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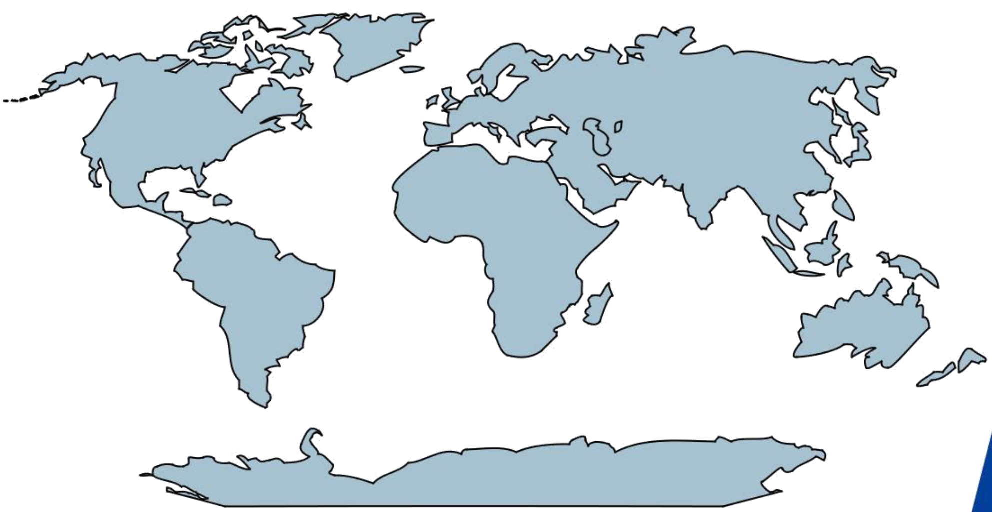

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A STUDY TO UNDERSTAND THE INFLUENCE OF CONTROVERSIAL ADVERTISING ON CONSUMER BEHAVIOR

Dr. Harmeet Kaur Bhasin
Associate Professor, Department of Commerce (HOD), St. Andrew's College of Arts, Science and Commerce, Mumbai

ABSTRACT
This study aims to understand the reason of controversies of certain ads. of some leading brands and its impact on the audience perception about the brand and purchase intention. This research is trying to understand how communication done in the light of attracting attention of the audience and proving themselves unique in their creativity sometimes backfires the brand, so this research will help the content writers and visualizers to sink with the societies thought process, bringing in an idea which can help the society for its awareness and understanding towards social cause. The research is trying to focus on how some controversial advertisements had Ethical issues in Advertising. A controversy may come up to oppose the advertiser, which can be racist in its demonstration or may demonstrate or communicate something bad in taste for the society. Such controversies impact the decision-making process of the consumers. Some Advertisers which try to send a social cause message in their communication, but while doing so, may hurt sentiments of a particular section of society may needs to know the right way of putting it down for the benefit of the society. The research is based on Primary data and secondary data. Survey method is undertaken using quantitative tool- questionnaire which has questions on multiple controversial ads. Data is tested with statistical testing.

Keywords: *Controversial Advertising, Social cause, Purchase intention, Brand image, Advertising Content, Advertising Communication.*

SIGNIFICANCE OF THE RESEARCH:
This study aims to understand the reason of controversies of certain ads. of some leading brands and its impact on the audience perception about the brand and purchase intention. This research is trying to understand how communication done in the light of attracting attention of the audience and proving themselves unique in their creativity, sometimes backfires the brand, so this research will help the content writers and visualizers to sink with the societies thought process, bringing in an idea which can help the society for its awareness and understanding towards social cause.

RESEARCH GAP:
Controversial advertising as a term has not been deeply explored and its effectiveness and impact needs to be studies case by case and category by category, country by country.

Social relevance of research: The research is trying to focus on how some controversial advertisements had Ethical issues in Advertising. A controversy may come up to oppose the advertiser, which can be racist in its demonstration or may demonstrate or communicate something bad in taste for the society. Such controversies impact the decision-making process of the consumers. Some Advertisers which try to send a social cause message in their communication, but while doing so, may hurt sentiments of a particular section of society may needs to know the right way of putting it down for the benefit of the society

