to abandon its earlier activist policy.⁶ While India was busy strengthening its defense forces, leading eventually to the signing of a Friendship Treaty with the Soviet Union in 1971, the pro and anti-communist divide was nearly total in East Asia. But for a short while India came under scrutiny due to its recognition of the regime that Vietnam propped up after its military intervened to remove the dreaded Pot in the 1970s (the only non-communist country to do so), and India's marginalization from regional affairs, both politically and economically, was nearly total.

Role of Look East Policy:

India's closer ties with the countries of Southeast and East Asia are the result of 'Look East' policy, first enunciated by the government of Prime Minister P.V. Narasimha Rao at the end of the Cold War in 1991 and pursued faithfully by all his successors. The first Prime minister of India Pandit Jawaharlal Nehru had referred, in his classic *The Discovery of India*, to Southeast Asia as 'Greater India', but that heady romanticism foundered amid mutual suspicions during the Cold War, and relations remained sparse. The end of the superpower standoff-and thus of the obligation of states to determine their international allegiances in relation to Cold War loyalties and commitments-widened India's foreign policy options, permitting New Delhi to look beyond the conventional wisdom of its non-aligned years. 'Look East' followed. Initially aimed at improving relations with the member states of the ASEAN at a time when India had embarked upon economic liberalization, and indirectly at enhancing strategic cooperation with the United States (looking East to look West', as the author Sunanda Datta-Ray termed it), the policy has succeeded beyond the vision of its initiator. "Look East' has not just become an end in itself, cementing enhanced economic cooperation with a long-neglected region, but it has signaled India's return-some might say arrival in a part of the world increasingly anxious about China's overweening influence. That the policy continues to bear fruit two decades after it was launched is reflected in such recent developments as India's admission as a full dialogue partner of ASEAN, its acceptance as a member of the ASEAN Regional Forum and as a full participant in the East Asia Summit (even though by no stretch of the geographical imagination can India be said to be an East Asian power). In 2003 Yashwant Sinha, then India's minister of external affairs, described the 'Look East' policy as having evolved through two phases, the first 'ASEAN-centred and focused primarily on trade and investment linkages and the second characterized by an expanded definition of "East", extending from Australia to East Asia, with ASEAN at its core'. The latter phase, Sinha explained also marks a shift from trade to wider economic and security issues, including joint efforts to protect the sea-lanes and coordinate counter-terrorism activities.⁷

Challenges for India:

Since its inception, the Indo-Pacific region remained a part of India's Foreign policy mooring but at varying levels. In the beginning, India was attracted towards this region in terms of its historical legacies of Buddhism and cultural sharing of Ramayana and Mahabharata epics. Besides, spice trade and people of Indian origin settled in different countries attracted the most. As a result, India has limited influence in Japan, China Myanmar, Thailand, Vietnam, Indonesia, Malaysia and some far-off island territories However, these ties

were mainly limited to socio cultural and religious moorings During the first half of the 1950s, even political understanding with these states was reflected through the organization of Asian conferences in New Delhi (1947 and 1949) and Bandung conference in Indonesia (1955). To some extent, the efforts of some states in the formation of NAM also brought India closer to them. But in political terms, this period of cooperation was very short-lived. Since mid 1950s, India drifted its foreign policy orientation towards Europe with the culmination of goodwill with the erstwhile Soviet Union. Later on, the politics of Cold War led to a policy of neglect between India and these states of Indo-Pacific. However, Indian interests remained limited to the Indian Ocean due to power rivalry in this area and its serious implications for India's security concerns. Moreover, the Cold War arena of power politics also concentrated around the Indian Ocean, then to the area of Asia-Pacific or presently described as Indo-Pacific. However, the end of Cold War, emergence of new permutations and combinations, growing economies of ASEAN states, emerging new regionalism with different thrust, initiations of the process of globalization, etc., led to a new shift in India's foreign policy in the form of 'look east' Simultaneously, cordiality in Indo-US ties in the post-Cold War era also initiated through Kick lighter proposal of 'military-to-military' cooperation in Indo-Pacific between the two countries. India's thrust became manifest in the form of its improvement in relations with ASEAN as 'sectoral' and later 'full dialogue partnership'. This was further strengthened by India's joining of ARF and organization of India-ASEAN summits. India also signed FTAs with some states of this region. Later on, India became a strategic partner of the US's 'pivot of Asia' strategy in the form of multilateral cooperation with the allies of the former through quadrilateral and bilateral naval exercises and other related areas of cooperation in the Indo-Pacific region.⁸ Thus, in the post-Cold War era, India started looking at this region as an important factor in terms of its security concerns, non-traditional threats, trade, investments, joint ventures establishments, energy supply, freedom of sea lanes of communication and for its overall economic growth.

Conclusion:

In an anarchic, self-help international system, survival remains the primary motivation of state behavior in the international arena. Therefore, states constantly search for opportunities to ensure their survival by preserving and maximising their relative power and influence The finish of the Cold War gave such a chance to states like India to reconfigure their international strategy needs and, in the light of the fundamental changes, utilize the recently made space to endeavor to augment their force and impact in the global framework.. The disintegration of the USSR, leading to the consequent heralding of the US-led unipolar world, coupled with the rise of China as a major power East Asia, forced India to rediscover' East Asia India's own great-power ambitions could be pursued with greater vigour as the structural limitations imposed by the bipolar international system had vanished India has, accordingly, pursued a more assertive foreign policy in East Asia. It involves a policy of 'congaging' China, robust political relations, maximal economic integration and interdependence, incremental security cooperation; and, finally, proactive regionalism and multilateralism. As India accumulates greater power and influence in East Asia and emerges as a major actor in the region, it will

correspondingly desire more space to achieve its strategic objectives. In pursuance of this strategy, India also has sought

to engage the US, the sole superpower today, and harmonies its interests-political, security, economic and diplomatic-within East Asia India's consistent and forceful engagement with East Asia in the post-Cold War era is leading to its emergence as a key player in the region, with serious implications for the evolving security dynamics in East Asia.

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Mechanochemical Synthesis of Biologically Active Transition Metal Complexes of 1*H*-4,4,6-Trimethyl-3,4-dihydropyrimidine-2-thione

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A new series of metal complexes using 1*H*-4,4,6-trimethyl-3,4-dihydro-2-pyrimidinethione (HTMPT) ligand were synthesized mechanochemically and also evaluated for antibacterial and DNA photocleavage potential. Complexes of 1*H*-4,4,6-trimethyl-3,4-dihydro-2-pyrimidinethione (HTMPT) [M(tmpt)₂(H₂O)_n] (M = Cu²⁺, Mn²⁺, Ni²⁺, Co²⁺; n = 2 and M = Zn²⁺, Cd²⁺, Pd²⁺; n = 0) were synthesized in 1:2 metal ligand ratio. All the metal complexes were characterized by ¹H NMR, FTIR, UV-vis, ESI-mass spectrometry, molar conductivity, magnetic and thermal measurements. ¹H NMR and IR results showed that the coordination occurs *via* N and S forming four-membered cyclic ring. Mass spectrum showed the formation of 1:2 metals to ligand stoichiometry. The antibacterial activity of synthesized compounds was evaluated by agar well diffusion method. All the synthesized compounds were evaluated for their DNA nicking activity and found most of metal complexes exhibited good DNA photocleavage activities.

Keywords: Transition metal(II) complexes, 2-Pyrimidinethione, Biological activity, Thermal study.

INTRODUCTION

Resistance to antimicrobial agents is a serious problem these days, it is the need of the time to develop new classes of antibiotics and some biologically active compounds, which ultimately would target the pathogens life cycle and lipid layer of the organisms. We are focusing on potential metal complexes, their design and synthesis of having such biological activities [1-3].

Pyrimidine and its derivative are such active components of antibiotics, antimicrobials, anticonvulsants, antispasmodics, antineoplastics (*e.g.* bleomycin) and antidiabetogenics. Number of these derivatives have been used in veterinary drugs, crop-disease control and seed dressing [4-7], antibacterial [8-10], antifungal [11,12], antileishmanial [13], anti-inflammatory [14,15], analgesic [16], antihypertensive [17], antipyretic [18], antiviral [19,20], antidiabetic [21], antiallergic [22], anti-convulsant [23], antioxidant [24,25], antihistaminic [26], herbicidal [27], anticancer activities [28,29] and many of

pyrimidine derivatives are reported to possess potential central nervous system (CNS) depressant properties [30] and also act as calcium channel blockers [31].

Interesting and stimulating findings on transition metal complexes of pyrimidine-2-thione lead us to a discovery of an arsenal of biochemical functions by this synthetic agent. In this paper, an attempt were made to synthesize various transition metal(II) complexes of pyrimidine -2-thione, which are being examined notably for their biological activities and of particular interest in the coordinating ability of these ligands. This work reports on the synthesis and physico-chemical characterization of Mn(II), Co(II), Ni(II), Cu(II), Zn(II), Cd(II), Pd(II) complexes with 1*H*-4,4,6-trimethylpyrimidine-2-thione. All the complexes have been characterized by elemental analysis, magnetic moment, electronic and IR spectroscopy and conductivity. Present findings stimulate us to explore the synthesis of new metal complexes of 1*H*-4,4,6-trimethyl-3,4-dihydropyrimidine-2-(1*H*)-thione (Htmpt) and investigate their biological properties.

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Was Gandhi a Multiculturalist? Exploring the Rhetorical Leadership of Mahatma Gandhi

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Vijay Chauhan

Abstract

The Post-Second World War world witnessed the renewal of ethnicity as a major concern in politics, as a centre of popular political mobilization, and major source of domestic, inter-state as well as intra-state conflicts. Political society/state confronted the challenge from people belonging to different cultural/religious majority and minority communities and more difficulty in keeping them together. This issue is haunting many states and their political leaders as well as peoples since the dawn of 21st century. Moreover, the present scenario in world poses a serious challenge to the multicultural and diverse society. The deepening of the crises entails the relevance of the present study. It is also significant to understand Gandhian perspective of Multiculturalism in the context of the changing character of Nation-States which is marked by the absence of any single national identity. This research project draws upon Mahatma Gandhi for conceptualization of this term. This also brings in to focus the concepts of multiculturalism evolved by Gandhi to achieve political relevance and autonomy.

Keywords: Cultural diversity, Cultural rights, Identity, Multiculturalism, Nationalism, Religious pluralism

Introduction

The term 'Multiculturalism' is believed to have been coined in the West by the western thinkers in connection with the immigrants. It became prominent first in Canada, but it had earlier existed in India in its true spirit and in its various aspects. Gandhi observed the antiquity and complexity of pluralism in India especially, in its extraordinary richness, which had to be integral to the cultures

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कला-मानविकी-समाजविज्ञान-जनसंचार-वाणिज्य-विज्ञान-वैचारिकी की अंतरराष्ट्रीय रेफर्ड शोध पत्रिका

महत्वपूर्ण पुरस्कार प्राप्त श्री कैलाश शर्माजी ने विक्रम विश्वविद्यालय, उज्जैन के छब्बीसवें दीक्षान्त समारोह के अवसर पर अंतरराष्ट्रीय पत्रिका के नवीन अंक का लोकार्पण किया तथा अक्षरवार्ता पत्रिका पर हस्ताक्षर कर शुभकामनाएं प्रेषित की। इस अवसर पर श्री कैलाश शर्माजी, विक्रम विश्वविद्यालय के कुलपति प्रो. अश्विनीकुमार पाण्डेय, भौमराज अवेडकर केन्द्रिय विश्वविद्यालय, लखनऊ के कुलाधिपति, प्रो. वरतुनिया, महर्षि पब्लिशिंग इन्डिया विश्वविद्यालय के कुलपति प्रो. विजयकुमार सौजी मेनन, विक्रम विश्वविद्यालय के कुलसचिव डॉ. प्रशांत पौराणिक, अक्षरवार्ता के प्रधान संपादक प्रो. रमेशकुमार शर्मा, संपादक डॉ. मोहन बैरागी, उप संपादक डॉ. जगदीशचंद्र शर्मा तथा अंतरराष्ट्रीय संपादक मंडल के श्री सुरेशचंद्र शुक्ल 'हरद अलेक्जेंडर' उपस्थित थे।



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निबंध : तात्विक विवेचन

डॉ. पूजा रानी

सहायक प्राध्यापिका, एम. पी. एन. महाविद्यालय, मुलाना, अंबाला, हरियाणा

निबंध को ही गद्य की सच्ची कसौटी माना जाता है, क्योंकि निबंध में ही भाषा के सर्वोत्कृष्ट और अभिव्यक्ति में कितनी सक्षम है, इसका पता उसमें लिखे गये निबंधों से ही लगाया जा सकता है। अर्थात् गद्य का पूण विकसित और शक्तिशाली प्राजल रूप निबंध के रूप में ही प्रकट होता है। निबंध की वही विशेषता है कि उसमें भाषा पूर्ण रूपेण साधन ही बनी रहती है, अन्य गद्य-रूपों के समान साध्य का एक अंग नहीं बन पाती निबंध-लेखक एक ऐसे पथ का अनुसरण करता है, जो दूसरों के लिए अपरिचित होता है। इसलिए उसे अपनी भाषा की शक्ति से ही यह प्रमाणित करना पड़ता है कि यह अज्ञान पथ उसके लिए सर्वथा परिचित, सुगम और अपना है। यह प्रमाणित करके ही वह अपने पाठकों को पूर्ण विश्वास में ले, उन्हें अपनेसाथ उस पथ पर बढ़ाए लिए चलता है। जिस प्रकार संस्कृत आचार्य वामन ने 'गद्य कविनाम निकषं वेदन्ति' कहकर गद्य को कवियों की कसौटी माना है, इसी प्रकार आचार्य रामचंद्र शुक्ल ने निबंध के महत्व को प्रतिपादित करते हुए कहा है- 'यदि गद्य कवियों या लेखकों की कसौटी है, तो निबंध गद्य की कसौटी है। भाषा की पूर्ण शक्ति का विकास निबंधों में ही सर्वाधिक संभव होता है। निबंधों से ही भाषा की शिथिलता और अयोग्यता दूर होती है निबंधों में विषय की अनेक रूपता तथा भाषा-लाघव के कारण शब्दावली में पारिभाषिक परिपक्वता एवं अर्थगत सूक्ष्मता के साथ-साथ शब्द-भंडार की वृद्धि होती है।

अत्य गद्य-रूपों में भाषा के वल साधन न रहकर साध्य का एक अंग बन जाती है। परंतु निबंध में वह एक प्रकार से पूर्ण रूपेण साधन ही बनी रहती है। साधारण लेख तथा निबंध में पर्याप्त अंतर होता है। साधारण लेख में लेखक का व्यक्तित्व प्रच्छन्न रहता है और निबंध में उसका व्यक्तित्व सबसे ऊपर उभर कर सामने आता है। यह वैयक्तिकता ही निबंध का सबसे प्रधान और महत्वशाली गुण है। केवल एक इसी गुण द्वारा हम साधारण लेख से निबंध को अलग करने में सफल हो जाते हैं। हमारे यहाँ प्राचीन काल में बौद्धिक तथा तार्किक विषयों की विवेचना के लिए निबंध का आश्रय ग्रहण किया जाता रहा था, किंतु अपने उस रूप में आधुनिक निबंध की परिभाषा के अंतर्गत नहीं आ पाते। आजकल हिंदी की अनेक पत्र-पत्रिकाओं में प्रकाशित विभिन्न आलोचना के लेखों में बहुत कम ऐसे होते हैं जिन्हें शुद्ध निबंध माना जा सके, क्योंकि उसमें लेखक की वैयक्तिक शैली का प्रकाशन होता है, तथा न लेखक का व्यक्तित्व ही उभर पाता है ना ही उसमें रसात्मकता होती है। लेख द्वारा हमारे ज्ञान में वृद्धि होती है, परंतु निबंध में ज्ञान वृद्धि के साथ भावोरजन उत्पन्न करने की भी क्षमता रहती है साथ ही मनोरजन भी। लेख में ज्ञान या चिंतन का रूप सुक्ष्म रहता है और निबंध में उसके इसी सुक्ष्म रूप को तरल, सरल और संवेदनशील बना दिया जाता है। लेख वर्णित विषय में मात्र परिचय और

विवेचन तक ही सीमित रहते हैं। उन्हें ज्ञानवर्धक तो माना जा सकता है, परंतु रसोद्रेक करने वाला नहीं, साहित्य की अन्य विधाओं के समान निबंध में भी रसात्मकता का होना अनिवार्य है और यही रचनात्मकता निबंध का साधारण लेख से भिन्न एवं श्रेष्ठता प्रदान कर देती है। इसलिए सफल और शुद्ध निबंध केवल उसे माना जा सकता है, जिसमें लेखक का व्यक्तित्व सर्वोपरि उभरकर आया हो।

यद्यपि ऐसे निबंध भी लिखे जाते रहे हैं जो निर्व्यक्तिक होते हैं, परंतु उनमें भी लेखक का व्यक्तित्व किसी ना किसी रूप में मुख्यता शैली तथा व्यक्तिक चुटकियों के रूप में उभर ही आता है। निबंध लेखक की आत्मनिष्ठ व्यक्तिकता व्यक्ति सापेक्ष होती है। उसकी मात्रा में कमी हो सकती है, परंतु उसका सर्वथा अभाव होना असंभव है। निबंध लेखक के विचार गंभीरता, अनुभव और प्रौढता का परिचय देता है, परंतु वह एक विशेष मनोदशा में ही लिखा जाता है। यह विशेष मनोदशा निबंध को व्यक्ति प्रधान बना देती है। कालांतर में निबंध का यथेष्ट विकास हुआ और उसकी संपूर्ण विशेषताओं को ध्यान में रखकर बाबू गुलाब राय उसकी निम्नलिखित परिभाषा निर्धारित की- निबंध पुस्तक की रचना को कहते हैं जिसमें सीमित आकार के भीतर किसी विषय का वर्णन या प्रतिपादन एक विशेष निजीपन, स्वच्छंदता, सौष्टव और सजीवता तथा आवश्यक संगति और सभ्यता के साथ किया गया हो। साहित्य विवेचन के एक लेखक ने निबंध की परिभाषा निर्धारित की है- 'निबंध गद्य काव्य की वह विधा है जिसमें लेखक एक सीमित आकार में इस विषय रूप जगत के प्रति अपनी भावात्मक तथा विचारात्मक प्रतिक्रियाओं को प्रकट करता है।'

आचार्य रामचंद्र शुक्ल के अनुसार - 'आधुनिक पाश्चात्य लक्षणों के अनुसार निबंध उसी को कहना चाहिये जिसमें व्यक्तित्व अर्थात् व्यक्तिगत विशेषता हो। भाषा की दृष्टि से निबंध गद्य साहित्य का सबसे अधिक परिपक्व व उन्नत रूप है। अन्य गद्य रूपों में भाषा केवल साधन ना रहकर साध्य का एक अंग बन जाती है। परंतु निबंध में वह एक प्रकार से पूर्ण रूपेण साधन ही बनी रही है। साधारण लेख तथा निबंध में पर्याप्त अंतर होता है। साधारण लेख में लेखक का व्यक्तित्व प्रच्छन्न रहता है और निबंध में उसका व्यक्तित्व सबसे ऊपर उभरकर सामने आता है। यह वैयक्तिकता ही निबंध का सबसे प्रधान महत्वशाली गुण है। केवल एक ही गुण द्वारा हम साधारण लेख से निबंध को अलग करने में सफल हो जाते हैं। हमारे यहाँ प्राचीन काल में बौद्धिक तथा तार्किक विषयों की विवेचना के लिए निबंध का आश्रय ग्रहण किया जाता रहा था, किंतु अपने उस रूप में आधुनिक निबंध की परिभाषा के अंतर्गत नहीं आ पाते। आजकल हिन्दी की अनेक पत्र-पत्रिकाओं में प्रकाशित विभिन्न

आलोचना के लेखों में बहुत कम ऐसे होते हैं, जिन्हें शुद्ध निबंध माना जा सके, क्योंकि उसमें ना लेखक की वैयक्तिक शैली का प्रकाशन होता है, ना लेखक का व्यक्तित्व उभर पाता है, और ना उसमें रसात्मकता ही होती है। लेख द्वारा हमारे ज्ञान में वृद्धि होती है परंतु निबंध में ज्ञान वृद्धि के साथ भावोरजन करने की भी क्षमता रहती है, साथ ही मनोरजन भी। लेख में ज्ञान या चिंतन का रूप शुद्ध रहता है और निबंध उसके इस रूप को तरल, सरल और संवेदनशील बना देता है। लेख वर्णित विषय के मात्र परिचय और विवेचन तक ही सीमित रहते हैं उन्हें ज्ञानवर्धक तो माना जा सकता है, परंतु रसोद्रेक करने वाला नहीं। साहित्य की अन्य विधाओं के समान निबंध में भी रसात्मकता का होना अनिवार्य है, और यही रचनात्मकता निबंध को साधारण लेख से भिन्न एवं श्रेष्ठ रूप प्रदान कर देती है और यह गुण निबंधकार के व्यक्तित्व के समावेश द्वारा उत्पन्न किया जा सकता है, इसलिए सफल और शुद्ध निबंध केवल उसे ही माना जा सकता है, जिसमें लेखक का व्यक्तित्व सबसे उपर उभर कर आया हो। यद्यपि ऐसे निबंध भी लिखे जाते रहे हैं जो निर्वैयक्तिक होते हैं, पर उनमें भी लेखक का व्यक्तित्व किसी ना किसी रूप में मुख्या शैली तथा व्यक्तिक छुट्टियों के रूप में उभर ही आता है।

साहित्य रूप की दृष्टि से निबंध सबसे अधिक आधुनिक विधा है। हिन्दी साहित्य में काव्य, नाटक तथा कथा साहित्य आदि की पूर्व परंपरा विकसित, अर्धविकसित अथवा केवल अभिप्राय की दृष्टि से अवश्य मिलती है, यहां तक की एकाकीयों का पूर्व रूप भी हमारे संस्कृत साहित्य में किसी ना किसी रूप में प्राप्त हो ही जाता है, परंतु निबंध ही साहित्य का एक ऐसा अंग है जिस के पूर्व रूप के दर्शन हमें संस्कृत और हिन्दी भाषा साहित्य के संपूर्ण इतिहास में ढूढ़ने से भी भारतेदू युग से पूर्व कहीं भी नहीं होते। जब हमारे यहां पहले हिंदी का पूर्ण विकसित गद्य ही नहीं था तो उसका उत्कृष्टतम रूप निबंध कहा से मिलता, संस्कृत गद्य का रूप पूर्ण विकसित होता हुआ भी उसमें निबंध नहीं लिखे गए थे।

आरंभ में जब निबंध लेखन आरंभ हुआ तो उसके विषय में आम धारणा यह थी कि उसमें लेखक को अपना व्यक्तित्व नहीं प्रदर्शित करना चाहिए। इस कारण उस समय निबंधों में उत्तम पुरुष सर्वनाम का प्रयोग वर्जित माना जाता था। तब हास्य तथा व्यंग्य को भी निबंध में कोई महत्वपूर्ण स्थान नहीं दिया जाता था परंतु कालांतर में यह धारणा बदल गई। स्वाभाविकता के साथ अपने भावों को प्रकट कर देना ही, जिसमें दर्पण के प्रतिबिंब की तरह लेखक का व्यक्तित्व छलक उठे, उसे निबंध का लक्षण समझा गया। जिस निबंध में वर्ण्य विषय तो हो परंतु लेखक का व्यक्तित्व नदारद हो, उस सच्चा निबंध नहीं माना जा सकता। सच्चे और सुंदर निबंध में वर्ण्य विषय का प्रस्फूटन इनता महत्वपूर्ण नहीं, जितना की निबंध लेखक के व्यक्तित्व का प्रस्फूटन। लेखक का व्यक्तित्व जितना ही आकर्षक होगा उतना ही वह हमें अधिक प्रभावित करेगा। लेखक का विषय पर अधिकार होता है ना विषय का लेखक पर। निबंध लेखन के लिए यह आवश्यक नहीं कि विषय महत्वपूर्ण हो। विश्व की कुछ से कुछ वस्तु निबंध का विषय बन सकती है। लेखक के व्यक्तित्व के स्पर्श मात्र से स्पष्ट होकर वह महत्वपूर्ण बन जाती है। निबंध लेखक की यह कला भारतेदू युग के निबंधकारों में भरपूर मात्रा मिलती है।