INTRODUCTION:
Controversial advertising is a branch of advertising which got acknowledgement after 1970s Recently it is observed that there has been a rise in situation of controversies with the content and demonstration of advertising communication, which has hot debates in the society. It is very difficult to gauge the true intentions of the companies behind such controversies, whether do the company deliberately allow such controversies or bring in a controversial content to draw the attention of the audience, audience which had become immune to the advertisements. The question is are these brands really honest in their efforts to bring in a creative content of social change, but gets into a controversy. Studies reveals that increased ethical awareness by consumer in the modern times influences the way consumers behave towards products and services. Over last few decades, ethics and social responsibility have increasingly become very fundamental in today's market. Ethics and socially responsible practices of the firm have significant influence on consumer purchasing behaviors. There is always a risk with the brand when they come up with some bold concept in the market which can be controversial social issue. Some concepts can be more idealistic but fails to be realistic. This is one of the risks of such bold content which can face criticism from a specific segment of society and the brand may suffer. It is not just the companies need to think about selling responsible products but also selling responsible images or demonstration or responsible communication. There will always be a debate on whether advertising is a driver

or mirror of change (Alexander 2011), Controversies in advertising can also be taken as a tool to drive change or support change. It is well understood that how companies should become a true instrument of social change, as advertising and social change are both complex issues, advertisers need to research multiple areas before getting in to an attempt of controversial advertising. Advertisers need to study where they can fit their communication to bring in a social change or a social climate and change their conversations accordingly. More effective campaigns can be made if the advertisers understand how he can word his content, create a creative demonstration or bring its message in such a way that is agreeable to the audience or make an honest justification and significance of the same to put forward its ideas in the society. It is also very important to know that the advertising agencies, which are generally global agencies, need to study and understand the cultural, emotional and religious sentiments of the consumers in the country which they are working towards. For an example Unilever brand "Fair and lovely" was been in controversy since a long time for being racist, by demonstrating that a person with dark skin is not successful or not acceptable in the society. After 2020 Unilever had to drop the word "fair" from its brand name and change it to "Glow and lovely" and proved themselves to be little sensitive towards their branding and communication content. Some controversial advertisement can be gaining attention for wrong reasons as it may have some shocking message or a shocking demonstration, as marketers try their level best to fit the ad, but this does not happen every time, sometimes they do mistakes and their commercials are stamped as controversial ads.

LITERATURE REVIEW;

The factors influencing the formation of attitudes among others are personal experience, the influence of others that are considered important, cultural influences, mass media, educational institutions and religious institutions as well as emotional factors (Awzar 1998). The result of research found that public response towards 70% controversial product advertisement was influenced by religious, perception of gender. (Akhter, 2011). Advertising has been around since human existence, the effect of it on society wasn't considered until the 1930s, when the literary critics (F.R. Leavis, 1933) accused advertising of evoking cheap, almost mechanical emotional responses" He believed that advertising was inherently evil,it increases material standards and social and political apathy (Dyer, 1988, Frankfurt School writers). Controversial ads are used by advertisers mainly to generate greater awareness among consumers so to increase sales of goods and services. Such ads can also offend consumers that could result in boycott of brand, company related to advertisement (Prendergast – 2002). (Bartos -1981) in their study clearly indicates the corelation between "dislike of ad and negative attitude towards ads". The main reason he reported for disliking ads was due to "the insulting of consumer intelligence, advertising poor in taste, offensive and overtly sexual". Multiple studies by (Waller 1999, phau and predergast - 2001 and Aaker and Bruzzone (1985) had put multiple products under controversial products, alcohol, cigarettes, condoms, female contraceptives, female hygiene products, gambling, male and female underwear, racially extremist ads, sexiest images etc.

Research methodology: To understand the influence of controversial advertising on consumer behavior the hypothesis drawn were as follows:

H_1– Controversies in market related to the ad. impact consumer behaviour
H_{2-} --- Controversies in market related to the ads. may hardly impact the purchase intentions of the audience if they find the controversy meaningless.
H_3– Controversies in market related to ad. is a big risk to the brand image if the communication is hurting sentiments of the society.
H4– Controversial advertising with social message is a powerful tool to bring in positive social change in the society

OBJECTIVE OF STUDY

- ❖ To understand the concept of controversial advertising and its impact on consumer behaviors
- ❖ To understand the role of controversies towards social change in the society
- ❖ To understand the impact of controversies on brand image in the minds of audience
- ❖ To understand the impact of controversies in ad on purchase intention of audience

Data collection

Survey method by using quantitative tool - questionnaire.

Sample size - 200 respondents

Data collected from both Primary and Secondary Sources. data tested with statistical testing using **JASP** software.

Data Analysis- One Sample t-test and average method.

Sampling technique – convenience sampling

Primary Quantitative data: Six brands were picked up in the questionnaire. The respondents were provided with the audio-visual and print ads for answering the related responses of controversial ads. The ad. description is mentioned below and also the controversy for which they are picked up.

Description of the ads.

Ad. 1	**Cadbury Diwali Ad – QR tech Ad. (Audio Visual Ad.)** Dramatizing a Man trying to be kind with the hawkers and helps him to be more accessible in the market through a QR code. Diwali gift packs with QR code trying to give special individual identity to numerous hawkers. Tag line which says "Scan your hawkers nearby" Shops for Shop-less , also supported with the old tag line "Kuch accha ho jaye, Kuch Meetha Ho Jaye" **Controversy – Ad.** was trolled as the shop owner name was "Damodar' and the public wreaked absolute havoc over the fact that prime minister Narendar Modi's fathers name was Damodar as well. This ad was actually termed as below the belt hit to PM's poverty-stricken childhood as Chaiwala)
Ad. 2	**Dabur's Fem Bleach's Ad on Karwa Chauth campaign** supporting same sex couples, Audio Visual Ad. dramatizing two girls getting ready for karva chauth celebration and are shown as couple. It has a tag line which says "Glow with Pride" Ad. trying to give message on social cause of acceptance. **Controversy:** According to critic, Karwa Chauth is pious event for married man and woman and such ads are putting blot on the holiness of the bond.
Ad. 3	**Fab India – Jashn -e- Riwas: Celebration of life by Fab India- Audio visual Ad. Dramatizing relations and festival moments where the new bride trying to understand the family culture .** **Controversy:** The Hindu diaspora in India had a controversy against the campaign using Urdu tint to the Hindu festival. The complainers said that the Indian traditional clothing brand had inappropriately used an Urdu name for a Hindu festival and the brand is forcing the Islamic ideologies on Hindu festival.
Ad. 4	**Kent - Tag line "Are you allowing your maid to knead atta dough by Hand?The demonstration showing Mother- daughter (Celebrity endorsed - Hema Malini) trying to convince the audience to be safe and using KENT roti maker and not getting it done by a maid and method of how to keep them away.** **Controversy:** Every brand during pandemic changed their communication content towards more safety and tried to make the most of it during that situation. So KENT bought in an ad. for Atta and Bread maker which was criticised due to its tag line and demonstration. The whole internet community opposed the discriminating message against the house-help during covid and being insensitive towards domestic help during covid.
Ad. 5	**Starbucks ad.– Audio – Visual Ad.– dramatizing the love of the father to her transgender son. (LGBTQ community ad.)** **Controversy-** reaction has praise and also shock in the community. Praises for speaking on behalf of the LGBTQ and shock for using a transgender model
Ad. 6	**Javed Habib – Stylist to the god – tag line Gods too visit JH Salon,** illustration showing Lord Ganesh, Goddess Durga and other relaxing and waiting in salon for the treatment from Javed Habib. **Controversy:** People criticised him for his wrong and insensitive illustration and asked him for an apology.

	AGE	PERCENTAGE		GENDER	PERCENTAGE
1.	16-20	35		MALE	47.5
2	21-24	42		FEMALE	49.6
3	25 -30	23		PREFER NOT TO SAY	2.9

The respondents responded in the following manner. The Average findings are as follows: Using a five-point scale the below mentioned questions had the following range for averages

Scale	Range	Response
5	4.21 - 5.00	Strongly Disagree
4	3.41 -4.20	Disagree
3	2.61 - 3.40	Neutral
2	1.81 - 2.60	Agree
1	1.00 - 1.80	Strongly Agree