निबंध लेखन किसी भी प्रकार के विषय को बंधन मानकर नहीं चलता। परंतु इसका अर्थ नहीं की उसकी कृति विश्रृंखलित और निरर्थक होती है और सुंदर निबंध लिखने के लिए पांच चीजों की आवश्यकता है-

1. लेखक का वैचारिक व्यक्तित्व आकर्षक हो, 2. उसका हृदय संवेदनशील

हो, 3. सुक्ष्म निरीक्षण की उसमें असाधारण शक्ति हो, 4. जीवन की विशद अनुभूति हो, 5. मनुष्य तथा समाज के रीति-रिवाजों से उसका सजीव व घनिष्ट परिचय हो।

निबंध की कतिपय विशेषताएं :-

1. निबंध अपेक्षाकृत आकार में छोटी गद्य रचना के रूप में होता है। अधिकांश निबंध गु में ही लिखे जाते हैं। परंतु कुछ निबंध पद्य में भी लिखे गए हैं, जैसे - पॉपस ऐसे ऑन मैन और महावीर प्रसाद द्विवेदी का है कविते नामक निबंध। निबंध के आकार की कोई सीमा निर्धारित नहीं की जा सकती, वह बड़ा भी हो सकता है और छोटा भी।

2. निबंध में लेखक के निजीपन और व्यक्तित्व की झलक होती है। साहित्य की अन्य विधाओं में लेखक का व्यक्तित्व छः अंशों तक ओझल रह सकता है किंतु निबंध में नहीं। कारण यह है कि उसको अपने निजीपन के अनुरूप अथवा अपने विशेष दृष्टिकोण से लिखता है, उसे उसके व्यक्तिगत अनुभव और उनके प्रति व्यक्तिगत अनुभव और उनके प्रति एक विशेष प्रकार का संवेदनात्मक दृष्टिकोण रहता है। उसके विचार और प्रभाव की विशेषताएं उपर उभर आती हैं।

3. निबंध में अपूर्णता और स्वच्छता के रहते हुए भी वह महत्वपूर्ण होता है उसे कुछ अंशों तक गद्य का मुक्तक काव्य भी कर सकते हैं, जिसमें प्रगीत काव्य का सा जीवन और तन्मयता रहती है। जिस प्रकार कहानी जीवन के किसी विशिष्ट अंशों की झांकी है, उसकी प्रकार निबंध भी जीवन के प्रति एक दृष्टिकोण है। वह जीवन की एक नई झलक लेकर आता है। उके लिए यह आवश्यक नहीं है कि वह विषय का पूर्ण प्रतिपादन करे। वह अपनी रूचि के अनुसार ही विषय का कोई एक अंग चुन लेता है।

4. निबंध साधारण गद्य की अपेक्षा अधिक रोचक और सजीव होता है। वह केवल वर्णन मात्र ना होकर लेखक की प्रतिभा की चमक-दमक से पूर्ण होता है, यहां तक कि दार्शनिक या सैद्धांतिक निबंध दर्शन और सिद्धांतों की अपेक्षा अधिक सजीव, रोचक और प्रभावशाली होता है। उसमें उत्तम शैली का उभार लाने के लिए घ्वनि, हास्य-व्यंग्य, लाक्षणिकता और कुछ अलंकारों का प्रयोग भी होता है। निबंधकार अपनी प्रतिभा और उपयुक्त विशेषताओं की सहायता से सामान्य विषय को भी असामान्य और नगण्य को भी महान बना देता है।

5. निबंध को हम कथ्य में अभिव्यक्त एक प्रकार का स्वागत भाषण भी कर सकते हैं। निबंध में लेखक का व्यक्तित्व प्रधान होने के कारण ऐसे निबंधों को साहित्य के अंतर्गत स्वीकार नहीं किया जा सकता जिसमें, दार्शनिक, वाद-विवाद, विधान, अर्थशास्त्र, नीतिशास्त्र अथवा राजनीति का ऐसा नीरस तथ्यपरक विवेचन किया गया हो कि उसके लेखक का व्यक्तित्व प्रतिबिंबित न हो सका हो। इसलिए आत्म निवेदन अथवा नीजी दृष्टिकोण की अभिव्यक्ति में ही निबंध कला का चरमोत्कर्ष माना गया है, इसमें लेखक को अपनी व्यक्तिगत प्रतिभा के प्रकाशन का पूर्ण अवसर मिलता है।

विषय की दृष्टि से निबंधों की कोई सीमा निश्चिन्म नहीं की जा सकती। प्रत्येक वस्तु, भाग और क्रिया निबंध का विषय बनाई जा सकती है। हिन्दी में विषयों में विविधता के लिए भारतेदू युग सबसे आगे है। द्विवेदी युग में इतिवृत्तात्मक दृष्टिकोण रहने के कारण विषयों में वह मनमौजीपन आकर्षण और विविधता नहीं मिलती जो भारतेदू युग में थी। यहां विविध विषयों पर लिखे गए निबंधों की तालिका देने से निबंध का आकार अत्यंत विस्तृत और उबा देनक वात हो जाएगा। विषय विभिन्नता को दृष्टि में रखकर विद्वानों ने निबंधों को च वर्गों में विभाजित किया है-

1. वर्णनात्मक निबंध
2. विवरणात्मक निबंध
3. विचारात्मक निबंध
4. भावात्मक निबंध

वर्णनात्मक निबंध में प्राकृतिक उपकरणों तथा भौतिक पदार्थ को फिर रूप में देखकर वर्णन किया जाता है। इनका संबंध संपूर्ण देश से रहता है, इनकी वर्णन शैली, व्यास शैली कहलाती है, जिसमें वर्ण्य विषय की लंबी चौड़ी विवेचना होती है। विवरणात्मक निबंध में वस्तु को उसके स्थिर स्वरूप में ना देखकर गतिशील रूप में देखा जाता है। प्रायः शिकार, पर्वतारोहण, दुर्गम प्रदेश की यात्रा, साहसपूर्ण कार्य इत्यादि का वर्णन इन निबंधों का विषय होता है। विचारात्मक निबंध में भौतिक विवेचन की प्रधानता रहती है, इसी कारण इसका संबंध प्रधानतः बुद्धि से माना गया है। इसमें दर्शन, अध्यात्म, मनोविज्ञान आदि की विवेचना होती है। यह निबंधों का सबसे गंभीर और सुलक्षा हुआ रूप होता है। ऐसी निबंधों के लेखक की व्यक्तिगत अनुभूतियाँ जितनी विस्तृत होंगी, उसका मानव जीवन का अध्ययन जितना गंभीर होगा, उतनी ही उसमें सफलता मिलेगी। भावात्मक निबंध में बुद्धि तत्व की अपेक्षा भाव तत्व की प्रधानता रही है, क्योंकि इनका संबंध भावना अर्थात् हृदय से होता है। इनमें राग, आत्मकथा अधिक होने से कविता पूर्ण उद्गार तथा शैली का सौंदर्य उभर जाता है, जिसमें इन में एक विशेष हार्दिक सौंदर्य, तड़प, सजीवता उत्पन्न हो जाती है।

समष्टि रूप से हमारा निबंध साहित्य क्रमशः समृद्ध होता जा रहा है, परंतु आधुनिक निबंध लेखकों की रुचि सामाजिक और राजनैतिक विषयों की अपेक्षा आलोचनात्मक निबंध लिखने में अधिक रमती है। आलोचनात्मक लेखकों की भरमार हो रही है, उनमें विषय वैविध्य का अभाव सा है। आज ऐसे निबंध लेखकों की आवश्यकता है, जो आलोचनात्मक निबंध ही न लिखकर सामाजिक, राजनीतिक, मनोवैज्ञानिक आदि विभिन्न प्रकार के निबंध लिख सकें।

संदर्भ सूची :-

1. साहित्यिक निबंध : राजनाथ शर्मा, विनोद पुस्तक मंदिर, आगरा, पृ. सं. 558
2. बृहत् साहित्यिक निबंध : डॉ. यश गुलाटी, सूर्य भारती प्रकाशन, नई सड़क, दिल्ली, पृ. सं. 271
3. साहित्यिक निबंध : राजनाथ शर्मा, पृ. सं. 552
4. साहित्यिक निबंध : राजनाथ शर्मा, पृ. सं. 553, 555
5. साहित्यिक निबंध : राजनाथ शर्मा, पृ. सं. 551-52, 554-55



Complexes of Pyrimidine Thiones: Mechanochemical Synthesis and Biological Evaluation

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A new series of metal complexes with 1-(2-methylphenyl)-4,4,6-trimethyl pyrimidine-2-thione (**2-HL1**) and 1-(4-methylphenyl)-4,4,6-trimethyl pyrimidine-2-thione (**4-HL2**) ligands, $[M(\text{mppt})_2(\text{H}_2\text{O})_n]$ ($M(\text{II}) = \text{Cu, Mn, Co; } n = 2$ and $M(\text{II}) = \text{Ni, Zn; } n = 0$) have been synthesized using mechanochemical protocol. The complexes have been framed as $[M(\text{mppt})_2(\text{H}_2\text{O})_n]$ due to 1:2 (metal:ligand) nature of these metal complexes. Structures have been further confirmed on the basis of elemental analysis, Magnetic susceptibility measurements, electronic, infrared, far infrared, proton NMR, Mass spectral moment and thermogravimetric analysis studies. The infrared spectral data suggested that ligand behaves as a bidentate, coordinating through –N (endocyclic) and –S (exocyclic) donor atoms. All the compounds have also been screened for antibacterial and DNA photocleavage potential. Ligands complexed with Mn and Ni metals have shown the effect of substitution on their biological potentials. It was found that substitution at 4th or *para* position makes the ligand and its metal complexes have better antibacterial and DNA photocleaving agents.

Keywords: DNA photocleavage, Pyrimidine-2-thione, Mechanochemical protocol.

INTRODUCTION

Pyrimidine-based heterocyclic thiones are regarded as privileged ligands [1] and metal complexes derived from these sulphur containing scaffolds have been known for decades. These complexes have been comprehensively studied due to their sensitivity, synthetic plasticity and selectivity towards a variety of metal atoms. Their importance in structural research as well as synthesis owes much to their derivative affluence and structural plurality. Pyrimidine-thione contains nitrogen and sulphur donor atoms, the sulphur atom, is a soft center and the nitrogen atom is a hard center [2], this hard – soft combination allows to coordinate with the metals. There are various ways in which thione ligand approach metals, *via* sulphur bonding/sulphur bridging/N, S-chelating and N, S-bridging modes. The presence of –N(H)–C(=S)– moiety [3] is mainly responsible for the biological and pharmacological activity of pyrimidine-thiones. So the compounds having this moiety represent an important class of compounds as pharmaceutical and medicinal agents with a wide variety of pharmacological activity like antibacterial, antifungal, antileishmanial,

anti-inflammatory, analgesic, antihypertensive, antipyretic, antiviral, antidiabetic, antiallergic, anticonvulsant, antioxidant, antihistaminic, herbicidal and anticancer activities [4-8].

In continuation of our research [9,10] to explore the potentiality of some metal complexes compounds, it was planned to synthesize, mechanochemically pyrimidine-2-thione based metal complexes *viz.* $[\text{Mn}(2\text{-mppt})_2(\text{H}_2\text{O})_2] \cdot \text{H}_2\text{O}$ (**1**), $[\text{Mn}(4\text{-mppt})_2(\text{H}_2\text{O})_2]$ (**2**), $[\text{Co}(4\text{-mppt})_2(\text{H}_2\text{O})_2] \cdot 4\text{H}_2\text{O}$ (**3**), $[\text{Ni}(2\text{-mppt})_2(\text{H}_2\text{O})_2] \cdot 2.5\text{H}_2\text{O}$ (**4**), $[\text{Ni}(4\text{-mppt})_2(\text{H}_2\text{O})_2] \cdot 2.5\text{H}_2\text{O}$ (**5**), $[\text{Cu}(4\text{-mppt})_2(\text{H}_2\text{O})_2]$ (**6**) and $[\text{Zn}(2\text{-mppt})_2] \cdot \text{H}_2\text{O}$ (**7**). Furthermore, an effort has been made to find some new potential DNA photocleavage and antibacterial agents.

EXPERIMENTAL

All the chemicals used were of analytical grade and purchased from Hi-Media and used as such. The experimental work was carried out with double distilled water. The bacterial strains were isolated from the patients at M.M. Medical College, Maharishi Markandeshwar (Deemed to be University), Mullana, India. Plasmid DNA pUC 18 was used for accomplishing the photocleavage studies.

Physical measurements: The ^1H NMR spectra of the ligand and complexes were measured in $\text{DMSO}-d_6$ using TMS as reference standard on Bruker 400 MHz instrument. Q-ToF Micro Waters LC-MS spectrometer was used for the recording of the mass spectra. Elemental analyses (C, H, N) was carried out using LECO 9320 analyzer (Saif Lab, Chandigarh). IR, electronic and Mass spectra were measured on Shimadzu IR affinity in 4000 to 200 cm^{-1} range using KBr pellet method, Shimadzu UV 1800 instrument in DMSO as a solvent and on Agilent mass spectrometer.

Synthesis of ligands: The starting ligands 1-[2/4-methylphenyl]-4,4,6-trimethyl-3*H*,5*H*-dihydropyrimidine-2-thione (2/4-Hmppt) were synthesized according to reported literature method [11].

(2-Hmppt) (2-HL1): Off white, Yield: 64%; m.p. $199\text{ }^\circ\text{C}$. Anal. calcd. (found) % for $\text{C}_{14}\text{H}_{18}\text{N}_2\text{S}$: C, 67.2 (67.3); H, 7.3 (7.3); N, 11.3 (11.4); S, 13.0 (12.9).

(4-Hmppt) (4-HL1): Off white, Yield: 71%; m.p. $201\text{ }^\circ\text{C}$. Anal. calcd. (found) % for $\text{C}_{14}\text{H}_{18}\text{N}_2\text{S}$: C, 66.4 (66.6); H, 6.9 (7.0); N, 10.6 (10.7); S, 11.9 (12.1).

Synthesis of metal complexes: Mechanochemical method was employed to synthesize all metal complexes.

[Mn(2-mppt) $_2$ (H $_2$ O) $_2$]\cdot\text{H}_2\text{O} (1): To solid ligand (2-HL1) (0.1 mol), solid Na salt (0.1 mol) was added, then it was grinded in a mortar with the help of a pestle for 1 h at room temperature and dried in sunlight for 2-3 days. Then $\text{Mn}(\text{CH}_3\text{COO})_2\cdot 4\text{H}_2\text{O}$ (0.05 mol) was added and again grinded for about 30 min and dried in air with occasional mixing in between). The product obtained was first washed with methanol then by petroleum ether to eliminate traces of unreacted metal salts. The complex obtained was coloured and stable at room temperature. Colour: light brown, Yield: 92%; m.p. $270\text{ }^\circ\text{C}$. Elemental anal. calcd. (found) % for $\text{C}_{28}\text{H}_{40}\text{N}_4\text{O}_3\text{S}_2\text{Mn}$: C, 56.1 (55.8); H, 6.67 (5.5); N, 9.3 (9.0); S, 10.68 (10.4); O, 8.0 (7.7). IR (KBr, cm^{-1}): $\omega(\text{O-H})$, 3391; $\nu(\text{C=N}) + \nu(\text{C=C})$, 1518; $\nu(\text{NCS})$, 1407; $\nu(\text{C=N}) + \nu(\text{NCS}) + \nu(\text{C=S})$, 1333, 1238, 1105; $\nu(\text{C-S})$, 862; $\omega(\text{Mn-N})$, 370; $\omega(\text{Mn-S})$, 233. MS m/z $[\text{M}+1]^+$: 547.3.

[Mn(4-mppt) $_2$ (H $_2$ O) $_2$] (2): The same procedure was used as for complex 1 with 4-HL2 (0.1 mol). Light brown, Yield: 92% (based on $\text{Mn}(\text{CH}_3\text{COO})_2\cdot 4\text{H}_2\text{O}$). m.p. $272\text{ }^\circ\text{C}$. Elemental anal. (found) % for $\text{C}_{28}\text{H}_{38}\text{N}_4\text{S}_2\text{O}_2\text{Mn}$: C, 57.8 (56.8); H, 6.5 (6.1); N, 9.6 (8.4); S, 11.0 (10.6); O, 5.5 (5.1). IR (KBr, cm^{-1}): $\nu(\text{O-H})$, 3440; $\nu(\text{C=N}) + \nu(\text{C=C})$, 1520; $\nu(\text{NCS})$, 1406; $\nu(\text{C=N}) + \nu(\text{NCS}) + \nu(\text{C=S})$, 1332, 1254, 1132; $\nu(\text{C-S})$, 781, $\nu(\text{Mn-N})$, 361; $\nu(\text{Mn-S})$, 226. MS m/z $[\text{M}+1]^+$: 547.3.

[Co(4-mppt) $_2$ (H $_2$ O) $_2$]\cdot 4\text{H}_2\text{O} (3): The same reaction procedure was used as for complex 1 with 4-HL2 (0.1 mol) and $\text{Co}(\text{CH}_3\text{COO})_2\cdot 4\text{H}_2\text{O}$ (0.05 mol) respectively. Light violet, Yield: 85%; m.p. $308\text{ }^\circ\text{C}$. Elemental anal. calcd. (found) % for $\text{C}_{28}\text{H}_{46}\text{N}_4\text{S}_2\text{O}_6\text{Co}$: C, 51.1 (50.1); H, 7.0 (6.4); N, 8.5 (8.0); S, 9.7 (8.9); O, 14.6 (14.2). IR (KBr, cm^{-1}): $\nu(\text{O-H})$ 3448; $\nu(\text{C=N}) + \nu(\text{C=C})$, 1521; $\nu(\text{NCS})$, 1418; $\nu(\text{C=N}) + \nu(\text{NCS}) + \nu(\text{C=S})$, 1333, 1238, 1105; $\nu(\text{C-S})$, 717; $\nu(\text{Co-N})$, 301; $\nu(\text{Co-S})$ 210. MS m/z $[\text{M}+1]^+$: 550.7

[Ni(2-mppt) $_2$ (H $_2$ O) $_2$]\cdot 2.5\text{H}_2\text{O} (4): The same reaction procedure was used as for complex 1 with 4-HL2 (0.1 mol) and $\text{Ni}(\text{CH}_3\text{COO})_2\cdot 4\text{H}_2\text{O}$ (0.05 mol). Greenish, Yield: 91.8%; m.p.

$328\text{ }^\circ\text{C}$. Elemental anal. calcd. (found) % for $\text{C}_{28}\text{H}_{43}\text{N}_4\text{O}_{4.5}\text{S}_2\text{Ni}$: C, 53.3 (53.0); H, 6.8 (5.9); N, 8.9 (8.4); S, 10.1 (9.7); O, 11.4 (11.0). IR (KBr, cm^{-1}): $\nu(\text{O-H})$, 3407; $\nu(\text{C=N}) + \nu(\text{C=C})$, 1519; $\nu(\text{NCS})$, 1406; $\nu(\text{C=N}) + \nu(\text{NCS}) + \nu(\text{C=S})$, 1333, 1238, 1131; $\nu(\text{C-S})$, 821; $\nu(\text{Ni-N})$, 349; $\nu(\text{Ni-S})$ 200. MS m/z $[\text{M}+1]^+$: 551.3.

[Ni(4-mppt) $_2$ (H $_2$ O) $_2$]\cdot 2.5\text{H}_2\text{O} (5): The same reaction procedure was used as for complex 1 with 4-HL2 (0.1 mol) and $\text{Ni}(\text{CH}_3\text{COO})_2\cdot 4\text{H}_2\text{O}$ (0.05 mol), respectively. Greenish, Yield: 91.8%. m.p. $328\text{ }^\circ\text{C}$. Elemental anal. calcd. (found) % for $\text{C}_{28}\text{H}_{43}\text{N}_4\text{O}_{4.5}\text{S}_2\text{Ni}$: C, 53.3 (53.0); H, 6.8 (5.9); N, 8.9 (8.4); S, 10.1 (9.7); O, 11.4 (11.0). IR (KBr, cm^{-1}): $\nu(\text{O-H})$, 3407; $\nu(\text{C=N}) + \nu(\text{C=C})$, 1518; $\nu(\text{NCS})$, 1407; $\nu(\text{C=N}) + \nu(\text{NCS}) + \nu(\text{C=S})$, 1333, 1238, 1105; $\nu(\text{C-S})$, 821; $\nu(\text{Ni-N})$, 350; $\nu(\text{Ni-S})$ 279. MS m/z $[\text{M}+1]^+$: 551.3.

[Cu(4-mppt) $_2$ (H $_2$ O) $_2$] (6): The same reaction procedure was used as for 1, with (4-HL2) (0.1 mol) and $\text{Mn}(\text{CH}_3\text{COO})_2\cdot 4\text{H}_2\text{O}$ was replaced by $\text{Cu}(\text{CH}_3\text{COO})_2\cdot \text{H}_2\text{O}$ (0.05 mol). Light Green, Yield: 89% (based on $\text{Co}(\text{CH}_3\text{COO})_2\cdot 4\text{H}_2\text{O}$). m.p. $314\text{ }^\circ\text{C}$. Elemental anal. calcd. (found) % for $\text{C}_{28}\text{H}_{34}\text{N}_4\text{O}_2\text{S}_2\text{Cu}$: C, 57.0 (55.3); H, 6.4 (6.0); N, 9.5 (8.3); S, 10.8 (9.9); O, 5.4 (5.1). IR (KBr, cm^{-1}): $\nu(\text{O-H})$, 3439; $\nu(\text{C=N}) + \nu(\text{C=C})$, 1507; $\nu(\text{NCS})$, 1409; $\nu(\text{C=N}) + \nu(\text{NCS}) + \nu(\text{C=S})$, 1333, 1308, 1103; $\nu(\text{C-S})$, 819; $\nu(\text{Cu-N})$, 284; $\nu(\text{Cu-S})$ 174. MS m/z $[\text{M}+1]^+$: 555.2.

[Zn(2-mppt) $_2$]\cdot \text{H}_2\text{O} (7): The same reaction procedure was used as for complex 1 with 4-HL1 (0.1 mol) and $\text{Zn}(\text{CH}_3\text{COO})_2\cdot 2\text{H}_2\text{O}$ (0.05 mol). White, Yield: 86.3% (based on $\text{Zn}(\text{CH}_3\text{COO})_2\cdot 2\text{H}_2\text{O}$). m.p. $313\text{ }^\circ\text{C}$. Anal. calcd. (found) % for $\text{C}_{28}\text{H}_{36}\text{N}_4\text{O}_2\text{S}_2\text{Zn}$: C, 58.6 (57.2); H, 6.3 (6.1); N, 9.8 (8.9); S, 11.2 (10.4); O, 2.8 (2.4). IR (KBr, cm^{-1}): $\nu(\text{O-H})$, 3280; $\nu(\text{C=N}) + \nu(\text{C=C})$, 1518; $\nu(\text{NCS})$, 1408; $\nu(\text{C=N}) + \nu(\text{NCS}) + \nu(\text{C=S})$, 1332, 1238, 1131; $\nu(\text{C-S})$, 754; $\nu(\text{Zn-N})$, 474; $\nu(\text{Zn-S})$ 217. MS m/z $[\text{M}+1]^+$: 557.3.