		Total of responses	**Average total/200 respondents**	**Average Response findings**
	Advertisement No.1 -Cadbury			
1	I really liked this Ad. of **Cadbury** with the theme of helping hawkers	**300**	**1.50**	**Strongly Agree**
2	This **Cadbury ad**. is a strong positive communication and can be an instrument of change in the society.	**310**	**1.55**	**Strongly Agree**
3.	In-spite of the controversy for this ad of **Cadbury**, I still have a positive brand image	**499**	**2.49**	**Agree**
4	In-spite of the controversy for this ad. of **Cadbury** I still have a positive purchase intention for the brand	**468**	**2.34**	**Agree**
5	Due to this ad. **Cadbury** controversy in the market, I am developing negative brand image and have no intention buying this brand	**700**	**3.50**	**Disagree**
6	This Ad. of **Cadbury** is Bad in taste for the society and is unethical.	**690**	**3.45**	**Disagree**
	Ad. 2- Dabur's Fem Bleach ad.			
1	I really liked this Ad. of **Fem bleach** supporting lesbians' acceptance in family and society	**489**	**2.44**	**Agree**
2	The **Fem Bleach ad.** has a very strong communication through dramatization which brings out importance of acceptance to LGBTQ very positively	**470**	**2.35**	**Agree**
3.	The ad. of **Fem bleach** and their efforts spreading the idea of Lesbian acceptance is developing a very positive attitude towards the brand and the company	**500**	**2.50**	**Agree**
4	In-spite of the controversy for the Ad of **Fem Bleach** I still have a positive brand image and a positive purchase intention as I find the controversy meaningless	**340**	**1.7**	**Strongly agree**
5	Due to the controversy of this brand **(Fem Bleach)** due to this ad. I am developing negative brand image	**716**	**3.58**	**Disagree**
6	The Ad. of **Fem Bleach** is Bad in taste for the society and is unethical.	**740**	**3.70**	**Disagree**
7	Due to this ad. of **(Fem Bleach)** controversy in the market, I have no intention buying his brand	**756**	**3.78**	**Disagree**
	Ad. 3- 5-Fab India – Jash -e Riwas			
1	I really liked this Ad. of **Fab India – Jash – e - Riwas**	**600**	**3.00**	**Neutral**
2	This Ad of **Jash-e- Riwas** has a strong communication about the idea of secularism and can bring positive change in the society.	**740**	**3.70**	**Disagree**
3	The Ad. of **Fab India -Jash – e- Riwas** is helping me develop a very positive attitude towards the brand and the	**623**	**3.11**	**Neutral**

	company			
4	The ad. of **Fab India -Jash-e-Riwas** has hurt the sentiments of Hindu religion.	**612**	**3.06**	**Neutral**
5	Due to this ad. **Fab India -Jash-e-Riwas** controversy in the market about hurting Hindu religious people sentiments I am developing negative brand image.	**644**	**3.22**	**Neutral**
6	Even after the controversy of this brand due to this ad. of (**Fab India -Jash-e-Riwas**) I have intentions of buying this brand.	**656**	**3.28**	**Neutral**
	Ad.4- Kent Ad. Roti Maker			
1	I really liked and appreciate this Ad. of **Kent** which is making us take precautions during pandemic by not calling our maids to work	**344**	**1.72**	**Strongly Disagree**
2	The AD. of **Kent – Roti maker** has made a very insensitive communication content which can create a bad brand image and can be risky for companies' reputation	**301**	**1.50**	**Strongly agree**
3.	The Ad. of **Kent** of being safe in pandemic had brough in a right suggestion for the society and promotions can be successful with such content.	**756**	**3.78**	**Disagree**
4	The ad. of **Kent** is helping me develop a very positive attitude towards the brand and the company	**657**	**3.28**	**Neutral**
5	Due to this ad. of **Kent** and its controversy in the market I am developing negative brand image	**666**	**3.33**	**Neutral**
6	Even after the controversy of this brand due to this ad. of **Kent** I have intentions of buying this brand	**645**	**3.22**	**Neutral**
	Ad.5 – Star bucks - LGBTQ – with transgender mode			
1	I really liked this Ad. of **Star-bucks** of giving acceptance and status to transgender in family and society	**356**	**1.78**	**Strongly Agree**
2	The above Ad. of **Star-Bucks** has convinced me that this content is instrumental for bringing a social change in the society	**299**	**1.49**	**Strongly Agree**
3.	Even after the controversy of this brand **(Star-bucks)** due to this LGBTQ issue, I have intentions of buying this brand	**456**	**2.28**	**Agree**
4	This ad. of **Star-bucks** (LGBTQ) is helping me develop a very positive attitude towards the brand and the company	**449**	**2.24**	**Agree**
5	This s Ad. of **Star-bucks** is bad in taste for the society	**766**	**3,83**	**Disagree**
6	Due to this controversy of this ad of **Star-bucks (LGBTQ)** in the market I am developing negative brand image.	**789**	**3.94**	**Disagree**
7	Due to this controversy of this ad of **Star-bucks (LGBTQ)** in the market I have no intention buying his brand	**773**	**3.86**	**Disagree**
	Ad.6- Javed Habib – Print ad – "Stylist to the god"			
1	I really liked this Ad. of **Javed Habib** with this tag line – "**Stylist to the god.**"	**890**	**4.45**	**Strongly Disagree**
2	The Ad. of **Javed Habib** with the tag line "**Stylist to the god"** is just an ad. with soft sell copy and not hurting anyone's sentiments	**860**	**4.30**	**Strongly Disagree**
3.	The Ad. of **Javed Habib** with a tag line "**Stylist to the god**" is helping me develop a good brand image	**866**	**4.33**	**Strongly Disagree**
4	The Ad. of **Javed Habib** with a tag line **"Stylist to the god"** is helping me develop a positive purchase intention.	**776**	**3.88**	**Disagree**
5	The ad. of **Javed Habib** with tag line **"Stylist to the god"** is bad in taste.	**298**	**1.9**	**Strongly Agree**
6	Due to this ad. of **Javed Habib** and its controversy in the	**460**	**2.3**	**Agree**