Study on *in vitro* antibacterial activity: Antibacterial activities of synthesized compounds against various pathogenic strains of bacteria (*Bacillus subtilis* (5021), *S. aureus* (2063), *P. syringae* (5102), *P. aeruginosa* (5029)) were evaluated using agar well diffusion method. Plates containing 25 mL of nutrient agar were inoculated by swabbing 100 μL inocula of each test bacterium. Wells were bored after 15-20 min of adsorption of incula using sterile cork borer (10 mm diameter). At 2000 $\mu\text{g/L}$ of concentration stock solutions of the standard and test compounds were prepared in DMSO. Two-fold dilution of the compounds (50 μL volume) from the stock solution (2, 4, 8, ..., 1054 $\mu\text{g/mL}$) were inoculated into the corresponding wells in the seeded agar plates. Incubation of the inoculated plates were done at $37\text{ }^\circ\text{C}$ for 24 h. Inhibition zone was evaluated for the detection of antibacterial activity of each synthesized compound with zone reader (Hi Antibiotic zone scale). DMSO was used as a negative control, where as oxacillin or penicillin G was used as a reference drug in the investigation.

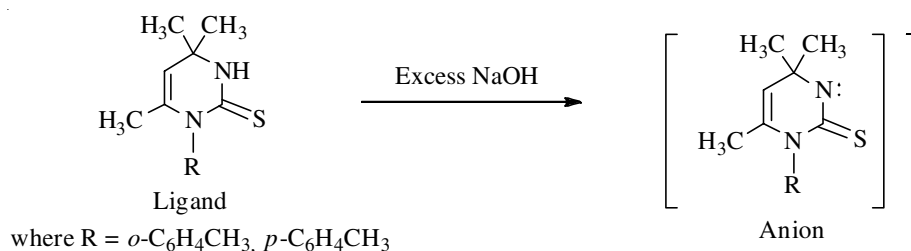
DNA photocleavage studies: Agarose gel electrophoresis was used to study the DNA photocleavage activity by metal complexes. Firstly, metal complex (40 μg) was added with supercoiled plasmid DNA (5 μL) and incubated at $37\text{ }^\circ\text{C}$ for 1 h. Later, Agarose (0.8%) gel was prepared and immersed into the electrophoresis tank containing 1X TAE buffer. DNA

samples were loaded into the wells by mixing with loading dye (0.25 % bromophenol blue, 0.25 % xylene cyanol, 30 % glycerol). After the electrophoresis at 90 V for 2 h, staining of the gel was done with ethidium bromide, (1.0 µg/mL) viewed under UV trans-illuminator (Bio-Rad UV trans-illuminator 2000).

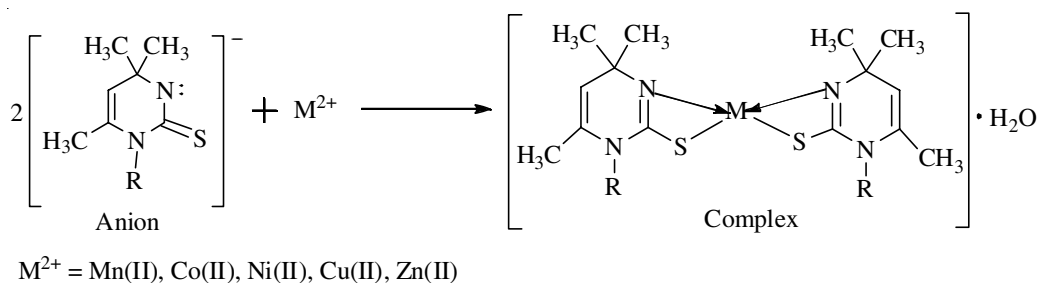
RESULTS AND DISCUSSION

The synthesized ligands and their metal complexes were stable at room temperature and readily soluble in DMF/DMSO shown in **Scheme-I**. The mononegative bidentate ligand is probable to coordinate with metal centers *via* deprotonated cyclic nitrogen (N-3) and thione sulfur atoms (**Scheme-I**) which was confirmed using different spectroscopic techniques. We tried to structurally characterize one of the complex by X-ray crystallography, but unsuccessful to collect the data due to very slight crystal dimensions. All the complexes were characterized on the basis of ¹H NMR, IR, UV-visible spectroscopy, mass spectrometry, magnetic moment and thermogravimetric studies.

Step-I:



Step-II:



Scheme-I

FTIR spectra: FTIR spectra was recorded in the region 4000-250 cm⁻¹ and some specific bands and their assignments are listed in Table-1. In FTIR spectra, ν(N-H) stretching bands appeared at 3019 cm⁻¹ in **2-HL1** and at 3028 cm⁻¹ in **4-HL1**. The bands at 1691cm⁻¹ in **2-HL1** and 1692 cm⁻¹ in **4-HL1** respectively are due to δ(N-H) deformations [12,13]. Due to absence of any band for ν(SH) in 2600-2500 cm⁻¹ region confirms the thione form of ligand [9,10,14].

After chelation, disappearance of ν(NH) stretching bands and advent of strong band in the range 1543-1510 cm⁻¹ are assigned to the combination of ν(C=C) + ν(C=N) skeletal vibrations of pyrimidine-thione ring. These bands are shifted to low or high frequency signifying N-coordination occur through deprotonated ring nitrogen [15,16]. Besides, these in **2-HL1** bands at 1273, 1137 cm⁻¹ and in **4-HL1** bands at 1276, 1136 cm⁻¹ are allocated to contribution due to prevailing ν(C=S), which shows lower intensities or sometimes absence in the spectra of metal complexes. This specifies the association of exocyclic sulphur atom in coordination. Appearance of bands at or near 862-781 cm⁻¹ due to C-S, further supports the participation of sulphur in coordination [12,13,17]. Due to extensive coupling

TABLE-1
FTIR DATA OF LIGANDS AND THEIR METAL COMPLEXES

| Ligand/ complexes | Key IR bands (cm ⁻¹) | | | | | | | | |
|----------------------|----------------------------------|-------|-------|--------------------|--------|----------------------------|--------|--------|--------|
| | ν(OH) | ν(NH) | δ(NH) | ν(C=N) + ν(C=C) | ν(NCS) | ν(C=N) + ν(NCS) + (C=S) | ν(C-S) | ν(M-N) | ν(M-S) |
| Ligand | | | | | | | | | |
| 2-HL1 | – | 3019 | 1691 | 1536 | 1495 | 1384, 1273, 1137 | – | – | – |
| 4-HL1 | – | 3028 | 1692 | 1508 | 1454 | 1385, 1276, 1136 | – | – | – |
| Complexes | | | | | | | | | |
| 1 | 3391 | – | – | 1518 | 1407 | 1333, 1238, 1105 | 862 | 370 | 233 |
| 2 | 3440 | – | – | 1520 | 1406 | 1332, 1254, 1132 | 781 | 361 | 226 |
| 3 | 3448 | – | – | 1521 | 1418 | 1333, 1238, 1105 | 717 | 301 | 210 |
| 4 | 3407 | – | – | 1519 | 1406 | 1333, 1238, 1131 | 821 | 349 | 200 |
| 5 | 3407 | – | – | 1518 | 1407 | 1333, 1238, 105 | 821 | 350 | 279 |
| 6 | 3439 | – | – | 1507 | 1409 | 1333, 1308, 1103 | 819 | 284 | 174 |
| 7 | 3280 | – | – | 1518 | 1408 | 1332, 1238, 1131 | 754 | 474 | 217 |

of $\delta(\text{NH})$, $\nu(\text{N}=\text{C}=\text{S})$, $\nu(\text{C}=\text{N})$ and $\nu(\text{C}=\text{S})$ called thioamide bands in the spectra of complexes infers that there is interaction between exocyclic S atom, ring N and metal ions [17,18].

Appearance of non-ligand bands in far IR spectra of complexes between 410 and 174 cm^{-1} are assigned to $\nu(\text{M}-\text{N})$ and $\nu(\text{M}-\text{S})$ stretches respectively [18-21]. It further confirms that N, S chelation takes place *via* the deprotonated nitrogen N-3 and the exocyclic sulphur atom [21,22].

¹H NMR spectra: ¹H NMR spectra of both ligands were documented in DMSO. The spectra of **2-HL1** exhibits singlets at δ 1.25, 1.33, 2.08, 4.94, 8.81 ppm which were allocated as 2(CH₃), 1(CH₃), 1(CH₃), C=C-H and N-H, respectively (Table-2). Multiplet of ArC-H appeared at δ 7.07-7.25 ppm. The spectrum of **4-HL1** exhibit singlet at δ 1.25, 1.40, 2.3, 4.91, 8.80 ppm, assigned as 2(CH₃), 1(CH₃), 1(CH₃), C=C-H and N-H respectively and the appearance of two doublet of doublet at δ 6.9-7.0(dd), 7.1-7.2(dd) ppm are due to ArC-H [19-25].

| Protons | (2-HL1) | (4-HL1) | 7 |
|------------------|------------------|------------------------------|-----------|
| 4CH ₃ | 1.25,1.33,2.08 | 1.25,1.40,2.3 | 1.27-1.71 |
| C=C-H | 4.94 | 4.91 | 4.85 |
| N-H | 8.81 | 8.80 | – |
| Ar-C-H | 7.07-7.25 | 6.9-7.0 (dd) 7.1-7.2 (dd) | 7.01-7.18 |

Absence of NMR signals at 8.81 ppm and 8.96 ppm for Nitrogen protons in the spectra of metal complexes further confirms the deprotonation of N-H and chelation of metal ion through the deprotonated N(3) [21]. Likewise, chemical shifting is observed in the values of all metal complexes as compared to free ligands. Broad peak appeared for NMR spectra of Cu, Ni and Mn complexes shows paramagnetic behaviour of the metal ions [26,27]. This statement is in full agreement with the reported results, which further approves the formation of metal complexes.

Mass spectra: The mass fragmentation of both ligands and selected metal complexes are reported in Table-3. The intense molecular ion peak appeared at m/z 247.52 ($\text{M}^+ + 1$) in mass spectra of both ligands corresponds to its molecular formula (calcd. 246). Complex **1** exhibits a peak at m/z 547.35 corresponding to $[\text{Mn}(2\text{-mppt})_2]^+$ ion, while complex **5** shows a peak at m/z 551.32 due to $[\text{Ni}(4\text{-mppt})_2]^+$ ion. The mass spectrum of complex **6** shows a peak at m/z 555.29 corresponding to $[\text{Cu}(p\text{-mppt})_2]^+$ ion and the spectrum of complex **7** shows a peak at m/z 557.31 due to $[\text{Zn}(2\text{-mppt})_2]^+$ ion. Spectroscopic analysis provides sufficient proof to validate the formation of the expected metal complexes with the ligand in stoichiometric

ratio of 1:2 (metal:ligand). This allows us to propose a *cis*-coordination geometry [9,25,28,29] for the metal complexes (**Scheme-I**).

Magnetic measurements and electronic spectra: The magnetic data of metal complexes are given in Table-4. The magnetic moment of metal complexes **1** and **2** shows value 5.68 and 5.66 BM, respectively which is expected for high spin distorted octahedral complexes [24]. Complex **3** shows magnetic moment of 3.67 BM and this value matches with values reported for octahedral complexes [30,31]. The magnetic data of complexes **4** and **5** show magnetic moment of 3.11 and 2.98 BM, which are close to that of an octahedral d^8 system with two unpaired electrons [32,33]. The value of 1.79 BM in complex **6** is due to one unpaired electron ($S = 1/2$) as mostly observed for copper complexes while Zn(II) have zero unpaired electron, shows diamagnetic behaviour [34].

| Ligand/ Complex | Magnetic moment (BM) | λ_{max} (nm) |
|--------------------|---------------------------------|-----------------------------|
| 2-HL1 | – | 292, 304 |
| 4-HL1 | – | 283, 319 |
| 1 and 2 | 5.68 and 5.66 (both octahedral) | 285, 667 |
| 3 | 3.67 (Octahedral) | 701, 624, 526, 465, 282 |
| 4 and 5 | 3.11 and 2.98 (both octahedral) | 723, 585, 510, 284 |
| 6 | 1.79 (octahedral) | 410, 403 |
| 7 | Diamagnetic | 631, 605, 287 |

UV visible spectra: Electronic spectra of complexes **1** and **2** show the $d-d$ transitions of $t_{2g}^3 e_g^2$ are frail and spin forbidden, rarely visible in the concentrated solutions. A weak band at 667, 669 nm may be assigned to ${}^6A_{1g} \rightarrow {}^4T_{1g}$ (G) transitions [35]. Absorptions of 701, 624, 526, 465 nm were allotted to ${}^4T_{1g} \rightarrow {}^4T_{2g}$ (F), ${}^4T_{1g} \rightarrow {}^4T_{1g}$ (P), ${}^4T_{1g} \rightarrow {}^4A_{2g}$ (F) transitions for complexes **1**, **2** and **3**, respectively [36].

For d^8 system electronic bands visible at 723, 585, 510 nm which are given to ${}^3A_{2g} \rightarrow {}^3T_{2g}$, ${}^3A_{2g} \rightarrow {}^3T_{1g}$ (F), ${}^3A_{2g} \rightarrow {}^3T_{1g}$ (P) and charge transfer (CT) transitions for complexes **4** and **5**. The electronic spectra for complex **6** shows a broad band at 702 nm which is assigned to ${}^2B_{1g} \rightarrow {}^2E_{2g}$ transitions [37]. Therefore, copper complex was proposed with an octahedral geometry [9,10]. Complex **7** displayed the bands at 631 and 605 nm assigned to ${}^1A_{1g} \rightarrow {}^1B_{1g}$ and ${}^1A_{1g} \rightarrow {}^1E_{2g}$ shows, respectively four coordinate square planar geometry for complex [38] (Table-4).

Thermal studies: Thermogravimetric studies showed stability and degradation behaviour of complexes **1**, **3**, **4**, **7**. The primary thermal analysis data is listed in Table-5. Loss of weight below 140 °C in some of the complex is due to dehydration and colour changes from light to dark [9,16]. TG curves

| 2/4-Hmppt | 1 | 4 | 6 | 7 |
|-------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------|
| 121.07, 136.10, 188.57, 215.57, 247.51 m/z | 188.5, 247.5, 269.4, 270.1, 491.4, 499.4, 515.4, 531.4, 547.3, 599.2 m/z | 247.5, 269.4, 271.5, 515.4, 551.3, m/z | 215.5, 247.5, 269.4, 270.4, 277, 315.5, 515.4, 555.2 m/z | 215.5, 247.5, 269.4, 270.1, 515.4, 555.3, 557.3 m/z |

TABLE-5
 THERMOGRAVIMETRIC DATA OF METAL COMPLEXES

| Compound | Decomposition stages and assignment | Temp. (°C) | Weight loss (%): Found (calcd.) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------|------------------------------------|
| [Mn(2-mppt) ₂ (H ₂ O) ₂].H ₂ O [C ₂₈ H ₄₀ N ₄ MnO ₃ S ₂] (1) | 1) Lattice water (hydrated water) | 0-80 | 2.9 (3.1) |
| | 2) Coordinated water (inside coordination sphere) | 80-153 | 5.09 (4.7) |
| | 3) C ₇ H ₁₀ N ₂ elimination | 153-330 | 20.5 (20.3) |
| | 4) C ₇ H ₇ S | 330-500 | 15.1 (15.3) |
| | 5) C ₁₃ H ₁₇ N ₂ elimination | 500-800 | 35.8 (35.6) |
| [Co(4-mppt) ₂ (H ₂ O) ₂].4H ₂ O [C ₂₈ H ₄₆ N ₄ CoO ₄ S ₂] (3) | 1) 4 Lattice water (hydrated water) | 0-100 | 9.7 (9.69) |
| | 2) Coordinated water (inside coordination sphere) | 100-228 | 5.53 (5.5) |
| | 3) C ₇ H ₁₁ N ₂ elimination | 228-328 | 18.9 (18.8) |
| | 4) C ₇ H ₇ S | 328-500 | 14.15 (14.0) |
| | 5) C ₁₃ H ₁₆ N ₂ elimination | 500-800 | 32.9 (33.0) |
| [Ni(2-mppt) ₂ (H ₂ O) ₂].2.5H ₂ O [C ₂₈ H _{42.5} N ₄ NiO _{4.5} S ₂] (4) | 1) 2.5 Lattice water (hydrated water) | 0-80 | 3.0 (2.9) |
| | 2) Coordinated water (inside coordination sphere) | 80-170 | 6.0 (5.9) |
| | 3) C ₆ H ₁₀ N ₂ elimination | 170-270 | 20.1 (20.0) |
| | 4) C ₇ H ₁₀ S | 270-375 | 15.1 (15.09) |
| | 5) C ₁₄ H ₁₇ N ₂ elimination | 375-800 | 35.2 (35.3) |
| [Zn(2-mppt) ₂].H ₂ O [C ₂₈ H ₃₆ N ₄ ZnOS ₂] (7) | 1) Lattice water (hydrated water) | 0-100 | 7.0 (7.1) |
| | 2) C ₇ H ₁₀ N ₂ elimination | 100-273 | 19.8 (20.71) |
| | 3) C ₇ H ₇ S | 273-372 | 15.5 (15.37) |
| | 4) C ₁₃ H ₁₇ N ₂ elimination | 372-700 | 31.4 (31.45) |

*Calculated in parentheses

showed four stages of decomposition starting from the loss of hydrated water, coordinated water and decomposition of mppt⁻ moiety, which is further due to the break-down of the weak hetero {HN-C(ph), HN-N(1) or N(1)-CS or S-N(3)} bonds [9,21].

Thermogram of complex **1** shows five stages of weight loss in 0-80 °C, 80-153 °C, 153-330 °C, 330-500 °C and 500-800 °C temperature regions. These weight losses are correspond to the removal of one hydrated water molecule (calcd. 3.1%, found 2.9%), two coordinated water molecules (calcd. 4.7%, found 5.09%), C₇H₁₀N₂ moiety (calcd. 20.3%, found 20.5%), C₇H₇S moiety (calcd. 15.3%, found 15.1%), C₁₃H₁₆N₂ moiety (calcd. 35.6%, found 35.8%), respectively thereby leaving the mixture of MnO, MnS and MnC₂ [9,21].

For complex **3**, thermogravimetric studies showed five steps of decomposition in the 0-100 °C, 100-228 °C, 228-328 °C, 328-500 °C and 500-800 °C, respectively. The weight loss reveals the removal of four lattice water molecule (calcd. 9.69%, found 9.7%), two coordinated water molecules (calcd. 5.5%, found 5.53%), C₇H₁₁N₂ moiety (calcd. 18.8%, found 18.9%), C₇H₇N moiety (calcd. 14.0%, found 14.15%), C₁₃H₁₆N₂ fragments (calcd. 33.0%, found 32.9%), respectively and CoO residue contaminated with sulfide and carbide left behind [9,21].

Thermogram of complex **4** shows five TG inflections from 0-70 °C, 70-150 °C, 150-270 °C and 270-450 °C, 450-800 °C. Removal of 2.5 lattice water molecules (calcd. 2.9%, found 3.0%), two coordinated water molecules (calcd. 5.9%, found 6.0%), C₆H₁₀N₂ moiety (calcd. 20.0%, found 20.1%), C₇H₇S moiety (calcd. 15.09%, found 15.1%), C₁₄H₁₇N₂ fragments (calcd. 35.3%, found 35.2%), respectively reveals the successive weight loss and leaving contaminated mixture of NiO with carbide and sulfide [9,21].

Thermogram of complex **7** explains four TG weight losses which ranges from 0-100 °C, 100-273 °C, 273-372 °C and 372-700 °C. The first weight loss was endothermic, may be

due to the release of one lattice water molecule (calcd. 7.1%, found 7.0%), then another due to C₇H₁₀N₂ moiety (calcd. 20.71%, found 19.8%) while third and fourth indicates the removal of C₇H₇N moiety (calcd. 15.37%, found 15.5%) and C₁₃H₁₇N fragments (calcd. 31.45%, found 31.4%) leaving ZnO + ZnS + ZnC₂ residue [9,21].

Biological evaluation

Antibacterial activity of the metal complexes: On comparing the experimental data discovered that the **4-HL1** and its metal complexes are more active than the **2-HL1** and its metal complexes against all bacteria (Table-6). The data confirmed that this activity increases considerably on coordination/chelation. In addition to that on coordination polarity of the metal ion reduces primarily due to partial sharing of its positive charge with the donor groups [39,40] with in the chelate ring which in turn, leads to proliferation in the lipophilicity of metal chelates, to make it more permeable through the lipid layer [41] of microorganisms thus terminating them more violently. Once the compound come into the microbial cell, it confines the growth of bacteria by binding at the active site of enzymes, involved in various vital biochemical processes like proteins synthesis and cell respiration in the cell. In all the metal complexes active sites involve the formation of hydrogen bonds with imino group which further leads to snooping with the cell wall synthesis due to hydrogen bond formation the cytoplasmic membrane damages and the cell permeability may also be changed causing the cell death. Bioactivity order of complexes found was **3** > **6** > **5** > **7** > **2** > **4-HL1**. The higher activity of **3**, **6** and **5** complexes of **4-HL1** proposes that, on coordination the polarity of Co(II), Cu(II) and Ni(II) ion is abridged to a larger extent due to overlap of the ligand orbital and partial sharing of the positive charge of the cobalt, copper and nickel ions with donor groups. Consequently, Co(II), Cu(II) and Ni(II) ions are easily adsorbed on the surface of the cell

TABLE-6
in vitro ANTIBACTERIAL ACTIVITY OF
2-HL1, 4-HL1 AND ITS COMPLEXES

| Compounds | Diameter of growth of zone inhibition (mm) | | | |
|--------------|--------------------------------------------|------------------|--------------------|----------------------|
| | <i>B. subtilis</i> | <i>S. aureus</i> | <i>P. syringae</i> | <i>P. aeruginosa</i> |
| | -5021 | -2063 | -5102 | -5029 |
| 2-HL1 | 12 | 12 | 12 | 10 |
| 4-HL2 | 15 | 14 | 16 | 14 |
| 1 | 10 | 12 | 10 | 10 |
| 2 | 14 | 15 | 15 | 16 |
| 3 | 41 | 33 | 38 | 35 |
| 4 | 11 | 13 | 13 | 14 |
| 5 | 21 | 19 | 19 | 26 |
| 6 | 40 | 31 | 29 | 38 |
| 7 | 16 | 13 | 20 | 21 |
| Penicillin G | 35 | 31 | 38 | 37 |
| Oxacillin | 36 | 36 | 38 | 37 |

wall of microorganisms. These adsorbed ions interrupt the respiratory process of the cells and obstructs the synthesis of proteins. This, in turn, controls further growth [42] of the organisms.

DNA photocleavage study: The most threatening danger to the humans nowadays is cancer can be overcome by the discovery of chemical nuclease. Transition metal complexes possess good nuclease activities and are known to bind specifically with DNA [43]. The DNA photo cleavage study result were presented in Fig. 1. It was observed from the results that under the same experimental conditions metal complexes of 4-HL1 are relatively more active than 2-HL1 and complexes. Fig. 1 revealed that in complex 2 (20 µg/µL), both SC and NC form are visible, in complex 1 (60 µg/µL) only OC form is visible and complex 3, show almost complete degradation of plasmid DNA suggesting the strong nuclease activity of these complexes (20 µg/µL). However, in complex 5 (40 µg/µL) and (20 µg/µL) respectively, there was complete change of super coiled plasmid DNA into open circular and nicked coiled form is also visible suggesting high DNA photo cleaving capacity in case of complex 5. In case of complex 6, there was almost complete degradation of plasmid DNA suggesting the strong nuclease activity of complex 6 (20 µg/µL).

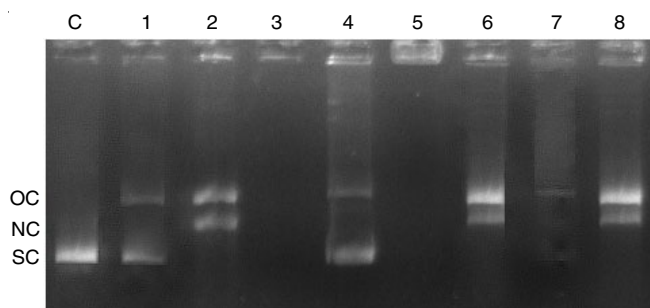


Fig. 1. DNA photocleavage activity of 2-HL1, 4-HL1 and its complexes C control (DNA+DMSO), Lane 1-4-HL1 (20 µg/µL), lane 2-complex 2 (20 µg/µL), lane 3-complex 3 (20µg/µL), lane 4-complex 5 (20 µg/µL), lane 5-complex 6 (40 µg/µL), lane 6-complex 6 (20 µg/µL), lane 7-2-HL1 (60 µg/µL), lane 8-complex 4 (60 µg/µL)

In complex 4, both the forms that is NC and OC were visible at 60 µg/µL. The better binding ability with plasmid DNA as compared to ortho substituted (2nd position) metal complexes

leads to enhanced nuclease activity in case of para (4th position) substituted metal complexes and the different degree of binding ability of complexes with the plasmid DNA resulted difference in the nuclease activity among the ortho and para substituted metal complexes.

Conclusion

In search of some biologically active agents, some transition metal complexes of bidentate pyrimidine-2-thione were synthesized under mechanochemical conditions. Metal coordinate with ligand via endocyclic nitrogen and exocyclic sulphur thus forming a four membered ring. All of these compounds were evaluated for their DNA photocleavage ability and as antibacterial agents. It has been perceived that in comparison to ligand, its metal complexes 3, 5 and 6 were found to reveal good DNA fragmentation and antibacterial potential. In future some structural alterations in the ligand may lead to formation of better DNA binding agents.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interests regarding the publication of this article.

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SOCIO-ECONOMIC DEVELOPMENT OF HARYANA SINCE ITS INCEPTION: A STUDY

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Abstract

Haryana was carved out of the former state of East Punjab on 1st November 1966 on a linguistic basis. Socio-Economic Development is the process of social and economic development in a society. It is measured with indicators such as gross domestic product (GDP), literacy, medical facilities and levels of employment. The social sector development is a precondition for sustained human development and economic growth of an economy. Both are closely interrelated. Social sector development has a positive impact on the economic growth of an economy. Human resource development is essential for the development of people and the nation as a whole. Haryana is one of the progressive states of India and has contributed significantly to socio-economic development of India. Haryana today is a well-developed industrial state. It has a very strong infrastructure base. More than half area of Haryana is included in the national capital region. It provides an excellent advantage to Haryana's economy. The state has also emerged as a base for the knowledge industry including IT and biotechnology. The state has 22 districts, 94 tehsils and 6841 villages. With just 1.5% of the total area of the country and less than 2.1% of the country's population, Haryana has achieved a place of distinction for itself in the Indian economy.

Keywords

Gross Domestic Product, Per Capita Income, Infrastructure, Economic Development, Haryana.

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Introduction

Haryana is one of the progressive states of India and has contributed significantly to socio-economic development of India. Socio-economic development is the process of social and economic development in a society. It is measured with indicators such as GDP, literacy, medical facilities and levels of employment. The social sector development is a precondition for sustained human development and economic growth of an economy. Both are closely interrelated. Social sector development has positive impact on economic growth of an economy. Human resource development is essential for the development of people and nation as a whole. The economic growth of Haryana has been exemplary since its inception as a separate state. With just 1.5% of total area of the country and less than 2.1% of the country's population, Haryana economy has achieved a place of distinction for itself in the Indian economy. It has the third highest per capita income in the country after Goa and Sikkim. Haryana is the second largest contributor of wheat and third largest contributor of rice to the national pool of food grains. Haryana is the largest exporter of Basmati rice. The Panipat Refinery (IOCL) situated at Panipat is the 2nd largest refinery in South Asia.

Haryana's structural transformation from an agrarian state to Industrial state, with services sector has showed progressive development towards achieving sustainable development goals. Though Haryana is a geographically small state, the contribution of the state to the National Gross Domestic product at constant (2011-12) prices has been estimated as 3.8% as per quick estimates of 2019-2020.

Haryana is one of India's largest automobile hubs and manufactures two thirds of passenger cars, 50% of tractors and 60% of motorcycles in the country. The state has also emerged as a base for the knowledge industry including IT and biotechnology. Gurugram, An emerging metropolis is the house of major information technology units of India. Haryana is the largest exporter of software. Haryana today is a well-developed industrial state and the state government is also committed to create a progressive business environment. Haryana surrounds Delhi on three sides forming the Northern, Western and Southern borders of Delhi. More than half area of Haryana is included in the National Capital Region. The state has 22 administrative districts, 74 sub divisions, 94 tehsils, 154 towns and 6841 villages. Haryana has a population of 2.54 crore and area of 44212 square kilometer.

Objectives of this Study

The study has been geared to achieve the following objectives:

1. To explore the social and economic changes in Haryana economy,

2. To analyze the contribution of Haryana to socio economic development of India,
3. To compare Haryana's economy with India's economy

Research Methodology

This is Quantitative and Analytical Research. This study has been carried out with the help of secondary data only. All the data has been collected from the various sources such as Websites, Books, Economic Survey and Ministry of Statistics, Haryana.

1. Various parameters of Socio-Economic growth of Haryana:

1.1 Health facilities in Haryana: Health is a most important major development indicator. Good health increases the quality of life and ability to work efficiently. Infact health of the masses is an integral part of a nations' social and economic development. Consistent efforts of Haryana government have yielded good results in the area of health since inception of Haryana. In Haryana, birth rate, death rate and Infant Mortality Rate(IMR) is decreasing. Reduction in death rate and infant mortality rate indicates availability of better health care facilities, control over diseases etc. Following Table (1.1.1) depicts that birth rate, death rate and IMR are decreasing over the period of time.

1.1.1 Table: Birth Rate, Death Rate and IMR in Haryana

| Year | Birth Rate | Death Rate | Infant Mortality Rate- IMR (per 1,000 in agegroup of 0 to 1 year) |
|------|------------|------------|----------------------------------------------------------------------|
| 1971 | 42.1 | 9.9 | 72 |
| 1991 | 33.1 | 8.2 | 68 |
| 2001 | 26.8 | 7.6 | 66 |
| 2011 | 21.8 | 6.5 | 44 |
| 2018 | 20.3 | 5.9 | 30 |

(Source: Director General of Health Services, Haryana)

In Haryana, Percentage of Population in the age group of 0 to 14 year is high and percentage of population of 60 years and above 60 years is increasing. It indicates higher life expectancy better health facilities and reduction in death rates in Haryana. Following table (1.1.2) shows the information regarding age structure:

1.1.2 Table: Age Structure

| Year | Age-group: 0-14 years | Age-group:15-59years | Age-group:60 and above 60 years |
|------|--------------------------|----------------------|------------------------------------|
| 1971 | 46.23 | 47.97 | 5.80 |
| 1981 | 41.75 | 51.91 | 6.34 |
| 1991 | 39.25 | 53.00 | 7.75 |
| 2001 | 35.85 | 56.28 | 7.87 |
| 2011 | 29.70 | 61.52 | 8.78 |

(Source: Various Census Reports)

In Haryana, health services are being provided through a network of 3470 hospitals, community health centres, primary health centres, dispensaries, sub centres etc. Following table (1.1.3) reveals the status of health service in Haryana:

1.1.3 Table: Status Of Health Services in Haryana

| Indicators | 1966-67 | 1980-81 | 2000-01 | 2019-20 |
|-------------------------------------------------------------------------|-------------|--------------|-------------|-------------|
| No. of Hospitals, Dispensaries and Community Health Centres/Sub-centres | 785 | 1,480 | 3,072 | 3,470 |
| No. of Beds available in Health Centres | 4,584 | 8,748 | 10,878 | 8,897 |
| Birth Rate (per '000) | 42.1 (1971) | 37.2 (1980) | 26.9 (2000) | 20.3 (2018) |
| Death Rate (per '000) | 9.9 (1971) | 11.2 (1980) | 7.5 (2000) | 5.9 (2018) |
| Infant MortalityRate (per '000) | 72 (1971) | 103.5 (1980) | 67 (2000) | 30 (2018) |

(Source: Statistical Abstract of Haryana, 2019-20)

In order to provide better health services, Haryana Government has initiated many schemes like Chief Minister free Health Scheme, setting up of Ayush Department, Aayushman Bharat Scheme, Haryana Swasthya Vahan Seva, distribution of free medicine in OPD etc.

1.2 Literacy in Haryana:

In any Economy, Education plays a vital role. It makes the person civilized, refined and cultured. Education is an investment in knowledge that is bound to pay better results. It leads to economic prosperity by establishing industries and businesses thereby increasing employment opportunities. Haryana government is well aware of the fact that educations plays a significant role in the overall development of the society. It has made sincere and consistent efforts to make 'Education for All' and to provide good quality education to the people of Haryana. Government has strengthened academic infrastructural facilities in Haryana.

1.2.1 Table: Number of Recognised Educational Institutions in Haryana

| Type of Institution | 1966-67 | 2019-20 |
|-------------------------------|---------|---------|
| Universities | 01 | 60 |
| Colleges | 40 | 359 |
| Teachers Training Colleges | 05 | 475 |
| High/Senior Secondary Schools | 597 | 8,575 |

| | | |
|-------------------------------------------------------------------------------------------|-------|-------|
| Middle/ Senior Basic Schools | 735 | 5,704 |
| Primary/ Junior Basic Schools | 4,447 | 9,928 |
| Technical Education Institutions, Industrial Training Institutes and Engineering Colleges | 07 | 885 |

(Source: Statistical Abstract of Haryana, 2019-20)

The above table 1.2.1 indicates significant growth in recognised educational institutions. With these efforts literacy rate has improved in Haryana.

1.2.2 Table: Literacy Rate, in Percentage

| Year | Literacy Rate, in Percentage |
|------|------------------------------|
| 1971 | 26.89 |
| 2001 | 67.91 |
| 2011 | 76.64 |

(Source: Census Reports)

The above table (1.2.2) indicates that the literacy rate in Haryana has seen upward Trends and is 76.64% as per 2011 population census. Male literacy stands at 85.38% while female literacy is 66.7%. The three best performing districts in literacy rate are Gurugram, Panchkula and Faridabad. The vision of the government is to utilise State's human resource potential to its fullest in the education sector with equity and inclusion. The Haryana government has taken several initiative or schemes to enhance literacy and basic education of the youth, expanding access to all levels of education, including higher and technical education. To improve the female literacy rate, Haryana government has made girl education free upto graduation level. To attract more children to school, Mid day Meal scheme, Sarv Shiksha Abhiyan, Rashtriya Madhyamik Shiksha Abhiyan, free text books etc., have been started by the government. RTE Act 2009 has also been implemented in Haryana.

1.3 Growth of state domestic product of Haryana

Gross state domestic product is defined as a measure in monetary terms of the volume of all goods and services produced within the boundaries of the state during a given period of time, accounted without duplication. Consumption of Fixed Capital (CFC) or depreciation is deducted from Gross State Domestic Product (GDP) to obtain Net State Domestic Product (NSDP). Rising per capita income at constant price is the indication of real economic development of that country. The trends in state domestic product and per capita income are as follows:

1.3.1 Table: Trends in State Domestic Product and Per Capital Income in Haryana

| Item | 1966-67 | 2011-12 | 2015-16 | 2019-20 |
|-------------------------------------------------------------------------|-----------------------|-------------|-------------|-------------|
| Net State Domestic Product (crore) (at current prices) | 540 | 2,71,152 | 4,38,140 | 7,08,364 |
| Net State Domestic Product (crore) (at constant prices of year 2011-12) | 304 (Base 1960-61) | 2,71,152 | 3,60,202 | 5,04,035 |
| Per Capital Income (at current prices) | 608 | 1,06,085 | 1,62,034 | 2,47,628 |
| Per Capital Income (at constant prices of year 2011-12) | 343 (Base 1960-61) | 1,06,085 | 1,33,591 | 1,76,199 |
| Gross State Domestic Product (crore) (at constant prices 2011-12) | 332 | 2,97,538.52 | 4,13,404.79 | 5,59,705.00 |

Sources: Statistical Abstract of Haryana, 2019-20 and Economic Survey of Haryana, 2020-21

The above table(1.3.1) reflects that NSDP at current and constant prices and per capita income at current and constant prices are increasing. It indicates that the economic growth is taking place as well as the living standards of the people of the state are also raising. Haryana data reported NSDP per capita at 274,634.596 INR in 2022. This records and increase from the previous number of 235,706.983 INR for 2021. It shows that since inception, per capita income of Haryana has increased many fold. Per Capita Income of Haryana is the third highest among all the states of India, only after Goa and Sikkim. Net state domestic product of the economy consists of output of three major sectors of the economy that is agriculture sector, industrial sector and service sector.

Though Geographically, Haryana is a small state. It has made remarkable economic development. The economic growth of Haryana has been exemplary since its inceptions as a separate state.

1.4 Growth in agriculture sector:

Haryana is primarily an agricultural state. About 70% of residents are engaged in agriculture and allied activities. Economic life in Haryana is mainly influenced by agriculture. Agriculture sector is a developed sector in Haryana.

Haryana constitutes 1.5% of India area, yet contributes 15% of the agriculture produce which has grown seven times since the foundation of Haryana in 1966. About 86% of the area in the state is arable; and of that 96% is cultivated. Haryana is self sufficient in food production and the second largest contributor to India's central pool of food grains. Haryana is the largest exporter of Basmati rice among all the states of the country. It also has highest productivity in Wheat, Bajra and Mustard oil seeds among all the states of India. Agriculture is the key to State's economic growth and prosperity.

1.4.1 Table: Growth of Agriculture in Haryana

| Items | 1966-67 | 2004-05 | 2015-16 | 2019-20 |
|----------------------------------------|---------|---------|---------|---------|
| Production of Food grains (lakh tones) | 25.92 | 130.57 | 163.33 | 184.20 |
| Wheat Production (lakh tones) | 10.59 | 90.43 | 113.52 | 118.77 |
| Rice Production (Lakh tones) | 2.23 | 30.94 | 41.45 | 51.98 |
| Sugarcane Production (lakh tones) | 51.0 | 82.3 | 71.69 | 77.30 |
| Cotton (thousand bales of 170 kg each) | 288 | 1,450 | 993 | 2,485 |
| Oil Seeds (lakh tones) | 0.92 | 8.36 | 8.55 | 11.75 |

(Source: Economic Survey of Haryana, 2020-21; Statistical Abstract of Haryana 2019-20)

With the fast development in industry and service sector in the state percentage contribution of agriculture sector in Net State Domestic Product has reduced from 56.6% in 1966-67 to 16.6% in 2019-20.

1.5 Growth in Industrial Sector:

Economic development is also measured through industrial sector. Haryana is one of the leading states in terms of industrial production especially passenger cars, two wheelers, cranes, tractors and electric mixer. The industry sector is the second largest contributor to the state domestic product. The percentage share of industry sector has increased from 20.5% in 1966-67 to 32.8% in 2019-20. Haryana has strong industrial base with 1,986 large and medium units and about 97,020 micro/small scale enterprises. Government has setup various industrial parks, industrial estates, information technology parks etc. Haryana is a third largest exporter

of software and one of the preferred destinations for IT facilities. Haryana is also a preferred destination for auto majors and auto component manufacturers. As of April 2021, Haryana had a total installed power generation capacity of 12480.87 MW, comprising 5719.67 MW under private utilities 2929.30 MW (state utilities) and 3831.90 MW (central utilities). Haryana has strong infrastructure base.

The state offers a wide range of fiscal and policy incentives for businesses under the Industrial and investment policy 2011, Enterprises Promotion Policy 2015 and Haryana Enterprises and Employment Policy, 2020 in order to retain its position as the most preferred investment destination for both domestic investors as well as global investors.

1.5.1 Table: Growth of Industries in Haryana

| Items | 1966-67 | 2004-05 | 2015-16 |
|----------------------------------------------------|---------|---------|-----------|
| No. of Registered Micro and Small Scale Industries | 4,519 | 70,326 | 97,020 |
| No. of Large and Medium Scale Units | 162 | 1,249 | 1,986 |
| Exports (in rupees crore) | 4.50 | 20,000 | 1,74,572* |

(Source: Economic Survey of Haryana, 2020-21)

Above Table (1.5.1) reflects growth of Industries in Haryana and significant increase in exports of Industrial products from the state. In the state of Haryana, 22 Special Economic Zones had been notified till 30th November 2021.

Following factors are responsible for this growth in industrial sector of Haryana:

- Strong infrastructure base
- Favorable geographical location
- Development of industrial estates and parks
- Supportive industrial and investment policy
- Availability of skilled manpower
- Setting up of SEZs
- Peaceful law and order situation
- Cordial employer employee relations

1.6 Growth in Service Sector:

Service sector of Haryana is the fastest growing sector and has become the main driver of the growth process of the economy. Service sector is the largest contributor in the state domestic product. It has led to sharp rise in State's per capita income.

The percentage contribution of this sector in the state GDP has increased from 22.9% in 1966-67 to 51% in 2019-20. Supported by improvement in agriculture and manufacturing, the state saw an upturn in the service sector. The rise in the service sector's share in GDP takes Haryana closer to the basics of a developed economy. Service sector refers to multiple activities which comprises of Trade, Transportation, Communication, Entertainment, Banking services, Health, Education, etc. All the sub-sectors of service sector are making tremendous progress. The sub-sectors of service sectors can be classified as follows:

1. Trade, Hotels, Transport and Communication
2. Financial and Business Service
3. Community, Social and Personal services.

The growth rate of service sectors always remained above the primary and secondary sectors. Haryana's economic growth can be called service-led growth especially after 1995 -96.

1.6.1 Table: Contribution of Different Sectors in State Domestic Product of Haryana

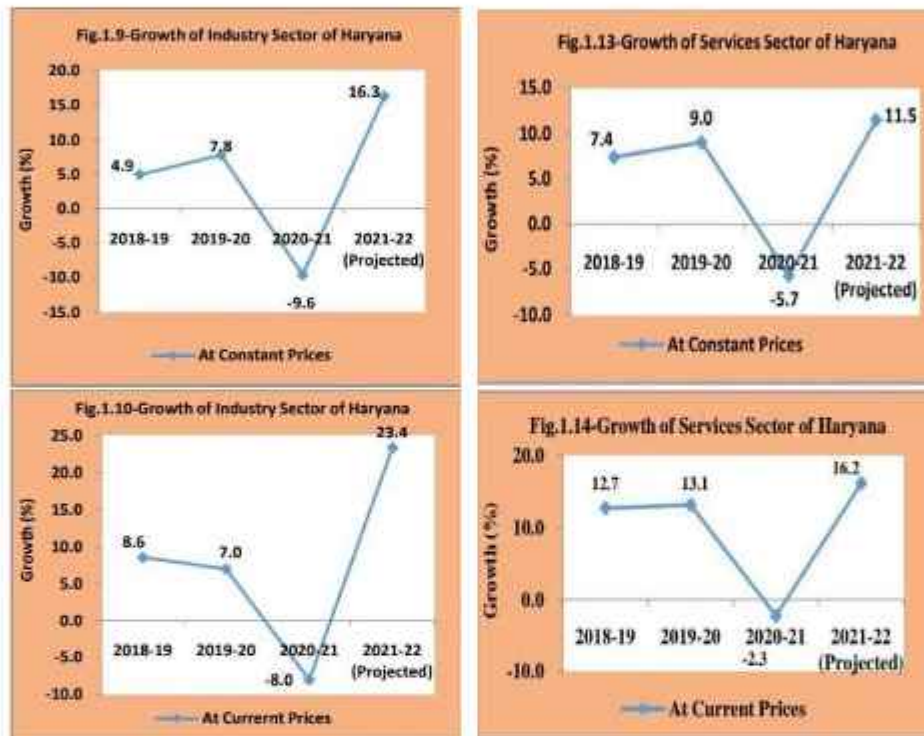
| Year | Primary Sector (in percentage) | Secondary Sector (in percentage) | Tertiary Sector (in percentage) |
|-------------------|-----------------------------------|-------------------------------------|------------------------------------|
| 1966-67 | 56.6 | 20.5 | 22.9 |
| 2001-02 | 28.1 | 28.6 | 43.3 |
| 2010-11 | 19.4 | 28.8 | 51.8 |
| 2016-17 | 17.8 | 30.5 | 51.7 |
| 2019-20 | 16.6 | 32.8 | 50.6 |
| 2020-21(expected) | 18.9 | 30.2 | 50.9 |

(Source: Economic Survey of Haryana, 2020-21)

It is evident from the above table (1.6.1) that the contribution of service sector is increasing at a faster rate in comparison to primary sector and secondary sector. This is a positive and beneficial change in the economy of Haryana.

Present Scenerio Of Industrial And Service Sector Of Haryana

Following graphs show the present situation of industrial and service sector of Haryana



Source: Economic survey of Haryana 2020-21

The trends in above graphs show that :

The industry sector was badly hit during the crisis of pandemic. However this sector is expected to record the growth of 16.3% in 2021-2022 with a V-shaped sharp recovery in economic growth.

The major impact of pandemic has been borne by the service sector. The service sector contracted by -5.7% in 2020-2021 at constant prices. But the growth of 11.5% has been projected for 2021- 2022.

Comparison of growth rates of different sectors of Haryana in comparison to India

The following table (A) highlights that Haryana is growing faster in each sector as compared to India.

Table A: Growth Rate of GDP and Different Sectors of Haryana in Comparison to India (in percentage)

| Year | Agriculture | | Industry | | Services | |
|---------|-------------|-------|----------|--------|----------|-------|
| | Haryana | India | Haryana | India | Haryana | India |
| 2007-08 | 0.0 | 5.8 | 6.6 | 8.6 | 13.6 | 10.3 |
| 2010-11 | 6.1 | 7.0 | 8.3 | 8.2 | 11.4 | 9.3 |
| 2015-16 | 2.9 | 0.8 | 7.9 | 8.2 | 10.9 | 9.8 |
| 2018-19 | 5.0 | 2.4 | 4.9 | 4.9 | 7.4 | 7.7 |
| 2019-20 | 5.6 | 3.3 | 7.8 | (-)1.1 | 9.0 | 7.2 |

(Source: Economic Survey of Haryana, 2020-21 and Economic Survey of India, 2020-21)

Various parameters of economic and social development of Haryana in comparison to India can be summarized in the following table :

| S. No. | Item | Year | Haryana | India |
|--------|-----------------------------------------------------------------------------------|---------|-----------------------|--------------------------|
| 1. | Area | 2012-13 | 44,212 sq. km | 32.87 lakh sq. km |
| 2. | Literacy Rate | 2011 | 75.6 | 74.04 |
| 3. | Birth Rate | 2018 | 20.3 | 20 |
| 4. | Death Rate | 2018 | 5.9 | 6.2 |
| 5. | Infant Mortality Rate | 2018 | 30 | 32 |
| 6. | Per Capita Income (at current prices) (at constant prices, 2011-12) | 2019-20 | Rs. 2,47,628 | Rs. 1,34,186 |
| | | 2019-20 | Rs. 1,76,199 | Rs. 94,566 |
| 7. | Gross Domestic Product (at current prices) (at constant prices, 2011-12) | 2019-20 | Rs. 7,80,612 crore | Rs. 2,03,39,849 crore |
| | | 2019-20 | Rs. 5,59,705 crore | Rs. 1,45,65,951 crore |
| 8. | Net Domestic Product (at current prices) (at constant prices, 2011-12) | 2019-20 | Rs. 7,08,364 crore | Rs. 1,81,87,414 crore |
| | | 2019-20 | Rs. 5,04,035 crore | Rs. 1,28,22,882 crore |

(Source: Economic Survey of Haryana 2020-21 and Economic Survey of India, 2020-2021)

From the above table it is clear that the pace and level of economic development in Haryana is much better in comparison to India.

Conclusion

Haryana is doing amazing work in each sector. The structural composition of state economy has witnessed significant change since the inception of Haryana.

Adjacency to national capital Delhi provides excellent advantage to Haryana economy. It has helped Haryana in its faster development. Indira Gandhi international airport provides easy global connectivity which facilitates industrialization. Haryana is the first state in the country to achieve hundred percent electrification. Haryana government is promoting e-governance and online platform for providing various services. Government has provided conducive policy environment also. Thus due to strong infrastructure base, peaceful law and order situation and harmonious industrial relations, Haryana's economy is continuously gaining strength and moving towards new heights of development.