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	market I am developing negative brand image			
7	Due to this ad. of **Javed Habib** and its controversy in the market I have no intention of using this service provider	**429**	**2.14**	**Agree**

FINDINGS

From the above-mentioned averages of 200 respondents, it is found out that most of the customers look into the intentions of the brand of bringing in such communication content. If the communication content is in controversy due to some critics which may be a part of a religious group or a conservative social group it does not impact much on the consumer behaviour and its attitude towards the brand sometimes remains neutral. If the customer can relate with the social cause and the issue which the company and the brand wants to highlight, the audience seems to be supporting, such controversial ads for example in the above case the Star-bucks ad. with a social cause of bringing acceptance for LGBTQ and also the Fem bleach ad supporting Lesbians. The controversies do not harm the brand image. But attempt like Javed Habib which directly attacks a religious sentiment and also Kent- Roti Maker which shows its inventiveness towards the poor during an emergency situation is also criticised by the audience and it impacted the brand name and purchase intentions negatively. At the same time a brand like Fab India trying to bring a content of issue related to social cause and do not do justify its communication fails to bring a change in the society. Audience even does not support cheap controversies like the controversy of the Cadbury ad. of Damodar the name of the hawker being the name of the prime minister's father, instead it appreciated the efforts of the company and brand.

Testing hypothesis through one sample t- test

One Sample T-Test -1

	t	df	p
After watching the above Ad.-Kent – roti maker - answer the following questions. Where 1 - strongly agree 2- Agree 3. Neutral 4- Disagree 5- Strongly disagree [Due to this ad. of **Kent** and its controversy in the market I am developing negative brand image]	28.815	199	< .001

Note. For the Student t-test, the alternative hypothesis specifies that the mean is different from 0.

Note. Student's t-test.

Findings: On conducting one sample t-test (Table 1) to understand influence of controversial ad. and controversies related to the ad. on the consumer behaviour. The p value of the above tables is 0.001 which is statistically significant. This allows us to accept the hypothesis- $\mathbf{H_1}$– Controversies in market related to the ad. impact consumer behaviour

One Sample T-Test -2

	t	df	p
After watching the above Ad.- Cadbury – QR Code – Helping the hawkers - answer the following questions. Where 1 -strongly agree 2- agree 3. Neutral 4- Disagree 5- Strongly disagree [In-spite of the controversy for this ad of **Cadbury**, I still have a positive brand image]	38.747	200	< .001

Note. For the Student t-test, the alternative hypothesis specifies that the mean is different from 0.

Note. Student's t-test.

One Sample T-Test -3

	t	df	p
After watching the above Ad.-Dabur – Fem Bleach - answer the following questions. Where 1 -Strongly agree 2- Agree 3. Neutral 4- Disagree 5- Strongly disagree [In-spite of the controversy for the Ad of **Fem Bleach** I still have a positive brand image and a positive purchase intention as I find the controversy meaningless]	37.822	198	< .001

Note. For the Student t-test, the alternative hypothesis specifies that the mean is different from 0.

One Sample T-Test -3

	t	df	p

Note. Student's t-test.

Findings: On conducting one sample t-test (Table 2 and 3) to understand influence of controversial ad. and controversies related to the ad. on the consumer behaviour. The p value of the above tables is 0.001 which is statistically significant. This allows us to accept the hypothesis- **H_2**- — Controversies in market related to the ads. may hardly impact the purchase intentions of the audience if they find the controversy meaningless.