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Indian Economy and Ecology

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Abstract

Dr. Rowan Williams rightly said that ecology and the economy go hand in hand. To see to have an economy without ecology is to try to manage an environment with no knowledge or concern about how it works in itself. A healthy economy is not possible without healthy ecology. Environment issues are closely related to the economy and addressing these issues further promotes our economy's success. Ecosystem protection is an economic investment. It does not make sense to try to separate these two subjects. Therefore the concept of a green economy has been gaining ground on the global sustainable development agenda and the Indian economy is no exception. Green economy is an economy that aims at reducing environmental risks and evening for sustainable development without harming the environment. It is closely related to ecological economics. The massive growth of organic farming, the establishment of plant-based homes and the use of bicycles as a means of transportation are some ways in which people are contributing to the green economy. Green energy announcements in budgets since 2014 are playing a key role in establishing India as a major player in the global green energy market. Green Economy is a development strategy that unites both economic development and ecological sustainability. In India, the Journey of transition towards a greener economy has started. India is making significant progress in areas of environmental policies at national level, enhancement in renewable energy portfolio, and improved access to basic services. The main objective of this paper is to throw light on the impact of ecology on the Indian economy.

Keywords

Ecology, Green Economic System, Environment, Economic Growth, Sustainable Development.

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Objectives of the Study

The following are the objectives of this research paper:

- To understand the concept of a Green Economic System.
- To throw light on the impact of ecology on the Indian economy.
- To identify the green economy transition in India.
- To study the policy framework of the Indian government on environmental protection.

Research Methodology

This research paper is based on secondary data, which is collected from various publications, journals, and articles given various websites. This paper is theoretical in nature.

Introduction

A Green economic system is defined as low carbon, resource efficient and socially inclusive system. The green economic system creates focus on the economy, investment, capital and infrastructure, employment and skills and positive social and environmental outcomes. So, a green economy is a clean, green economy that promotes good health, wealth and well-being. It can be defined as an economy in which economic growth and environmental responsibility work together for sustainable development without harming the environment. It is closely related to ecological economics and can be said to be considered part of the ecosystem. UNEP (2011a) defines, a green economy as an economy that leads to improved human well-being and social justice, while significantly reducing environmental risks and ecological scarcities. Green Indices have been developed to measure environmental impact and efficiency in various sectors. 2016-2022 Green Score City Index is an independent ongoing study to measure the anthropogenic impact of human activity on nature. Anthropogenic processes are intentional and non-malicious human activities such as groundwater abstraction, sub-surface mining, vegetation removal, chemical explosions and infrastructure. Fairness implies recognizing global and country-level equity dimensions, particularly in assuring a just transition to an economy that is low-carbon, resource-efficient and socially inclusive.

Thus Green Economy is an economic system that is based on or guided by ecological principles. In this economy, employment and income growth are driven by public and private investment into such economic activities, infrastructure and assets that enable a reduction in carbon emissions and pollution, enhance energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services.

The term green economy was first coined in a landmark 1989 report for the Government of the United Kingdom by a group of leading environmental economists entitled *Blueprint for a Green Economy*.

Examples of green economy can be traced from people's everyday lives. Substantial growth in the organic farming sector, setting up plant-based homes and using a bicycle as a means of transportation, are some of the ways in which people are contributing to the green economy.

The following are the features of a Green Economic System:

- The green economy aims to increase prosperity for all, not only in economic terms, but also in terms of human, social, physical and cultural capital. It allows people to prosper while treating nature and natural resources sustainably.
- The green economy promotes good governance because it is based on accountable, transparent and resilient institutions. It also requires broad public support, and a bold and methodical approach to problem-solving.
- This economy offers significant investment and employment opportunities as the transition to a green economy requires new skills and training to eradicate poverty.
- A green economy focuses on the efficient use of resources and minimizes waste to make the use of natural resources more sustainable.
- The green economy is based on the use of renewable energy sources such as solar, wind, and hydropower with little or no carbon emissions.

The green economy, therefore, takes a long-term view and focuses on how resources are used to create value for society. Not only low carbon fuels are important but also how to promote efficiency and resource sufficiency to create the prosperity and well-being of citizens of today and tomorrow.

Impact of Ecology on the Indian Economy

India is one of the fastest growing economies in the world, faces a major challenge that how to meet the basic needs of its population without exceeding the environmental limits.

The policymakers and practitioners, who are the key players, have the responsibility to guide the economy toward a sustainable future. The success and failure of a green economy depend on green governance. It concerns rules and regulations that encourage more sustainable practices that enable the transition to a green economy.

There is a long way to go to be a green economy for the Indian economy,

but several countries have shown leadership by adopting national 'green growth' or 'low carbon' economic strategies. For example: The Republic of Korea is allocating 2% of its GDP for investment in several green sectors such as renewable energy, energy efficiency etc. China, Namibia, and Mexico are also managing their natural resources to generate economic, social and environmental benefits. Although India has made major international commitments towards the 2030 Global Development Agenda and the Paris Climate Agreement, it still ranks 68th out of 80 countries on the Global Green Economy Index. Much work is to be done.

One of the main environmental problems facing India is the pollution from the combustion of fossil fuels. This leads to serious health issues and with the fast growth of the economy, these impacts are rising. The environmental impact of economic growth includes the increased consumption of non-renewable resources, global warming and loss of environmental habitats. Following are the some impacts of economic growth on the environment:

- A decline in sources of oil/coal/gas.
- Loss of fishing stocks due to overfishing.
- Damage to natural resources has led to species extinction.
- Poor air quality.
- Global warming is due to excessive CO₂ emissions.
- Health problems due to air/land/water pollution.
- Volatile weather patterns, and rising levels of the sea because of global warming.
- Soil erosion results from deforestation.

The Transition of India to a Green Economy

In India, Lakshadweep is the winner of India's greenest states with 90.33% forest cover. Mizoram is India's second greenest state with around 84.53% forest cover. The other states like Andaman & Nicobar Islands (81.75%), Arunachal Pradesh (79.33%), and Meghalaya (76%) too, have a thick forest cover with more than 75% land covered in greenery. Among India's union territories, Lakshadweep has a vast forest cover in 2023. Total forest cover in India 21.71% and 7,13,789 sq. km. of India's area. Making the nation a green economy is a big challenge for India. Despite the India's remarkable growth record, the environment has suffered, exposing the population to serious air and water pollution. A new report finds that environmental degradation costs India per year 5.7% of its economy.

In a recent survey of 178 countries, India ranked 155th place overall and almost last for its exposure to air pollution. The study also found that India's

environmental quality is far below that of all BRIC countries. Environmental sustainability is the biggest challenge for India. The survey conducted by WHO, across the G-20 economies, indicates that 13 of the 20 most polluted cities are in India. Simultaneously poverty is both cause and effect of resource degradation and agricultural production also declines on degraded land.

Table:1 Present status of forest cover area in India-2023

| Forest cover in India | In Square Kilometre | In Percentage |
|-----------------------------------------------|---------------------|------------------------|
| Very Dence Forest (70% and above) | 99,779 | 3.04% of India's area |
| Moderately Dence Forest (between 40%-70%) | 3,06,890 | 9.33% of India's area |
| Open Forest (between 10%-40%) | 3,07,120 | 9.34% of India's area |
| Total Forest cover | 7,13,789 | 21.71% of India's area |

Source: India State of forest report(2023)

Table:2 Forest cover of different states (More than 75% and Less than 10%)

| More than 75% | Less than 10% |
|------------------------------------|-----------------------|
| Lakshadweep (90.33%) | Ladakh (1.35%) |
| Mizoram (84.53%) | Haryana (3.63%) |
| Andaman & Nicobar Islands (81.75%) | Punjab (3.67%) |
| Arunachal Pradesh (79.33%) | Rajasthan (4.87%) |
| Meghalaya (76%) | Uttar Pradesh (6.15%) |
| | Gujrat (7.61%) |
| | Bihar (7.84%) |

Source: India State of forest report(2023)

Policy Framework in India for Environment Protection

Some of the major policies of India's green economy are:

Gobardhan Yojana (2018) : India has the potential to produce 10 thousand million cubic meters of biogas from Gobar (cow dung) and 1.5 lakhs cubic meters of gas from Gobar, which contributes up to 8% to the country's city gas distribution. Gobardhan Yojana launched in 2018, is an important part of India's biofuel strategy. In this budget, the government has announced plans to build 500 new waste treatment plants under the Gobardhan Yojana. The Galvanizing Organic Bio-Agro Resources Dhan (GOBAR-DHAN) scheme is implemented under the Swachh Bharat Mission Gramin-Phase 2, by the Department of Drinking Water and Sanitation under the Jal Shakti ministry.

PM-KUSUM (2019) : PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha am Utthaan Mahabhiyan) Scheme is designed to ensure the energy security for Indian farmers. It is commemorating India's commitment to increase the installed capacity

share of electricity from non-fossil-fuel sources to 40% by 2030 as part of Intended Nationally Determined Contributions (INDCs). The scheme was launched in 2019 with 3 components: 1) For Setting up 10,000 MW of Decentralized Grid Connected Renewable Energy Power Plants on barren land, 2) For Installation of 17.50 Lakh stand-alone solar agriculture pumps, 3) For Solarisation of 10 Lakh Grid Connected Agriculture Pumps.

India's Vehicle Scrapping Policy (2021) : This policy is an important part of the green growth strategy as it gives room for a clean fleet of vehicles. The Vehicle Scrapping Policy launched on August 13, 2021, is a government-funded program to replace old vehicles with modern & new vehicles on Indian roads. According to the new policy, commercial vehicles over 15 years and passenger vehicles over 20 years must be compulsorily scrapped if they fail to pass the fitness and emission tests. The policy aims to reduce pollution, create job opportunities and stimulate demand for new vehicles.

PM PRANAM (Budget 2022-23) : The government will encourage and facilitate one crore farmers to select natural farming through Prime Minister Program for Rehabilitation, Awareness, Nourishment, and Betterment of Mother Earth (PRANAM). The main objective of this scheme is to reduce the use of chemical fertilizers and promote the balanced use of chemicals, promote green growth, and reduce the negative environmental impacts.

Green Credit program (Budget 2023-24) : Green Credit program will promote environmental protection to mitigate climate change and enhance adaptive capacity. The

The Green Credit Clause outlined in this budget (2023-24) provides a pathway to achieve sustainability for the country. The goal of this program is to encourage behavioral change. This program also facilitates the allocation of additional resources for the adoption of environmentally friendly, sustainable and responsive technologies.

MISHTI and Amrit Darohar (Budget 2023-24) : 'Mangrove Initiative for Shoreline Habitats & Tangible Incomes' or MISHTI, is a new program to promote mangroves plantation along the coastline and on salt pan lands. Amrit Darohar is another new scheme that will be implemented over the next three years to "encourage optimal use of wetlands, and enhance biodiversity, carbon storage, eco-tourism opportunities, and income generation for local communities".

Threats Before India to be a Green Economic System

The major threats are:

- How to move to an economic system that benefits more people in the long run. To be a green economic system requires a fundamental rethinking of growth and development of goods and services as well as consumer habits. This Transition does not happen by itself.
- How important decisions are made with better information about impacts, risks, or better economic analysis?
- Financial and Technological factors are the major challenges for the transition to a Green economy.
- Other threats are:
 - Weak Management,
 - Increasing Poverty,
 - Changing political climate that keeps changing economic policies,
 - Economic dependency on conventional resources particularly fossil fuels,
 - Increasing food insecurity.

Suggestions

Some of the following measures may help create a more level policy-making playing field:

- Raise Public awareness and advocate for change as the need for this transition is clearly recognized now. It will motivate people not only for the costs but also for the benefits of a green economy. They will care about the environment if they believe, it is in their best interests.
- Promote new indicators that complement gross domestic product: Planning agencies and finance ministries should adopt a more diverse and representative set of economic indicators that focus not only on growth, but rather track the pace and progress of development also.
- Open up Government decision-making processes to the public and civil society.
- Sustainable farming practices increase food availability and food security, and reduce poverty.

Conclusion

Green growth is one of the top priorities of the Union Budget 2023-24. The Union Budget 2023-24 has considered several projects and initiatives spread across different sectors and ministries such as Green Hydrogen Mission, Energy Transition, Energy Storage Projects, Renewable Energy Evacuation, Green Credit

Program, PM-PRANAM, GOBARdhan Scheme, Bhartiya Prakritik Kheti Bio-Input Resource Centres, MISHTI, Amrit Dharohar, Coastal Shipping, and Vehicle Replacement. The objective is to accelerate the momentum for green growth in the country by forwarding new-age reforms along with detecting solutions to current challenges. The green energy announcements in the budget play a vital role in establishing India as a leading player in the global green energy market. India has been the fastest in renewable energy capacity addition among major economies since 2014. Green Economy promotes a sustaining and advancing economic, environmental and social well-being. The main challenges in the area of economic and environmental development, as well as the public policies for a green economy, is a real concern. The transition towards a green economy has become an urgent need.

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MSMEs in Haryana: An Analysis**Amarjeet Kaur**

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Abstract

Micro, Small and Medium enterprises are known by the acronym MSMEs. MSME sector has emerged as a highly vibrant and dynamic sector of Haryana economy in last few years. These enterprises have a special place in the sphere of employment and economic development. MSMEs are the backbone of the Indian economy. With the introduction of MSME Act 2006, small scale industries (SSI) were reclassified as micro, small and medium enterprises. MSMEs has been turned as 'engine of growth' for all developing economies. Haryana is mainly influenced by agriculture it would be no exaggeration to say that agriculture based micro enterprises can make a remarkable contribution to the overall economic well-being of the people of Haryana and thereby raising their quality of life to a great extent. Haryana has made rapid economic development in the last few years and MSME have made special contribution in this. Haryana is included in the top three states of the country in the field of MSME. The objective of this paper is to understand, analyse and interpret the role of MSME in the rapid growth of Haryana.

Key-Words: Sustainable Development, Economy, MSME, Employment, Growth.

Objectives of the paper

- To throw light on the importance and growth of MSMEs in Haryana.
- To discuss the problems of MSME in Haryana.

Research methodology

This study is based on quantitative and analytical research. And secondary data is used for this paper. All the data has been collected from the various sources such as books, websites, Statistical Abstract of Haryana and MSME annual reports.

Introduction

Across the Globe MSMEs are accepted as an 'engine of economic growth' and for promoting equitable development. Haryana has been ranked third at the national level for the remarkable work done by the state government in the MSME sector. Haryana is a vibrant and fast-growing economy among 28 states and eight union territories of India. It enjoys many advantages like proximity to National Capital Delhi, good quality infrastructure, conducive policy environment, trained and skilled man power, excellent law and order etc. The state of Haryana has sustainably transformed from an agrarian economy to a well-rounded economy with a thriving secondary sector and tertiary sector. In developing countries like India there is always a choice between labour intensive and capital-intensive techniques. Labour intensive technique is more appropriate for India as hair labour forces found in large quantity and lack of capital prevails. Intensive technique labour is used more than capital. In MSMEs less capital is required to run the industries. This sector promotes all- inclusive

growth by providing employment opportunities especially to people belonging to weaker sections of the society in rural areas. Farmers can earn their income by engaging themselves in cottage industries in their slack season and these industries go a long way in removing disguised unemployment. These industries also play a significant role in reducing pressure of population on agriculture. MSMEs are complementary to large industries as ancillary units and this sector contributes enormously to the socio-economic development of the country. As per the MSME annual report 2016-17 (Haryana Govt Gaz., Feb.26,2019) MSMEs contribute nearly 6% to country's GDP, 33 percent of the manufacturing output and 45% of the exports and are complementary to large anchor as vendor units.

SSI sector of Haryana dominates in exports of handlooms, electric mixer, food processor, scientific instruments, pickle, sanitaryware, sports goods, readymade garments, leather products, handicrafts, process food etc. The major benefit of small-scale industries is that these industries make use of (exploit) local resources otherwise these resources would have been remained unused without such industries because these resources are not used by large industries.

Historical evolution of the definition of MSME and policy framework

The first definition of small industry was given in 1950. At that time there were restrictions on fixed investment and employment provisions. Conditions of employment were abolished in 1960. In 1966, capital investment limits were converted in investment in plants and machinery.

In 2006 MSMED Act was enacted. In this act small scale industries were re classified as micro, small and medium enterprises. With the introduction of this act, the paradigm shift that took place is the inclusion of the service sector in the definition of MSMEs. The MSMED Act, 2006 provides a regulatory framework for facilitating the development of MSME and enhancing competitiveness. It addresses those issues relating to investment limits.

These are:

- A) Manufacturing enterprises:** based on investment in plant and machinery
 - Micro enterprises: investment up to rupees 25 lakh.
 - Small enterprises: investment above rupees 25 lakh and up to rupees 5 crore.
 - Medium enterprises: investment above rupees 5 crore and up to rupees 10 crore
- B) Service Enterprises:** based on investment in equipments
 - Micro enterprises: investment up to Rs.10 lakh.
 - Small enterprises: investment above Rs 10 lakh and up to 2 crores
 - Medium enterprises: investment above rupees 2 crores and up to rupees 5 crores.

The ceilings on investment for the MSMEs both in manufacturing sector and service sector can be summarized into following Table 1.

Table 1. Classification of MSMEs based on investment slabs

| A) Manufacturing Enterprises | |
|------------------------------|-----------------------------------------------|
| Enterprises | Investment in plant and machinery |
| Micro | Up to Rs. 25 Lakhs |
| Small | More than Rs. 25 Lakhs and upto Rs. 5 crores |
| Medium | More than Rs. 5 crores and upto Rs. 10 crores |

| B) Service Enterprises | |
|-------------------------------|-----------------------------------------------|
| Enterprises | Investment in equipments |
| Micro | Up to Rs. 10 Lakhs |
| Small | More than Rs. 10 Lakhs and up to Rs. 2 crores |
| Medium | More than Rs. 2 crores and up to Rs. 5 crores |

(Source: Micro, Small and Medium Enterprises Development Act, 2006)

Following Amendment in 1961 Business Rules, on May 9, 2007, the Govt. of India merged Ministry of Small scale industries and the Ministry of Agro and Rural industries to form the ministry of micro, small and medium enterprises.

This ministry now designs policies and supports programs, schemes and monitors their implementation with a view to assisting MSMEs and helps them to scale up. Haryana Enterprise promotion policy 2015 sets a road map for Haryana's industrial growth with MSMEs as focal point of strategic interventions. This policy places special emphasis on focus sectors for the state such as scientific instruments, metal, plywood, light engineering and textile as (traditional clusters), apparel, footwear and dairy (rural functional clusters) textiles and food processing (thrust/ focus clusters). This policy also alliance itself with major initiative like make in India ,skill India, digital India and startup India and also takes cognizance of ease of doing business initiatives and reform measures taken by the central and state government.

The Haryana MSME policy 2019 also aligns with Haryana Enterprise promotion policy 2015 and takes a comprehensive approach by integrating strategies for skill development, cluster development and institutional strengthening. Haryana became the first state to introduce Mini cluster development scheme covering cluster interventions up to rupees 2 crores. Based on the concentration of industrial activities, 25 clusters were identified for development /support across the state involving more than 6000 MSMEs in the first phase. Based upon the success in the first phase the scheme will be scaled up with additional Mini clusters to be taken up in the next phase. So, the aim of the Haryana MSME policy 2019 was to augment the competitiveness of MSMEs across the thrust sectors of the state by creating state of the- art infrastructure to foster innovation and to create gainful employment. After 14 years the Indian government has revised the definition of MSMEs under the Atamnirbhar Bharat package on 30th May 2020 to increase the number of enterprises eligible for being classified as micro, small and medium enterprises it came into effect from 1st July ,2020. In this definition, both manufacturing and service enterprises are classified as MSMEs on the basis of same criteria. Now, there will be no difference between manufacturing and service sectors. It has enhanced its simplicity and has made it relatively easier to identify businesses that qualify for the MSME status. A new criterion of net investment and net turnover is added in this definition of MSMEs. Net investment means the investment is the difference of investment in pollution control, research and development and the installation of safety devices from the total investment while net turn over means the turnover with respect to exports made by MSME will not be counted in the turnover limit for defining MSMEs. To strengthen the backbone of the country ,MSME ministry aims to increase its contribution to GDP by up to 50 percent by 2025 as India moves ahead to become a \$ 5 trillion economy. The modified definition of MSMEs is as under:

- **Micro enterprises:** investment in plant and machinery or equipment is up to rupees 1 crore and annual turnover sales is up to rupees 5 crore.
- **Small enterprises:** investment in plant and machinery or equipment is up to rupees 10 crore and annual turnover is up to rupees 50 crore.
- **Medium Enterprises:** investment in plant and machinery or equipment is up to rupees 50 crore and annual turnover up to rupees 250 crore.

This information is summarized in the following Table 2-

Table 2. Net Investment and Net Turnover in Plant and Machinery or Equipments:

| Types of Enterprises | Net Investment in Plant and Machinery or Equipments | Net Turnover |
|----------------------|-----------------------------------------------------|------------------|
| Micro Enterprises | < Rs. 1 crore | < Rs. 5 crores |
| Small Enterprises | < Rs. 10 crore | < Rs. 50 crores |
| Medium Enterprises | < Rs. 50 crore | < Rs. 250 crores |

(Modified definition of MSMEs, 2020)

By including the retail and wholesale sector in the new definition, it has created a level playing field for businesses in all sectors. This will increase the number of MSMEs. The following table compares the new definition with the older one in order to identify its merits.

| Old definition of MSMEs | New Definition of MSMEs |
|------------------------------------------------------------------|----------------------------------------------------------------|
| Different threshold limits for manufacturing and service sectors | Uniform threshold limits for manufacturing and service sectors |
| Excluded retail and wholesale sectors | Includes retail and wholesale sectors |
| Upward limits of turnovers and investments were too much low | Upward limits of turnovers and investments have been raised |
| Export turnover included in total turnover | Export turnover excluded from total turnover |

The Haryana government's main goal is to strengthen the common industrial infrastructure in the state including Quality Marking Centres(QMCs) and supporting MSMEs in product and process improvements. In order to promote the holistic development of the state the government advises MSMEs on intellectual property rights, trademark registration, copyrights, patents and effectively supports research and development among MSMEs by linking them leading think tanks and research and development institutions, thereby creating effective government -industry- academia linkages. The vision of MSME's policy of Haryana government is creating globally competitive and locally relevant MSMEs. The objectives of this policy are as following:

- To promote balanced regional development through geographical dispersal of industry.
- To increase the competitiveness of the MSMEs through cluster development and adoption of quality manufacturing practices.
- To facilitate MSMEs in accessing domestic and export markets.
- To provide a conducive ecosystem for promotion and growth of MSMEs in the thrust sectors of Haryana.

- To enable access to finance to MSMEs.
- To promote entrepreneurship through startup and incubation support.
- To support for revival of Sick enterprises.
- To enhance competitiveness through ease of doing business.

Problems of MSMEs

There are many problems associated with MSMEs, some of them are:

- Lack of good quality and not timely supply of raw material.
- Unable to face competition from large scale industries and multinational companies as the items reserved for small scale industries has been unreserved in 2015-16.
- Problem of power shortage /crisis.
- Problem of finance.
- High cost of production due to old methods of production and unskilled labour.
- Marketing difficulties
- Shortage of competent entrepreneurs to run MSMEs.

Present Position of Micro and Small scale industries in Haryana

Table 3. Growth of Micro and Small scale industries in Haryana

| Year | No. of Micro and Small scale industries |
|-----------|-----------------------------------------|
| 1966-1967 | 4,519 |
| 1990-1991 | 98,996 |
| 2010-2011 | 80,976 |
| 2012-2013 | 85,789 |
| 2015-2016 | 97,020 |

(Source : Statistical Abstract of Haryana 2015-2016, MSME Annual Report, 2020-2021)

Table 4. Growth of Registered Working Factories in Haryana

| Year | No. of Registered Working Factories in Haryana |
|------|------------------------------------------------|
| 1966 | 1168 |
| 1970 | 1359 |
| 1980 | 3176 |
| 1990 | 4843 |
| 1995 | 6498 |
| 2000 | 8631 |
| 2005 | 9282 |
| 2012 | 10979 |
| 2015 | 11574 |
| 2018 | 12931 |
| 2019 | 13384 |
| 2020 | 13778 |
| 2021 | 14417 |

(Source: Statistical Abstract of Haryana 2021-2022)

Conclusion

It is the need of hour that the problem faced by MSME must be addressed by government by devising appropriate policies and strategies "to overcome them as MSME are an important sector for Haryana and have contributed to the state's social economic development. It not only generates job opportunities but also works hand in hand towards the development of the state's backward and rural areas. The MSME sector provides silent support to the nation economy and acts as a defence against global economic shock and adversities. Improving technology, liberal lines of credit, marketing tools and appropriate and focused promotions to conquer domestic and international markets all these measures must be taken as a priority to prevent the monster of unemployment and poverty. As Prof. M.M. Goel has suggested that to ensure implementation of the policies and programs for MSMEs, we need good governance which means SMART (simple, moral, action oriented, responsive and transparent administration). Only then the micro enterprises in the state Haryana will survive, exist and thrive.

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Acceptance Letter

Vijayawada
Date: 10-01-2023

To
Dr.Shelly Mannan
Assistant Professor of English,
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Mullana, District Ambala-133203
Haryana

This is brought to your kind notice that your paper titled “**Second or Foreign Language Learning in a Digital Age: Exploring and Reviewing Newer Possibilities**” is accepted to be published in Volume-8; Issue-1 in our prestigious international English journal. The paper has been done the review process successfully and got a good feedback from the reviewers. Your manuscript number is 8108. Once your manuscript is moved to publishing, our production editor will keep you informed of your article's progress in the production process. Research Journal Of English wishes you a heartfelt congratulations for your future projects too. Please feel free to email us if you have any questions
Thanking you

Yours Sincerely



Velagaleti Bujji Babu
Managing Editor and Publisher
Research Journal Of English (RJOE)

Second or Foreign Language Learning in a Digital Age: Exploring and Reviewing Newer Possibilities

Dr.Shelly Mannan, Assistant Professor, English, Maharana Pratap National College, Mullana, District Ambala-133203 (Haryana)

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Abstract: Though digital intrusion of technology into the teaching-learning process is not a recent development and we have been occasionally (weekly/monthly/quarterly) sprucing up multi-media in our teaching pedagogy along with regular classroom teaching in the past also. However, the real potential of digital technology has never been fully explored and put to use before the recent Covid-19 pandemic. The 'new normal' has offered us an opportunity to explore, discover and eventually apply consistently, the newer digital tools into the pedagogy. The present paper explores, identifies and enlists newer, interesting and trendy ways of second or foreign language learning in a digital age. It scrutinizes the potential of new media towards second and foreign language learning, specifically English through Blogs, social networking, educational and vernacular sites namely Face book, Twitter, YouTube, WhatsApp, Amazon Kindle, Slide Share, Canva etc. Besides this, the study undertaken interweaves the challenging areas of digital learning and its future implications in its text.

Keywords: Digital age, new media, Technology assisted language learning (TALL), Second language acquisition (SLA).

Introduction

The onset of the twenty-first century has made digital revolution accurately comprehensive and global to the extent that cell phones have almost substituted computers. The ever-spending research in the fields encompassing language pedagogy, learning and assessment, discourse analysis, socio-linguistics, computer-assisted language learning bears the testimony to the scope of learning a new language through the formal and informal use of new media. The access to internet along with a possession of a smart phone not only surpasses users' identities, cultural/social/regional differences, literacy levels and language learning proficiencies round the globe but also opens up new vistas in the field of effective language learning and social networking.

Let us understand the concept of new media. It is a comprehensive term which engulfs a wide variety of

electronic communications that are feasible due to innovation in computer technology. With the twin assistance of internet and computers/mobiles, new media has re-defined the channels of communication across the globe. Indisputably, it has almost transfigured the contemporary life and living. "Television, film, computer graphics, digital photography, and virtual reality: our culture recognizes and uses all of these technologies as media." (Round hand et al., 1999) New media denotes the digital media which is interactive, user-centric and can be easily processed, stored, transformed, retrieved, and hyperlinked and, perhaps most radical of all, easily searched for and accessed. (Logan, 2016).

Objectives of the Present Study

Undeniably, Covid-19 pandemic along with social distancing, quarantine and the new normal have devastatingly eroded the ages old belief that man is a social animal. Interestingly, new media appeared as a magic wand which ensured our virtual social connectivity even without actually socialising. SLA is essentially a social activity and therefore, the present paper gains a well-deserved emergency. The key objectives of the present study are:

1. To explore, analyse and review the intrusion of new media in Second Language Learning (SLA) and Technology Assisted Language Learning (TALL).
2. To analyse the overlapping of formal and informal modes of

language learning in the present context.

3. To explore and employ newer, trendy and cost-effective tools of new media to ensure SLA.
4. To assess the tools on the parameters of functionality, feasibility, practicality and access to the teachers and learners alike.
5. To analyse the hurdles in between and the future prospects therein.

Methodology

The present paper is expository in nature and adopts an interdisciplinary approach to explore and review newer possibilities in the arena of Second or Foreign Language Learning, especially English in the post-pandemic digital age.

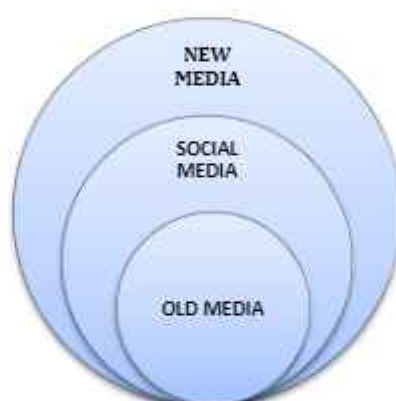
New Media and its Impact

The successive evolution of communication and media proclaims that invention of press offered only one facet of cultural communication, namely- dispersal of knowledge; photography catered to another parameter of cultural communication i.e. static pictures; telephones assisted dissemination of a spoken word to a limited audience; type writers added a professional flavor to the official/personal writings but "computer media revolution affects all stages of communication, including acquisition, manipulating, storage and distribution." (Logan, 2016) Undoubtedly, new media quite imperatively engulfs social and old media into its territory and gives its creator and the consumer an exciting experience. The more we penetrate into the realm of new media,

more are the occasions and openings to access and learn new skills in the field. It thrives on computers, websites, human-computer interface, virtual world, virtual

reality, multimedia, computer games, computer animation, digital videos, special effects in cinema and interactive computer installations. (Manovich, 2001).

Figure 1: A Venn diagram evidently illustrates the relationship of new media with social and old media.



New Media and its Intrusion into SLA and TALL

After reviewing the overall impact of new media on our lives, let us now focus on its influence in TALL and SLA. While tracing down the history of language learning, a couple of decades before, teachers and students relied upon books and black-boards for formal learning and newspapers, magazines, cinema, radio and television for informal and/or formal learning. While comparing the components of old media with the newer additions to media, one discovers an unbridgeable fissure between the segments. Old media is essentially non-interactive while on the

contrary new media; to name a few, websites, blogs, internet telephony, web advertisements, online education, online videos/audio streams, online forums, online communities etc. have revolutionized the experience of teaching and learning. One can see a considerable and growing body of research in a variety of fields, including language pedagogy and assessment, second language acquisition (SLA), discourse analysis, literary studies, computer-mediated communication (CMC), and sociolinguistics (Reinhardt, 2019). Unquestionably, internet technology has stimulated language teaching over the past two decades.

Figure 2: Table visualising the overlapping, blending and blurring boundaries of media in the digital age.



| | | | |
|------------|-----------|------------------------|-------------------|
| Newspapers | Facebook | Websites | Mobile Apps |
| Television | Twitter | Blogs | Web advertising |
| Radio | Snap chat | Chatrooms | Virtual reality |
| Books | LinkedIn | e-books | Digital cameras |
| Letters | Instagram | Online communities | YouTube streaming |
| | WhatsApp | Social media platforms | |

As new media has been accelerating social communication and connectivity in the present times, the present paper gains a well-deserved urgency. Hence, in the light of these findings, we must acknowledge the fact that new media is a vital component of contemporary education and learning. Online courses, online classes/coaching/tutoring, webinars, presentations, live streaming, live sessions, online educational games, online tests and evaluations are some of the essential components of contemporary educational set-up. New media has not only become an essential tool in teaching pedagogy but it plays a key role in the field of evaluation and assessment in the present times.

There has been a continued and sustained contribution towards research and practice in TALL all over the world. Linguists and psychologists have been emphasizing that language acquisition is essentially a socio-cultural phenomenon and human-beings acquire a language through a continued and sustained practice in the target language. People communicate and interact through a language and language ultimately connects people, communities and society. Undeniably, language and

society dwell on each other. It is here, where the socio-linguistics intervenes and investigates the interdependence between language and social contexts. While incorporating various socially-informed theoretical contexts namely "sociocultural theory, situated practice, language socialization or socio-cognitive frameworks"; rightly confirms that language development is an "essentially social phenomenon" (Block, 2003). At this moment, it is very relevant to register a couple of facts. Firstly, language is dynamic and ever-evolving in nature and secondly, mutual communication is intricately woven in the matrix of the society. Certainly, socio-cognitive approaches to CALL shift the dynamics from learners' interaction with computers to interaction with other humans via the computer (Kern & Warschauer, 2000).

Let us now acknowledge the fact that learning does occur outside the formal frame work of education. Digital literacy, learner's autonomy along with virtual learning environments (VLEs) have contributed towards TALL. However, it is very relevant to quote a fact here that ever-growing technological novelties, make us feel confused and exhausted at times. Amusingly, some

digital tools become obsolete even before people get accustomed to it. That is why, the present paper explores a chosen few trendy tools which have come of age and generally speaking, people are familiar with these platforms. The subsequent sections of the paper explore some trendy tools of new media which enable a learner to acquire second or foreign language through TALL, as including all the existing tools is definitely beyond the scope of the paper.

Innovative and Trendy Tools for ESL

Social media exploits the innate human tendency to connect and communicate with each other. There are four important purposes behind social media and social networking and these are to connect to others and build relationships; to collaborate with others; to present or broadcast an identity or to express creative activity (Reinhardt, 2019).

1. Blogs

A blog (a truncation of weblog) is a personal online portfolio or a journal where a blogger documents his/her opinion and experiences on issues of his/her choice. The blogs are interconnected to other blogs by their authors and ultimately, generate networked communities. These blogs are not only platforms for expression for their authors but also create a virtual space for readers to gain knowledge and insight into the fields of their choice. In the framework of English as a second language, blogosphere recommends access to a "wide variety of topic and

registers" and enables ESL students to gain proficiency in the skills like "skimming, scanning and critical reading." (Ward, 2004)

In the context of ESL, there are evidences that blogs enhance critical intercultural consciousness especially because the students experience how their own perceptions have transformed when their most recent entries are compared with the older ones. In the same context, learners can create a blog-based customized 'personal learning environment (PLE); while making the most of learner's autonomy these blogs could act as a space for accumulating, archiving, and handling online learning resources. (Guth, 2009)

2. Face book

Facebook is a social networking site which facilitates its users with an online connectivity with family and friends. Owing to its world-wide popularity and acceptance, academia too, has taken interest into this vernacular site to explore the possibilities of "collaborative and participatory learning communities as well as opportunities for informal and unstructured learning." (Reinhardt, 2019)

Latest trends and researches in the fields namely Internet socio-linguistics and new media studies has revealed considerable possibilities in the methodological innovation in the field of ESL. Internet socio-linguistics acknowledges multilingual and multicultural diversity of the online language used therein where user "considers the various repertoires

and resources as an integrated system, and the SNS serves as an intertextual space for self-presentation and identity performance.” (Schreiber, 2015) However, self-motivated and intentional ESL through Facebook cannot be negated at all. Teachers may share motivational quotes, videos or stories through closed Facebook groups/communities meant for the learning and educational purpose. This will not only make ESL interesting and engaging but will also promote learning through observation.

3. Twitter

Twitter is a multilingual social networking service which facilitates its users to post and communicate through short messages called “tweets.” Often labeled as micro blogging, it was purposefully created with a pre-conceived objective of swift spreading of main news captions or gossip to trail and surf information using hash tags. It boasts of allowing its subscribers to follow the tweets of people whom they may not know personally. Amusingly, Twitter has started resembling Facebook and vice-versa as Twitter has relaxed the characters limit, allowed inserting images and videos into the tweets while Facebook has freshly assimilated the idea of hash tags and followers. Twitter can be incorporated into the teaching pedagogy by sending images; pictures to the students encouraging them to create a short story/character sketch/assign an appropriate title etc. Teachers may utilize Twitter for informing students about the

deadlines for their projects/assignments/exams or for sharing inspirational quotes or retweeting significant feeds of international/national personalities.

4. YouTube

YouTube is an established website for sharing videos. The platform not only facilitates the user to upload one's own videos but one can also view videos uploaded by other users. YouTube videos can be embedded and shared on other sites also. Educators can recommend some informative videos related to language learning to the students so that they may pursue learning in their own comfort and privacy zones. The next day, teacher may conduct a discussion on the watched videos in the class. In addition to this, students can subscribe to informative channels for informal and unstructured SLA.

5. Whats App

WhatsApp is a mobile messaging application which connects its users through voice calls, face-to-face calls or text messages. Photo/document sharing and group chats and one-to-one chats are some of the popular features of WhatsApp. Recent researches have revealed that students prefer WhatsApp as an “extended learning platform”(Ahmed, 2019). It is a very effective tool for upgrading reading and writing skills in SLA. Educator can share photograph(s), video(s) or text(s) to begin a discussion in the group. It is an integral platform for informal official communication in organizations and

lately, it has now gained acceptance in the field of education also. Evidently speaking, almost every teacher has created WhatsApp group(s) for his/her respective classes for sharing important information, recent updates, online class links etc. during the online teaching sessions and eventually, this practice is going to stay in future also.

6. Amazon Kindle

Amazon Kindle empowers its users to download, access/read e-books, magazines and other digital media. Keeping in harmony with the user-friendly approach, Kindle devices enable its reader to access dictionary and Wikipedia for browsing difficult words during reading. In addition to this, font size and margins of the e-book can be tailored according to the personal choice/need of the user. Text to speech for reading the text aloud and an MP3 player playing music in the background during reading are some exciting and user-friendly features of Kindle. Though carrying actual books or carrying books through Kindle depends exclusively on the concerned person. Speaking particularly, of the present generation and the contemporary times, youngsters prefer reading e-books than the paperback books. The new mobile technology coupled with computer-based smart phones has made audio books readily available as well as user-friendly than ever before, we find evidence that the target groups of audio books are growing due to the amplified flexibility and prevalence of the medium. (Have &

Pedersen, 2015) Passion for reading e-books necessarily adds to informal and unstructured SLA.

7. Video Conferencing (Zoom, Microsoft Teams, Google Meet, etc.)

Video Conferencing through Google meet, Zoom and Microsoft teams sanctions its users to initiate and contribute in text, voice or video chats. These platforms debar the geographical limitations and connect people online in a virtual world. The communication can be one-to-one or it may take place in groups. The platform brings learners and teachers virtually face-to-face to each other and the situation culminates from "in front of your teacher" to "in front of your computer screen" assert (Wang & Winstead, 2016). Videoconferencing, in addition to offering virtual platform for collective learning also encourages collaborations and reinforcement among students and teachers while disabling the geographical, political, regional and communal barriers. These platforms facilitate the users to execute a project/assignment/presentation collaboratively without the constraint of time and place. The participants may contribute as per their personal engagements is-à-vis time and place towards the collective project. Subject-specific and topic-specific virtual meetings can be planned by the teacher and/or students. This platform in addition to ensuring team work, also keeps a check on the individual performance of the learners. Unquestionably, this tool has

been extensively utilised across the world to ensure the dissemination of education and learning through online classes even in the testing times of the recent Pandemic.

8. Slide Share

If YouTube permits its users to upload videos, Slide Share licenses its users to upload slideshows/presentations. Slide Share is a slide hosting service which empowers its users to upload files namely PowerPoint, Word, PDF or Open Document presentations. One can view these presentations on the site itself or these can be rooted to the other sites as well. It is this feature which makes Slide Share, truly, a component of new media. Primarily, the platform was created for the business organisations with a pre-defined purpose to share information with employees but currently, it has flourished much beyond its original being. Today, it has succeeded into a reservoir of presentations related to a variety of segments, to name a few; education, life style, tourism, internet, spiritual, social media, technology, self-improvement, career, food etc. One can find a plethora of presentations on grammar, syntax, vocabulary, sentence structures and likes on the site. One can not only peruse these presentations for learning rather one can draft, design and upload one's own presentations. Hence, SlideShare offers tremendous opportunities for formal and informal learning.

9. Canva

Canva is an online graphic designing and publishing tool which aims at enabling its users to design and publish a variety of things namely photo-collage, book-cover, mind-map, magazine cover, poster, worksheets, post-cards, letter-heads, flyers, comic strip, class schedule, planner, concept maps, lesson-plans, book-marks, desktop wall-paper etc. Canva is free to use but can be upgraded to Canva Pro for additional features. Teachers can not only use this tool for designing their lesson-plans, class-schedules, talking presentations and videos to enrich their pedagogy but can also propel students to design posters, invitations, letter-heads for various upcoming online/offline activities and events. Interestingly, teachers of English have been teaching letter-writing, poster/advertisement designing, notice-writing etc. Now, with Canva, students can conveniently get hands-on training of creating and publishing a variety of things. Not only this move will enrich their business communication but hands-on practice on such projects will result enhance their life-skills.

Incorporating New Media in ESL: Facing Challenges and Dealing with Threats

Irrefutably, SLA through new media is student-centered and TALL invariably expects a teacher to be a planner, a facilitator, a mediator, a controller, a regulator, an enabler, an organizer who initiates, motivates,

stimulates, inspires, persuades, encourages, inspires and stirs the students to accomplish the desired goals of teaching/learning process. Planning lessons/lectures/sessions; designing content for structured classes; choosing online tool for additional information and learning; imparting morals/ethical values; instilling life-skills; designing, assigning and scheduling tests/assignments and eventually, evaluating academic performances of students; planning online/offline curricular and cultural activities are the top-most priorities of a teacher. Undoubtedly, TALL expects teachers to be exceptionally competent in integrating digital tools in their teaching pedagogy.

TALL has unquestionably, the potential to disrupt the outmoded and stiff barricades of classroom language learning but everything comes with a price and this platform of learning is not an exception. Here are some pre-requisites for the smooth and unflinching TALL:

- i. Consistent and reliable institutional support system regarding technology assistance to meet the learner's needs, namely software and/or hardware necessities, internet bandwidth and connectivity.
- ii. A high-level competency in digital literacy is a pre-requisite for the teacher and the taught alike.

- iii. A dependable support system for trouble shooting of software and hardware failures.
- iv. Dependable and unflinching digital opportunities for teacher and students for effective communication amongst them.

It is obligatory to document a very relevant fact here that no tool or device can ever replace the educator who propels the learners towards the desired goals of learning. These innovative and trendy tools of learning may act as a catalyst towards efficient learning but in no case can defy a teacher. Though the informal individual language learning may not be controlled but the structured language learning needs to be controlled and supervised by a teacher, especially for unsuitable and incongruous content or comments while using new media. On the contrary, these innovative and creative tools may culminate into distractions, disturbances, cyber bullying or even criminal activities on the part of students. Definitely, we should stay mindful but we should also not get influenced by the potential of ever progressing technology. (Wang & Winstead, 2016)

While turning to the threats involved in TALL, one jiggles with a plethora of problems, namely-surplus information, constraints of technology, individual digital literacy, addiction towards social media, online bullying, trolling, isolation, self-centeredness, individual privacy concerns, disinterest towards face-to-face

communication and a penchant for virtual presence. The tendency of students to shun away from interactions and face-to-face dialogue with people in reality, is another area of concern.

Conclusion

While pulling all the threads together towards the conclusion, it is very appropriate to acknowledge that new media has undeniably stimulated the mode of teaching and learning of English language in this digital age. SLA through new media is indisputably learner-centered which tends to diminish the cultural gaps, literary competencies, social and geographic diversities. While supporting and promoting autonomy of learners, these innovative and trendy tools of new media have noteworthy potentials and possibilities. Earlier, the tools discussed in the present study were facilitating informal mode of learning but they have essentially intruded into the formal teaching pedagogy in the post-pandemic period. The blurring boundaries and overlapping contours of such differentiated fields like education, technology, digital literacy, new media, discourse analysis, applied linguistics, digital humanities, comparative and contrastive linguistics, global citizenship and above all, the ongoing inter-disciplinary studies in these fields assures us that new media will continue to play a pivotal role towards modern language proficiency in future.

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A Perception of Indian Public Towards Cashless Transactions

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Abstract: **PURPOSE OF THE STUDY:** In this paper an attempt is made to examine the Public perception in India towards cashless transactions and the attempt is made to identify the challenges faced by them during their transactions. In India, most of the people started electronic payments for their various transactions after demonetization. Today's, everyone from the small merchant to neighbouring vegetable vendor is embracing digital payment solutions. Slowly and slowly, India is moving from cash to cashless economy. A cashless economy is one in which all the transactions are done using cards or digital means of payment. The circulation of physical currency is going to minimum in cashless economy. There are many benefits of Cashless economy. The increased use of debit and credit cards will definitely reduce the amount of cash that people have to carry which reduces the risk associated with that.

FINDINGS AND SUGGESTIONS OF THE STUDY: Maximum respondents are in favour of Cashless transactions as compared to Cash transactions. Maximum respondents prefer Debit or Credit card facility for cashless modes of making payments because might be they believed that it is more secured than Internet Banking or Mobile Wallets. The study concluded that India is ready to become a cashless economy because of the change in mindset of people, evaluation of technology, internet facilities and government initiatives.

Keywords: Cashless Economy, Debit Card, Credit Card, UPI, NEFT, RTGS.

1. INTRODUCTION

In today's scenario, Time has come to go cashless. When decision of demonetization was taken, the main objective is not only to remove black money but also to encourage cashless payment. In other words, it means Instead of breaking your heads by standing in ATM queue you should adopt a cashless method for the transaction because cashless method is more transparent as every transaction can be traced easily as it leaves its footprints. Many smart people have

adopted or started using new cashless payment options. Some Cashless Payment options are as follows:

1. **Cheque:** The cheque is one of the traditional and oldest methods of cashless payment. It is a popular and known method to everyone. In this method, you issue a cheque for the specific amount for someone to whom you have to pay. The cheque gets deposited in the respective bank account of that person. The bank processes a payment in his account through a clearing house.

The entire transaction done through cheque gets recorded and proof of payment is available. However, there are instances or situations where cheque payments get dishonoured due to signature mismatch or insufficient fund in the account of payee. In order to avoid such issue, you can use other cashless payment methods or options.

2. **Demand Draft:** Demand draft is another method of cashless transaction. It is the safest way of option to receive payment from anyone. Demand draft (DD) never gets dishonoured or defaulted as it is signed by the banker. The disadvantage of DD and cheque is you need to visit a bank physically in order to deposit cheque and demand draft. The clearance of cheque or DD takes additional time in completing the process.

3. **Online Transfer- NEFT or RTGS:** The third simplest way of method for the cashless transaction is online transfer using NEFT or RTGS. In order to do online money transfer, you need internet banking facility or internet/mobile banking. Online transfer of money using NEFT or RTGS is comparatively faster than cheque or DD. Online transfer can be done from anywhere using internet facility by the payee.

4. **Credit Card or Debit Card:** Credit card or debit card is another cashless payment option or method. Previously, the usage of credit card and debit card was limited in India. However, usage of credit card and debit card is increasing now days. The limitation of

this payment method is a non-availability of swipe card facility or machine at merchant end.

5. E-Wallets: E-wallet is the next cashless payment method or option. E-wallet can be used to purchase products from grocery counter or corner to airline tickets. In order to use E-wallets customer and merchant, both require a smart phone with active and good internet connection. The most popular example of E-wallet is PayPal. Apart from PayPal, you can also use Payoneer, Transferwise, Skrill, and PayZa.

For registering for E-wallet you need to link your credit card or debit card with your E-wallet Id. You can use e-wallet for fund transfer or online shopping. It is the simplest cashless option or method.

6. Mobile Wallets: The next cashless payment option or method is a mobile wallet. You do not need a credit card, debit card or internet banking password for making payment while using a mobile wallet. Just deposit or load money in your wallet via IMPS and start using it. You can download mobile wallet app from play store. Few examples of mobile wallets are Oxigen, Lime, Paytm, PayUmoney, MobiKwik etc.

7. UPI Apps: UPI is a mobile payment system which allows you to do various financial transactions by using your smart phone. UPI allows you to send or receive money using virtual payment address without entering bank information. Merchants can enrol with banks to accept payments using UPI Id.

The examples of few UPI Apps are Bhim app, Google Pay, SBI Pay, ICICI Pocket, Axis Pay UPI App, Union Bank UPI App, PNB UPI, PhonePe, TranZ app etc.

8. Gift Card: The next cashless payment option or method is a gift card. Gift Card is a readymade card and can be purchased from a merchant or from the bank. The gift card is loaded with a pre-decided or fix cash amount you can purchase any item from the specific vendor by using a gift card.

9. Aadhaar Enabled Payment System: Aadhaar Enabled Payment System (AEPS) is one of the best cashless payment option or method. AEPS is like Micro ATM; it uses smart phone and a finger-print scanner for completing the transaction. In order to use this facility, it is mandatory to link your Aadhaar card with your bank account. You can use AEPS in order to perform transaction like Cash withdrawal, Cash deposit, Aadhar to Aadhar fund transfer etc.

10. Unstructured Supplementary Service Data: You can use USSD cashless method or option; if you don't have a smart phone or internet connection.

Unstructured Supplementary Service Data is mobile banking service. From any mobile phone, you can dial *99# and use this service. You can do all these things which are available to a person having smart phone and internet connection. Almost all banks i.e. State Bank of India, ICICI, Bank of Baroda, Axis Bank and Punjab National Bank for supporting USSD payment method or option.

When the transactions in an economy are not heavily based on the money notes, coins or any other physical form of money but are aided by the use of Credit Card, Debit Card, UPI, NEFT, RTGS, Google Pay, Paytm, Net Banking or Mobile Banking and prepaid payment instruments, such an economy is called cashless economy.

Period of Demonetisation forced people to go for cashless transactions as there is very less liquid cash available with the public and most of the black money has been confiscated by the government. Many digital payment platforms were come into existence which helped the people to migrate into cashless transactions. The growing shift towards digital payments is strongly debated among governments, central banks and financial experts. Indeed, the proliferation of new electronic and mobile instruments has opened the door to a possible revolution of the payments landscape. Yet, various factors must be taken into account as a worldwide shift to cashless could prove more complex than believed.

To justify a withdrawal of paper money, governments argue that a fully digitalised system which would eradicate tax evasion and money laundering, reduce transaction costs and enable financial authorities to stimulate economic growth. A cashless system would enable governments to track and record every transaction, leaving no loopholes for fraudsters to exploit. Moreover, central banks would be able to impose any desired monetary policy – including negative rates – as consumers would have no way to retrieve their cash from the banking system.

A demise of paper money would enable governments to exercise a full control over the banking system, including tracking and recording all transactions. If this might be useful in the fight against criminality, it will also impinge on consumer rights to privacy. Furthermore, no one would be immune in case of a system failure, and a stolen or broken smart phone would immediately leave the victim without a payment tool. Last but not least, the millions of

unbanked would be left behind without any resource. According to specialists, a shift to cashless might even create a second-class citizenry and thus deepen the gap between rich and poor.

The example of India's demonetization shows how laborious the shift to cashless can be. Last year's demonetisation of the Rs 500 and 1000, which accounted for 86% of the currency in circulation in the country, unsurprisingly resulted in chaos. Companies were unable to pay salaries and millions of unbanked citizen could not buy food and medicine. What's more, the economy slowed to a two-year low as the population spent days lining up at banks to open accounts and deposit their old notes.

This effect occurs in any scenario where we use digital forms of payment instead of cash, which these days make up most of our transactions. Unfortunately, whether it's a big or small purchase, we are likely to spend more money when we don't physically have to give it up.

For example, imagine if you are at Best Shop, looking a LED of Rs. 20,000. It is very unlikely that you would decide to buy the LED if you had to pay for it in cash. For this, you would have to carry a lot of money, which can be unsafe and risky. Secondly, it would feel a lot harder or difficult to part ways with a wad of cash than to give someone your credit card. Thirdly, you may not actually have Rs. 20,000 to use. But, if you can use a credit card in this case, you don't need to have that money in your pocket immediately. So, you go ahead with the purchase.

Individual effects

Digital payments do not only indicate only a change in the option or method of payment through which we perform our transactions; the cashless method affects us in many ways, like digitized transactions cause us to change our spending habits. We are much looser in many ways with our money when it only exists in an indefinite or evasive digital form, and often spend money that we wouldn't if we had to make the same transaction with physical cash.

The cashless effect is more dangerous because it can lead to overspending. We make large purchases while using credit card at ease, because we find it harder to understand the value of money when it isn't tangible or in our hands. We often forget that a credit card is literally a line of loan or credit that we later have to repay. The cashless effect on individuals, because we

end up spending more money than we actually have, can quickly cause us to fall into debt. Apart from the financial downfalls of debt, research has also shown that individuals who have debt are twice as likely to suffer from depression and anxiety disorders.

When transactions are digital or online, it also means that there is a digital trace of all of our activities of receiving or spending money. We lose anonymity and the ability to make discrete the transactions. Platforms use for these purposes, affects our spending habits to hit us with targeted ads, causing us to spend even more money, demonstrating how the cashless effect can quickly bring us into a vicious spending cycle. The loss of anonymity through financial surveillance and system becomes more transparent can also give a lot of control to the government and reduce the chances of our freedom.

Systemic effects

Essentially, most of the developed countries now operate in a "cashless society". While cashless societies have always existed, in terms of trading commodities instead of cash, in recent years, the term has taken on a new meaning or a new terminology. Our trading is almost entirely digital or online, with money only ever 'passing hands' through the Internet. Bit coin is the most recent evolution of our turn towards being totally cashless.

The ubiquity of using digital platforms for payments has only increased more in light of the COVID-19 pandemic, with many retailers actually banning cash transactions in fear of the virus spreading through money exchanging hands. Outside of potentially helping reduce the spread of COVID-19, cashless societies also mean that the cashless effect is much more prominent now days, and is impacting far more humans. The fact that forms of payment are becoming more and more opaque, such as in the case of bit coin, also suggests that the impacts of cashless effect will increase.

The cashless effect becomes a real problem when the individuals that are tempted to overspend in buying and they do not have much money to spend. When individuals spend more because transactions are digital and it is easy to pay digitally but sometimes they are unable to pay that money back. In America alone, consumer debt was close to 14-trillion in 2019. Not only does this have negative consequences on human beings, but because debt and financial

problems can cause a lot of stress problems, it can actually lead to increased healthcare costs for the federal government.

Why it happens

The cashless effect occurs because we don't have as much difficulty parting with money when it is not tangible. It is actually considered painful for us to give up physical money, as we feel the loss of it, known as the "pain of payment". This may be because physical money has more obvious value than digital payments, meaning we more readily understand what we are giving up when we pay cash physically.

When money is exchanged digitally, it is harder to quantify what we are parting with. Giving someone our credit card feels like a far smaller commitment other than handing someone wads of cash. After all, giving someone our credit card is just handing them a piece of plastic, which in itself, is not worth much.

Moreover, we often make short-sighted decisions without properly and rationally determining the long-term effects of our decisions (see the projection biasness while taking these decisions and we do not realize for more information on why we make decisions based on short-term tastes). If we pay in cash, presently we have to immediately give up our money. However, if we pay through a credit card or another form of digital payment, we have more time to come up with that money. It may feel like less of a commitment at the time, but the cashless effect makes us susceptible to being in debt.

Why it is important

Payment mechanisms should have no impact on our consumer behaviour decisions if we are purely rational decision-makers. However, the cashless effect demonstrates that this is not the case; our spending habits change when we do not have to pay in physical cash. Irrational purchasing decisions can have negative consequences, such as overspending, debt, and increased stress problems.

Cashless payments are so ubiquitous in our society, shown by discourse that suggests we are moving into cashless societies. It is therefore very important to know that we understand how changing our payment methods; changes our consumer behaviour, so that we can adjust accordingly. We may not be able to avoid using different forms of payment, but if we understand that digital payments detract us from making rational

purchasing decisions, then we can be more careful about how and when we spend our money. Being a little more diligent with behaviour of consumers leads to more rational and optimal decisions that better fit our budgets and financial goals.

How to avoid it

Obviously, sticking to cash as a form of payment would absolve us from the cashless effect. However, this is not always a viable solution or option. Some retailers and restaurants will not accept cash, whether to avoid the fees associated with cash-handling costs or to avoid the spread of diseases like COVID-19. It also is not convenient or safe to carry around large amounts of cash. So, what can we do?

In starting of the period, individuals were reluctant to go for cashless transactions due to lack of awareness, security reasons, limited availability of internet and mobile phones, especially in rural areas. Since the technological revolution during last 4 to 5 years, internet and mobile phones have reached every household. This made the people get ready to use to cashless transaction.

Period of demonetisation has led individuals to open large number of bank accounts in different banks, which also helped in volume increase of cashless transactions. People are now used it due to the ease, transparency and faster transactions. Now, we can say that India is ready to become a cashless country or economy because of the change in mindset of people, evaluation of technology, internet facilities and government initiatives.

A very big question lies in front of everyone. Is India ready for a cashless economy? The answer is relative to most people. Some believe that India is ready for it and some believe that India is not.

The Government of India has a strong belief in the fact that India can transform itself for a cashless economy. Since most individuals are connected with a smartphone in India, it is very usable and will help India move towards a paperless society. The government also announced a few incentives for cashless transactions to promote it.

2.MERITS AND DEMERITS OF CASHLESS ECONOMY

A paperless economy has its own merits and demerits.
THE BENEFITS OF A CASHLESS ECONOMY:

In reducing cost: The cost of printing and circulating money into the economy is now reduced.

Transparency system: Since most e-wallets and digital payments require KYC, and this helps the RBI to track all the digital transactions.

Convenience: E-transactions are convenient for both the banks and customers. This kind of transactions can take place in any corner of the world, 24*7*365.

Offers: Various E-wallets give exciting offers like free coupons or cash backs on transactions. Cash back is an offer where individuals get back a certain amount on their transactions.

Rapid development: Due to the high demand for digital needs, India has seen increased development in many parts of the country.

Control on black money: Digital transactions have proven to reduce the chances of the black money problem in India due to higher transparency in transactions.

THE DEMERITS OF CASHLESS ECONOMY

Not enough reach: The platform of Digital India did not reach or cover properly in various parts of slum or rural areas. Many villages are yet to have the rapid development seen in the digital infrastructure or internet facility.

Lack of digitalization: In India, smart-phone is not with everyone; around 14 people out of 100 in India lack a smart-phone.

Cyber-attack: The chance of hacking and cyber-attacks on your phone is very high after digitalisation of India.

Bad servers: Many UPI users have faced trouble in transactions due to bad servers very often. This can put people in big problems at times.

As the country moves towards a cashless environment after demonetisation, the initial awe and confusion have given way to a flurry of concerns. Will the emphasis on online transactions provide convenience and tangible benefits or just add to stress and additional charges? To incentivise the move towards a cashless economy, the government has come up with a rash of discounts and freebies on digital transactions. But will these be substantial enough and, along with other benefits, counter the higher risk of identity theft once the currency notes are back in circulation? The government is working at various levels to reduce the dependence on cash. Even as ordinary citizens queue up for cash and economists are busy estimating the extent

to which economic growth will be hit because of the ongoing drive to replace high-value banknotes, there has been a lot of discussion on whether the government can use the current situation to push India towards a cashless future. In his radio address on Sunday, Prime Minister Narendra Modi once again pitched for creating a cashless society. Reducing Indian economy's dependence on cash is desirable for a variety of reasons. India has one of the highest cash to gross domestic product ratios in the world and lubricating economic activity with paper has costs. According to a 2014 study by Tufts University, The Cost Of Cash In India, cash operations cost the Reserve Bank of India (RBI) and commercial banks about Rs21,000 crore annually. Also, a shift away from cash will make it more difficult for tax evaders to hide their income, a substantial benefit in a country that is fiscally constrained. To be sure, the government on its part is working at various levels to reduce the dependence on cash. Opening bank accounts for the unbanked under the adoption of direct benefit transfer is part of the overall idea to reduce usage of cash and increase transparency.

3. REVIEW OF LITERATURE

(Hunt, 2014), Talked about the critical role to be played in ensuring the efficient and effective transition and transformation from Industrial Era models and processes to their Digital Era upgrades. He further said the social and digital technologies are transferring talent management. In addition to transforming talent management, social and digital technologies are changing the nature of work itself which have extensive human capital management implications, ranging from human capital strategy, organizational structure, and staffing - to job design, training and development, performance management, and compensation.

(Pathania, 2016), in his article mentions some of the benefits of cashless transactions to nations like increased GDP by using cards and reduced social cost, increased in financial inclusion due to acceptance of e-payments, reduces the shadow economy, reduced in cash payment enables e-commerce growth and facilitated trusted transactions online. He says that at 1.7% of GDP, India incurs a much higher cost of cash compared with most developed economies. Every changing digital world had a huge impact on Human

resource. It had created an impact on their jobs and their workplaces. He mentions five challenges that the human resource has to in the present as well as in the future. The five challenges are- (i) figuring out when processes should be automated, versus when a human face or voice is the best route, (ii) better communicators in order to effectively leverage the digital space, (iii) simplifying the data and provide a clear picture of their current workforce as the data are scattered among multiple systems and acquired in varied formats, (iv) fear from the legal department of using social media and (v) HR has to evaluate what function can be automated and provide desired level of services.

(Team, 2016), paper clarifies the impact of Demonetization on the availability of credit, spending, level of activity and government finances. The impact of the shock in the medium term is a function of how much of the currency will be replaced at the end of the replacement process and the extent to which currency in circulation is extinguished.

(Sharma, 2017), conducted a survey to understand the potential for cashless economy in India, through an extensive household survey of Jodhpur city. It was estimated the extent to which households made non cash expenditure. It was also identified the bottlenecks which prevented households to make non cash payments like Security, internet connection, loss of card, hackers activity, lack of technology are worries of customers towards switching to cashless economy.

4. RESEARCH METHODOLOGY

OBJECTIVES OF THE STUDY

1. To study about Cashless Transactions are better than Cash Transactions.
2. To know about Cashless Modes of Making Payments.
3. To study the perception about benefits of Cashless Transactions.
4. To study the perception about Challenges of Cashless Transactions.
5. To study the perception about Ease of Use.
6. To study the Social Influence on cashless transactions.
7. To know the Digital Literacy of respondents.
8. To study the OTP (One Time Password) is secured for authentication and authorization.

RESEARCH DESIGN

A research design is simply a plan for study in collection and analysing the data. The report is exploratory and descriptive in nature. This study is going to describe the perception of respondents regarding Cashless Economy. Hence it is a descriptive in nature but it suggests some important points to improve the ways of digitalisation.

Research includes questionnaires, observations and facts used to find enquiries of different kind. Structured Questionnaire is prepared and pilot survey has been done to check the reliability of questionnaire with the help of 20 respondents, who were not the part of final sample. With their suggestions some questions are dropped and some are reframed.

DATA COLLECTION

During preparation of the project report different kinds of data were required which includes both primary and secondary sources.

SOURCES OF DATA COLLECTION

PRIMARY DATA

Primary data is used through by preparing structured questionnaire.

SECONDARY DATA

Secondary data is already published data. It is the data which is collected by someone else before and presently used by further research work. Secondary data for the base of the project are collected from:

- internet
- magazines
- journals

SAMPLE SIZE

The sample size selected from universe to constitute the study is 150.

SAMPLE FRAME

Sample frame is respondents from Ambala Cantt.

SAMPLE UNIT

Study is conducted by the survey mainly from respondents of Ambala Cantt.

SAMPLING TECHNIQUE

A Probability sampling technique i.e. Stratified Sampling technique has been used while collecting the data through questionnaire. This technique divides the elements of the population into small subgroups (strata) based on the similarity in such a way that the elements

within the group are homogeneous and heterogeneous among the other sub-groups formed. And then the elements are randomly selected from each of these strata. We need to have prior information about the population to create subgroups. In this study, this technique is used due to different income level of population of Ambala Cantt.

5. ANALYSIS AND INTERPRETATION

Table 1: Cashless Transactions are better than Cash Transactions

| Options | No. of Respondents |
|---------|--------------------|
| Yes | 123 |
| No | 20 |
| May Be | 07 |
| Total | 150 |

Interpretation: Above table depicts that 123 respondents are in favour of Cashless transactions as compare to Cash transactions.

Table 2: Cashless Modes of Making Payments

| Options | No. of Respondents |
|------------------------------|--------------------|
| Debit/ Credit Card | 141 |
| Online Transfer (NEFT/ RTGS) | 47 |
| Internet Banking | 54 |
| Mobile Wallets | 79 |
| UPI Apps | 39 |
| | 91 |

Interpretation: Above table reveals that maximum respondents prefer Debit or Credit card facility for cashless modes of making payments because might me they believed that it is more secure than Internet Banking or Mobile Wallets. 54% respondents i.e. businessmen, manufactures and entrepreneurs prefer NEFT or RTGS facility for making payments. 91% respondents prefer UPI Apps for making payments.

Table 3: Perception about benefits of Cashless Transactions

| Options | Strongly Disagree(SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree(SA) | Total No. of Respondents |
|----------------------------------------------------------|-----------------------|--------------|-------------|-----------|--------------------|--------------------------|
| Easy and Convenient Means | - | - | - | 19 | 131 | 150 |
| Secure Payments | 9 | 62 | 40 | 35 | 4 | 150 |
| Reduces Risk of Carrying Cash | - | - | - | 87 | 63 | 150 |
| High Transaction Speed | - | - | - | 11 | 139 | 150 |
| Cash Back Offer/ Discounts | - | - | 55 | 40 | 55 | 150 |
| Controls Black Money | - | 6 | 130 | 2 | 12 | 150 |
| Control Illegal Activities | 3 | - | 101 | 17 | 29 | 150 |
| Reduces Corruptions as transactions are easily traceable | 4 | 18 | 63 | 40 | 25 | 150 |

Interpretation: Above table shows that maximum respondents believe that cashless transactions were easy and convenient means of making payments but on the other hand 62% respondents disagree that it is not secure mode and 40% were neutral. But maximum respondents agree that it reduces risk of carrying cash as well as it involves high transaction speed. Maximum respondents prefer cashless transactions due to cash back offer/ discounts. But maximum respondents believe that it controls black money and control illegal activities.

Table 4: Perception about Challenges of Cashless Transactions

| Options | Strongly Disagree(SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree(SA) | Total No. of Respondents |
|--------------------------------|-----------------------|--------------|-------------|-----------|--------------------|--------------------------|
| Lack of Security | 4 | 28 | 7 | 60 | 49 | 150 |
| Lack of Incentives | 9 | 22 | 4 | 75 | 40 | 150 |
| Inadequate Infrastructure | - | - | - | 87 | 63 | 150 |
| Lack of Digital Knowledge | - | - | 55 | 40 | 55 | 150 |
| Poor Internet Connectivity | 3 | - | 30 | 88 | 29 | 150 |
| Charges of Online Transactions | 4 | 18 | 13 | 90 | 25 | 150 |

Interpretation: Above table exhibits that maximum respondents believe that there are many challenges in doing cashless transactions like lack of security, lack of incentives, inadequate infrastructure, lack of digital knowledge, poor internet activity, charges of online transactions. This shows that these might be the reasons for not using the cashless modes of payments properly by many respondents.

Table 5: Perceived Ease of Use

| Options | Strongly Disagree(SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree(SA) | Total No. of Respondents |
|---------|-----------------------|--------------|-------------|-----------|--------------------|--------------------------|
|---------|-----------------------|--------------|-------------|-----------|--------------------|--------------------------|

| | | | | | | |
|------------------------------------------------------------|----|----|----|----|-----|-----|
| I feel comfortable in doing Cashless Payment | 16 | 28 | 7 | 90 | 9 | 150 |
| It makes easy to track past transactions | 16 | 28 | 7 | 90 | 9 | 150 |
| Cashless payment modes are easy and flexible to interact | - | - | 40 | 87 | 23 | 150 |
| Transaction charges affect my mode of payment | - | - | - | 11 | 139 | 150 |
| My experience of using cashless modes has always been good | - | - | 55 | 80 | 15 | 150 |

Interpretation: Above table exhibits that maximum respondents feel comfortable in doing Cashless payment, easy to track past transactions but transaction charges affect in using this mode of payment.

Table 6: Social Influence

| Options | Strongly Disagree (SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree (SA) | Total No. of Respondents |
|-----------------------------------------------------------------------------------------------------|------------------------|--------------|-------------|-----------|---------------------|--------------------------|
| My friends/ family and relatives believes cashless payment are beneficial and they also recommended | 6 | 28 | 47 | 60 | 9 | 150 |

Interpretation: Above table shows that 60% respondents are influenced in using cashless payment mode by friends, family and relatives, 47% are neutral and 28% are disagree with this belief.

Table 7: Digital Literacy

| Options | Strongly Disagree (SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree (SA) | Total No. of Respondents |
|---------------------------------------------------------|------------------------|--------------|-------------|-----------|---------------------|--------------------------|
| Digital Literacy is important for cashless transactions | 4 | 8 | 47 | 60 | 31 | 150 |
| Smartphone accessibility is important | - | 7 | - | - | 143 | 150 |

Interpretation: Above table depicts that maximum respondents believe that Digital Literacy is important for cashless transactions and smart phone accessibility is important for doing cashless transactions.

Table 8: Authentication and Authorization

| Options | Strongly Disagree (SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree (SA) | Total No. of Respondents |
|-------------------------------------------------------------------------|------------------------|--------------|-------------|-----------|---------------------|--------------------------|
| I perceive usage of OTP a secure mechanism for authentication E-payment | 4 | 28 | 47 | 60 | 9 | 150 |

Interpretation: Above table shows that 60% respondents agree, and 9% respondents strongly agree that usage of OTP a secure mechanism for authentication E-payment. But 47% respondents are neutral for this perceive.

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5. CONCLUSION OF THE STUDY

The study concluded that India is ready to become a cashless economy because of the change in mindset of people, evaluation of technology, internet facilities and government initiatives.

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Exploring the Gandhism in India's Soft Power Strategy

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Abstract

Jawaharlal Nehru, India's first prime minister, served as Prime Minister from the year of the country's independence until his passing in 1964. Gandhi's principles were reflected in the distinctive foreign policy that Nehru crafted. "The policies and philosophy which we aspire to adopt are the policies and philosophy provided to us by Gandhi," he said in his final words. Nehru aimed to implement his guru's methods both within India and in the context of global politics. A significant component of India's soft power diplomacy may be Gandhism. Gandhism lends itself well to soft-power diplomacy because of its emphasis on peaceful cooperation, nonviolence, the truth, and its widespread international presence. This research exercise helps to make sense of the Indian government's efforts to incorporate Gandhism into its foreign policy as a foundation for future diplomatic, economic, cultural, and strategic ties and efforts to take advantage of Gandhism in Soft Power strategy.

Keywords

Foreign Policy, Cultural Diplomacy, Gandhism, Soft Power.

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शोध आलेख सार

हिंदी एक विश्व भाषा है क्योंकि वह एक देश की राष्ट्रभाषा होने के साथ-साथ अन्य देशों में भी पर्याप्त संख्या में लोगों द्वारा लिखी बोली और समझी जाती है वैश्वीकरण के परिप्रेक्ष्य में हिंदी के प्रति सकारात्मक प्रवृत्तियां दिखाई दे रही हैं हिंदी विश्व में सबसे अधिक बोली में समझी जाती है तथा यह विश्व की सबसे लोकप्रिय भाषा है। यह डॉक्टर जयंती प्रसाद नैटियाल द्वारा एक शोध में सिद्ध किया गया है। इस शोध को समय-समय पर अद्यतन किया जाता रहा है ताकि हर दो-तीन साल के कालखंड में भाषागत परिदृश्य में आए परिवर्तनों को रेखांकित किया जा सके 2015 तक प्रकाशित हुई शोध रिपोर्ट का सार निम्नवत है (आई एम ए जी ई) यह शोध रिपोर्ट इस बात का प्रमाण है कि हिंदी जानने वालों की संख्या विश्व में बहुत अधिक है बहुत अधिक कहें या यह कहें कि सबसे अधिक है तथा यह निरंतर बढ़ती जा रही है इससे यह सिद्ध होता है कि हिंदी विश्व की सबसे लोकप्रिय भाषा है।

मुख्य शब्द : राष्ट्रभाषा, विश्व भाषा, महाशक्ति, हिंदी दिवस, भाषा।

सृष्टि के निर्माण काल से ही भाषा का संबंध मानव समाज से रहा है मानव जीवन में भाषा एक अभिन्न अंग है जिसके बिना मानव गूंगा है। भारतेन्दु हरिश्चंद्र का कथन है चार कोस पर पानी बदले आठ कोस पर बीस कोस पर पगड़ी बदले तीस कोस पर धानी आज भी चरितार्थ हो रहा है। विदेशों से व्यापार करने के लिए संप्रेषण के लिए आवश्यकतानुसार भाषा अपना नहीं पड़ती है उपभोक्ता वस्तुओं की बिक्री और उनके प्रचार के लिए अपना जाने वाले साधनों में स्थानीय भाषा का उपयोग होता है। भारत में इस कार्य के लिए अधिकतर हिंदी भाषा का उपयोग हो रहा है बहुराष्ट्रीय कंपनियां अपना माल बेचने के लिए हिंदी तथा अन्य भारतीय भाषाएं अपना रही हैं। हिंदी विश्व में सबसे लोकप्रिय भाषा है यह तथ्य भी निर्विवाद रूप से सिद्ध हो चुका है इस तथ्य को अब अधिकांश विद्वान स्वीकार करने लगे हैं इसका एक प्रमाण यह भी है कि भारत के प्रधानमंत्री माननीय नरेद्र मोदी जी ने संयुक्त राष्ट्र संघ सहित विश्व के अनेक देशों में अपना व्याख्यान हिंदी में ही दिया, यह व्याख्यान संपूर्ण विश्व के लोगों ने बड़े चाव से सुना वह समझा। आदरणीय मोदी जी के सम्मान में इन कार्यक्रमों को भी हिंदी में ही प्रसारित किया गया था। हिंदी भाषा की लोकप्रियता केवल भारत या भारत के पड़ोसी देशों तक ही सिमटी हुई नहीं है बल्कि यह दूर कॅरेबियाई राष्ट्रों तक फैला है मारिशस, फीजी, गुयाना, सूरीनाम, ट्रिनिडाड, और टोंगेगो जैसे देशों में यह राजभाषा के रूप में प्रतिष्ठित है। इतना ही नहीं बल्कि इंडोनेशिया, अमेरिका, ब्रिटेन, आस्ट्रेलिया, अफ्रीका, और खाड़ी के देशों में हिंदी बहुत लोकप्रिय है। विश्व की 18 प्रतिशत जनता हिंदी जानती है इसलिए अनेक देश अपने प्रिंट मीडिया और इलेक्ट्रॉनिक मीडिया में हिंदी को

उपयुक्त स्थान दे रहे हैं। इतना ही नहीं भारतीय फिल्मों, टीवी चैनलों के कार्यक्रम भी विश्व के कई देशों में बड़े ही उत्साह व चाव से देखे जाते हैं।

हिंदी एक विश्व भाषा है क्योंकि वह एक देश की राष्ट्रभाषा होने के साथ-साथ अन्य देशों में भी पर्याप्त संख्या में लोगों द्वारा लिखी बोली और समझी जाती है वैश्वीकरण के परिप्रेक्ष्य में हिंदी के प्रति सकारात्मक प्रवृत्तियाँ दिखाई दे रही हैं हिंदी विश्व में सबसे अधिक बोली में समझी जाती है तथा यह विश्व की सबसे लोकप्रिय भाषा है। यह डॉक्टर जयंती प्रसाद नौटियाल द्वारा एक शोध में सिद्ध किया गया है। इस शोध को समय-समय पर अद्यतन किया जाता रहा है ताकि हर दो-तीन साल के कालखंड में भाषागत परिदृश्य में आए परिवर्तनों को रेखांकित किया जा सके 2015 तक प्रकाशित हुई शोध रिपोर्ट का सार निम्नवत है (आई एम ए जी ई) यह शोध रिपोर्ट इस बात का प्रमाण है कि हिंदी जानने वालों की संख्या विश्व में बहुत अधिक है बहुत अधिक कहे या यह कहे कि सबसे अधिक है तथा यह निरंतर बढ़ती जा रही है इससे यह सिद्ध होता है कि हिंदी विश्व की सबसे लोकप्रिय भाषा है।

नब्बे के दशक के उपरांत जब उदारोक्ति व सार्वभौमीकरण अर्थात् लिबरलाइजेशन एवं ग्लोबलाइजेशन का दौर भारत में चला तब ज्यादातर विचारकों का मत था कि ग्लोबलाइजेशन से भारत के आर्थिक और सांस्कृतिक परिदृश्य में बहुत परिवर्तन हो जाएगा आर्थिक दृष्टि से विदेशी पूंजीवाद फिर से शुरू हो जाएगा तथा हमारा सांस्कृतिक ताना-बाना स्वस्थ होकर पूरी तरह विदेशी संस्कृति हम पर हावी हो जाएगी वह हमारी भारतीय भाषाएं तथा विशेषता हैं हिंदी विलुप्त हो जाएगी हिंदी में भारतीय भाषाओं का स्थान अंग्रेजी ले लेगी परंतु यह हमारे लिए अत्यंत हर्ष का विषय है कि ऐसा कुछ भी नहीं हुआ जैसा कि पूर्व अनुमान लगाया जा रहा था। ऐसा ही चिंतन उस दौर में भी आया था जब भारत में कंप्यूटरों का आगमन हुआ था अर्थात् 1980 के दशक से यह चिंतन चलने लगा था और लोगों को भी यह डर सता रहा था परंतु भारत में भाषा प्रौद्योगिकी ने काफी विकास किया है तथा आज हम सब काम हिंदी में वैसे प्रिय भाषाओं में करने में सक्षम हैं। सोशल मीडिया में भी हिंदी काफी तेजी से आगे बढ़ रही है हिंदी के लोकप्रिय का अंदाजा हम इसी बात से लगा सकते हैं कि 10 जनवरी संसार के कई देशों में विश्व हिंदी दिवस के रूप में मनाया जाता है। हिंदी का वर्चस्व विश्व स्तर पर दिनों दिन बढ़ता ही जा रहा है यह हमारे लिए अत्यंत गर्व का विषय है। विश्व में हिंदी की लोकप्रियता को देखते हुए विश्व के 150 से अधिक देशों में हिंदी शिक्षण एवं प्रशिक्षण के अनेक शिक्षण माध्यम शुरू हो गए हैं यह इस बात का प्रमाण है कि विश्व में हिंदी के प्रति अधिक झुकाव है। हिंदी अध्यापन अनेक हिंदी संघों हिंदी संस्थाओं द्वारा चलाया जा रहा है केंद्र सरकार द्वारा भी हिंदी अध्ययन हेतु हिंदी शिक्षण योजना चलाई जा रही है। विश्व के अनेक विद्यालयों महाविद्यालयों तथा विश्वविद्यालयों में हिंदी का अध्ययन अध्यापन तेजी से चल रहा है। भारत में केंद्र सरकार के प्रयासों व स्वयंसेवी संस्थाओं के प्रयासों से हिंदी सीखने वालों की संख्या में निरंतर वृद्धि हो रही है।

आने वाले समय में हमारा युवा भारत विश्व की महाशक्ति बनने जा रहा है इसलिए हिंदी के प्रति विश्व स्तर पर लोकप्रियता में निरंतर बढ़ोतरी होती जा रही है। इस प्रवृत्ति से सेहत ही यह अनुमान लगाया जा सकता है कि निकट भविष्य में हिंदी को संयुक्त संघ की अर्धित भाषा के रूप में भी महत्व मिलेगा। वह यह विश्व भाषा के पद पर आसीन होगी भारत में तो हर भारतीयों के दिल और आत्मा में इसको स्वीकार्यता मिल चुकी है हिंदी विरोध बीते कल की बात हो चुकी है। समस्त दक्षिण भारत में हिंदी धीरे-धीरे संपर्क भाषा का ध्वज धारण किए आगे बढ़ती जा रही है। यह आने वाले समय का संकेत है धार्मिक स्थलों पर्यटन स्थलों पर तो हिंदी पहले ही लोकप्रिय थी। अब हिंदी उद्योग व्यापार शिक्षा एवं मनोरंजन के क्षेत्र में भी महत्वपूर्ण स्थान ले चुकी है भारत की युवा पीढ़ी की पसंदीदा भाषा हिंदी है आज की युवा पीढ़ी भाषा के मामले में व्यावहारिक दृष्टिकोण अपनाती है अतः यह दृष्टिकोण हिंदी की लोकप्रियता बढ़ाने में और भी अधिक सहायक होगा।

आज हिंदी में रोजगार के अवसरों की कोई कमी नहीं है सोशल मीडिया से लेकर तमाम प्लेटफार्म पर हिंदी का बोलबाला है। इसके साथ ही हिंदी में रोजगार यह कैरियर बनाने की विकल्पों में भी लगातार इजाफा हो रहा है। प्रिंट मीडिया इलेक्ट्रॉनिक मीडिया इंटरनेट राष्ट्रीय और अंतरराष्ट्रीय मंच और संस्थाओं में हिंदी के इस्तेमाल में काफी बढ़ोतरी हुई है। फेसबुक ट्विटर यूट्यूब व्हाट्सएप जैसे प्लेटफार्म पर अब हिंदी का दबदबा बना हुआ है गूगल और माइक्रोसॉफ्ट जैसी दिग्गज कंपनियों ने भी हिंदी में बहुत बड़े पैमाने पर अपना काम शुरू कर दिया है। ऐसे में एक अच्छे कैरियर की बहुत अधिक संभावना है किसी भी फेल मत व सीरियल की जान उसकी स्क्रिप्ट होती है। स्क्रिप्ट अगर दमदार है तो फिल्म कामयाबी के इंडे गाड़ ती है। अतः स्क्रिप्ट लेखन का स्थान सर्वोपरि है हिंदी स्क्रिप्ट लेखन के क्षेत्र में करियर की नई संभावनाओं का उदय हुआ है टीवी चैनलों पर विभिन्न किस्म के धारावाहिकों की बढ़ती संख्या को देखते हुए हिंदी स्क्रिप्ट लेखन के क्षेत्र में दक्ष व्यक्ति अच्छा पैसा कमा सकता है। अनुवादक का कार्य काफी महत्वपूर्ण एवं चुनौतीपूर्ण होता है आज के समय में इस क्षेत्र में करियर की अनेक संभावनाएं विद्यमान हैं।

विश्व भाषा के रूप में हिंदी के समक्ष अनेक समस्याएं भी हैं। जैसे विदेशों से जिस अनुपात में भारतीय हिंदू संस्क्रुति का हार और पश्चिमी लोकवादी सभ्यता का विकास होता चला जा रहा है उसी मात्रा में हिंदी का प्रचलन काफी कम होता जा रहा है। भारत से पलायन करने वाले युवा बुद्धिजीवियों और श्रमिकों पर यह भाषा टिकी हुई है किंतु वह बड़ी तेजी से अंग्रेजी अत के रंग में रंगते जा रही है। उनकी अगली पीढ़ी हिंदी से अपरिचित सी है जब इसे संविधान में भारत की राजभाषा के रूप में स्वीकृत किया गया तो ऐसा माना जाने लगा कि से देश सवेर संयुक्त राष्ट्र संघ एवं संसार की अन्य अंतरराष्ट्रीय संस्थाओं संस्थानों में भी स्थान मिलेगा और अंतरराष्ट्रीय संपर्क की भाषा के रूप में इसे भी मान्यता प्राप्त होगी लेकिन ऐसा नहीं हो सका है। अंतरराष्ट्रीय स्तर पर हिंदी के व्यापक प्रचार प्रसार के निमित्त अंतरराष्ट्रीय हिंदी विश्वविद्यालय की स्थापना की गई है यथासंभव अनुदान भी दिया गया है किंतु जिस लक्ष्य को लेकर इसकी स्थापना की गई थी, वह अपनी लक्ष्य सिद्धि तक नहीं पहुंच सका है सूचना क्रांति के इस युग में हिंदी को भूमंडलीकरण की प्रक्रिया में अपनी भूमिका को और अधिक मजबूत बनाना होगा हिंदी में ऐसे सॉफ्टवेयर विकसित करने होंगे जिनसे वैश्विक स्तर पर सूचनाओं का आदान प्रदान करना और भी आसानी और सहजता से संभव हो सके देश में हिंदी के ऐसे शिक्षण संस्थान होने चाहिए जिसमें विदेशियों के लिए हिंदी भाषा के ऐसे विविध पाठ्यक्रम हो जिन को पूरा कर कोई भी विदेशी छात्र हिंदी माध्यम से चलने वाले चिकित्सा इंजीनियरी तथा अन्य विज्ञान के विषयों को पढ़ने समझने की अपेक्षित योग्यता प्राप्त कर सके या फिर कोई विदेशी अल्प समय में भाषा पर इतना अधिकार प्राप्त कर सके कि वह भारत में यात्रा कर सके अपने उपयोग की सामग्री को सके हिंदी समाचार पत्र पढ़कर भारत के समाचार जान सके। विदेशी हिंदी प्रशिक्षकों के लिए पुनश्च रिया पाठ्यक्रम हो जिनमें उनकी समस्याओं पर विचार हो और योजनाबद्ध तरीके से अपेक्षित लक्ष्य के लिए विशिष्ट पाठ्यक्रम तथा पाठ्य पुस्तकें तैयार की जाए। विश्व में हिंदी का प्रसार हो हिंदी अध्ययन अनुसंधान की दिशा में प्रगति हो इसके लिए आवश्यक है कि हिंदी के संदर्भ ग्रंथ तैयार किए जाएं।

हिंदी के सामने कई चुनौतियां हैं इन चुनौतियों का सामना करने के लिए आवश्यक है कि हम वास्तविक स्थिति और अपनी कमियां समझे हमें अपने लक्ष्य का स्पष्ट ज्ञान हो लक्ष्य प्राप्ति की सार्थक योजनाएं बनाएं ईमानदारी तथा दृढ़ता से योजनाओं को कार्यान्वित किया जाए तथा समय-समय पर प्रगति का मूल्यांकन किया जाना चाहिए । हिंदी को विश्व में अपना स्थान बनाए रखने के लिए मिलकर प्रयास करने की जरूरत है ।

हिंदी भारत वासियों की संपर्क भाषा तो बनी ही चुकी है और अब विश्व भाषा बनने की दिशा में तेजी से आगे बढ़ रही है। अब हिंदी भले ही संयुक्त राष्ट्र संघ की अधिकारिक भाषा नहीं है परंतु व्यावहारिक स्तर पर उसकी सभी एजेंसियों की मान्य भाषा है। संयुक्त राष्ट्र संघ हिंदी में नियमित रूप से 1 सप्ताह ही

कार्यक्रम प्रस्तुत करता है जो इसकी वेबसाइट पर उपलब्ध है हिंदी को संयुक्त राष्ट्र संघ की आधिकारिक भाषा बनाने के लिए सघन प्रयास किए जा रहे हैं। जिन देशों में हिंदी बोली और पढ़ी लिखी जाती है। उन देशों का एक संगठन बनाने का प्रयास भी भारत सरकार कर रही है। हिंदी के प्रचार-प्रसार को गति देने के लिए विदेश मंत्रालय में हिंदी एवं संस्कृत प्रभाव का गठन किया गया है। यह विदेशों में हिंदी के प्रचार प्रसार के लिए विभिन्न गतिविधियों को संयोजित करता है यह अपने विदेश स्थित दूतावासों के माध्यम से हिंदी के प्रचार प्रसार में जुटे संस्थाओं को हिंदी कक्षाएं आयोजित करने व अन्य गतिविधियों के लिए अनुदान देता है साथ ही यह विदेशों में अंतरराष्ट्रीय क्षेत्रीय हिंदी सम्मेलनों का आयोजन भी करता है। अंतर्राष्ट्रीय स्तर पर हिंदी को प्रतिष्ठित करने के लिए भारतीय संस्कृति संबंध परिषद महत्वपूर्ण भूमिका निभा रही है। इसने दुनिया भर में अनेक विश्वविद्यालयों में हिंदी भाषा पीठ की स्थापना की है इन विश्वविद्यालयों में यह भारत से ही शिक्षक प्रतिनियुक्ति पर भी ऐसी है और उस देश में हिंदी के प्रचार-प्रसार अध्यापन शोध कार्य इत्यादि में सहयोग करते हैं। यह प्रतिवर्ष योग्य हिंदी पर अध्यापकों का पैनल भी तैयार करती है आज आवश्यकता इस बात की है कि हिंदी को राष्ट्रभाषा का दर्जा देने के साथ-साथ इसे संयुक्त राष्ट्र संघ की सातवीं आधिकारिक भाषा के रूप में स्वीकृति दिलाने के लिए कुछ ठोस पहल की जाए हिंदी में यह शक्ति कब आएगी कि वह विश्व के लिए ऐसी महत्वपूर्ण भाषा बन जाए जिसकी कोई भी चाह कर भी उपेक्षा ना कर पाए। यह तभी होगा जब हमारी मानसिकता बदलेगी हमें अपनी भाषा बोलते हुए गौरव का अनुभव होगा। जापान जर्मनी इंग्लैंड रूस फ्रांस चीन आदि सभी शक्तिशाली देश अपनी भाषा में वक्तव्य देते हैं और अनुवादक के माध्यम से उनकी बात विदेशी श्रोताओं तक पहुंचती है हिंदी को लेकर भी ऐसे प्रयासों की आवश्यकता है यह जानकर दुख होता है कि आधुनिकता के इस दौर में कुछ अंग्रेजी मानसिकता के लोग। यह कह कर भ्रमित कर रहे हैं कि अपना अंग्रेजी जाने भारतीयों का कोई भविष्य नहीं है यह नितांत हास्यास्पद है तथा यथार्थ इसके विपरीत है इस दौर में हिंदी भाषा का इतना विकास हुआ है कि स्टार चैनल के रूफर्ट मर्डोक को अपने स्टार कार्यक्रमों की टीआरपी बढ़ाने के लिए हिंदी में लाना पड़ा हिंदी का वर्चस्व निरंतर बढ़ता ही जा रहा है। आज वे उस मुकाम पर पहुंच गई है जहां उसकी लोकप्रियता को कोई अन्य भाषा चुनौती नहीं दे सकती है हिंदी आज विश्व में मनोरंजन की दुनिया में सबसे आगे है यही कारण है कि सोनी जी टीवी डिस्कवरी चैनल विदेशी कार्टून कार्यक्रम भी भारत में वह हमारे पड़ोसी देशों में हिंदी में प्रसारित हो रहे हैं।

विश्व का सबसे बड़ा लोकतांत्रिक राष्ट्र होने की सुखद अनुभूति करने वाली भारत की अपॉ जनसंख्या आज भी अपनी राष्ट्रभाषा के प्रश्न पर लगभग चुप है। हम उस अंग्रेजी के पूर्णतया मानसिक दास हो गए हैं जो एक दूरदर्शी अंग्रेज लॉर्ड मैकाले ने हमें शिक्षा के रूप में दी थी। हमारे देश में स्वतंत्रता के पश्चात इंग्लिश मीडियम के स्कूलों की बाढ़ सी आ गई। इन स्कूलों के संचालक इससे अर्थ संपन्न होते जा रहे हैं जबकि अभिभावकों को ठीक से है पता भी नहीं होता कि उनके नौनिहालों को पढ़ाने वाली मैडम को अंग्रेजी ग्रामर का ज्ञान है भी या नहीं।

स्वतंत्रता के पश्चात हम अपनी राष्ट्रभाषा के मामले में गुंने और बहरे क्यों हो गए इस प्रश्न पर कभी गंभीरता से मनन व चिंतन कीजिए और यह भी सोचे कि अपनी भाषा को अपनाना स्वाभिमान की बात है या सात समंदर पार की भाषा को अपनाना हमारे सामने टर्की इसराइल तो छोटे से राष्ट्र भाषा में काम करने वाले जिब्राब्वे व श्रीलंका का नाम भी 100 भाषा के स्वाभिमान के उदाहरण हैं। दुनिया के विभिन्न भागों में बसे यहूदियों ने स्वदेश वापसी का मन बनाया उनके भिन्न-भिन्न भाषाएं तथा जीवन के अलग-अलग तौर तरीके थे सबने राष्ट्रभाषा के संबंध में गहन मंत्रणा की तथा उस हिब्रू को अपनाया जो लुप्त प्राय हो गई थी। परिश्रमी एवं स्वाभिमानी यहूदियों ने कुछ ही समय में सारी ज्ञान की पुस्तकों को हिब्रू में अनुवाद करके भाषा के क्षेत्र में अपना ध्वज विश्व के सम्मुख फहराया परतंत्रता बहुत ही निकृष्ट वस्तु है। जिसमें मनुष्य को सोचने समझने

तथा विश्लेषण की क्षमता पंगु हो जाती है, किंतु इससे भी बुरी स्थिति तब हो जाती है। जब इसके कीटाणु रक्त में मिल जाते हैं दुर्भाग्य से भारतीयों के रक्त में परतंत्रता के कीटाणु प्रविष्ट हो गए हैं क्योंकि हमने गुलामी का लंबा दौर चाहा है कभी क्रूर अशिक्षित और धर्मांध्र लोगों की जी हजूरी की तो कभी गोरी चमड़ी वाले लोगों को अपना काम आना है। इसका परिणाम यह हुआ है कि अब हमें चाहे कितनी ही लानत उठानी पड़े अथवा दुनिया के सबसे भ्रष्ट कहलाए या हमारी भाषा के मामले में बेज्जती हो सब कुछ बर्दाश्त हो जाता है। भाषाई प्रदूषण से बचने के लिए हमें अपने आचार विचारों को बदलने के साथ-साथ अपनी प्राचीन शिक्षा व संस्कृति को भी सिमरन करना होगा। हमको इस बात का हमेशा गर्व होना चाहिए कि हम लोग आर्यों की संतान हैं जो विश्व की सर्वप्रथम शिक्षित वह शब्द है संतति है ।

देश को आजाद हुए 7 दशक से अधिक समय बीत चुका है और यह हमारे लिए लज्जा की बात है कि हम अपने देश में हिंदी दिवस को वर्ष के 365 दिनों में से 1 दिन मना रहे हैं और वह भी महाशक्ति से संबंधित क्षेत्रों में, महात्मा गांधी ने राष्ट्रभाषा की ताकत को सिद्ध किया था। उस ताकत को उनके बाद मजबूती के साथ क्यों नहीं सा मारा गया बाद के भक्तों के लिए हम सब से मेदार है महात्मा गांधी ने जनमानस पर यह दायित्व डाला था। उन्होंने 1 फरवरी 1942 को काशी विश्वविद्यालय में अपने दीक्षांत भाषण में कहा था कि अंग्रेजों को हम गालियां देते हैं कि उन्होंने हिंदुस्तान को गुलाम बना रखा लेकिन अंग्रेजी के तो हम खुद गुलाम बन गए हैं। महात्मा गांधी ने इसी अवसर पर कहा था कि भारत के छात्र छोटी-छोटी बातों पर भूख हड़ताल तो कर देते हैं मगर ईश्वर उन्हें बुद्धि दे तो वह इस बात को लेकर हड़ताल करें कि हमें अपनी भाषा में पढ़ाओ।

संदर्भ सूची

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