One Sample T-Test -4

	t	df	p
After watching the above Ad. of Javed Habib – "Stylist to God" - answer the following questions. Where 1 -Strongly agree 2- Agree 3. Neutral 4- Disagree 5- Strongly disagree [Due to this ad. of **Javed Habib** and its controversy in the market I have no intention of using this service provider]	32.437	189	< .001

Note. For the Student t-test, the alternative hypothesis specifies that the mean is different from 0.

Note. Student's t-test.

Findings: On conducting one sample t-test (Table 4) to understand influence of controversial ad. and controversies related to the ad. on the consumer behaviour. The p value of the above tables is 0.001 which is statistically significant. This allows us to accept the hypothesis- **H_3**– Controversies in market related to ad. is a big risk to the brand image if the communication is hurting sentiments of society

One Sample T-Test -5

	t	df	p
After watching the above Ad.-Star-bucks -transgender model - answer the following questions. Where 1 -Strongly agree 2- Agree 3. Neutral 4- Disagree 5- Strongly Disagree [The above Ad. of **Star-Bucks** has convinced me that this content is instrumental for bringing a social change in the society]	38.030	199	< .001

Note. For the Student t-test, the alternative hypothesis specifies that the mean is different from 0.

Note. Student's t-test.

Findings: On conducting one sample t-test (Table 5) to understand influence of controversial ad. and controversies related to the ad. on the consumer behaviour. The p value of the above tables is 0.001 which is statistically significant. This allows us to accept the hypothesis- **H4**– Controversial advertising with social message is a powerful tool to bring in positive social change in the society

LIMITATIONS OF THE STUDY:

1. This study has done analysis of the young age group and do not generalize about age beyond 35.
2. The study was done with the help of few cases and few controversies.
3. This study is focused on promotion of FMCG and local services
4. This study is done on Indian ads only and so the generalization does not apply to the western countries ads.

CONCLUSION WITH SUGGESTIONS:

Companies need to be very careful with the communication content which they are using in the ad. to bring in an attraction value. If the company wants to play with controversial ads, then the company and the brand needs to do careful research on the sentiments of the customers before bringing in a controversial content. It is observed that if the content has a very authentic approach towards an important social issue and is dramatized and worded with full responsibility then the customers definitely supports the brand, such controversial ads helps to bring a positive image of the brand in the minds of the customers. The brands should not get into the brand wagon of creating a surprise element irresponsibly. Mature brand and reputed brand can face a set back in the market with un- researched content. At the same time the companies need to support social-cause irrespective to the oppositions coming from conservative audience and bring in content which are more realistic than being idealistic.

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ACHYRANTHES ASPERA L. SEVERAL ACTIVITIES: A REVIEW

Nishinandan R Suryawanshi*, Dr Apar ark Moholkar, Rushikesh Patil and Nilesh Dhanve
Department of Pharmaceutics, Channabasweshwar Pharmacy College (Degree) Latur - 413512

ABSTRACT

Amaranthacear, or Achyranthes aspera, is a significant medicinal herb that grows as a weed all over India. Almost all of its parts are used in traditional system of medicines such as seeds, roots, shoots and leaves are the most important medical parts of plants which are used medicinally. According to this article, a large number of phytochemical compounds that have been isolated from the plant and indicate characteristics like diuretic, antiperiodic, laxative, antiasthmatic, antiallergic, antifungal and several other important medicinal properties. This article provides an overview of the most recent data regarding its pharmacological and phytochemical characteristics especially antifungal property. Extensive research has been conducted in the last few decades to demonstrate the biological activities and pharmacology of its extracts. Several chemical constituents have been isolated, including saponins, alkaloids, long chain compounds and many other chemical constituents have been isolated which shows antifungal activity. The aim of the study was to investigate antifungal activity of the various leaves extract of Achyranthes aspera Linn.

Keywords: *Antifungal activity, Extract, Chemical constituents, Phytochemical Characteristics.*

INTRODUCTION

Nature has been a source of medicinal agents for thousands of years and an impressive number of modern drug have been isolated from natural source [1]. The success of popular therapeutic diversity is herbal medicine. Natural product medicines have come from various source materials including terrestrial plants, terrestrial microorganisms, marine organisms, and terrestrial vertebrates and invertebrates. Medicinal plants are the nature's gift to human being to make disease free healthy life. India is one of the most medico-culturally diverse countries in the world where the medicinal plant sector is part of a time-honoured tradition that is respected even today. Hence, the main traditional systems of medicine include Ayurveda, Unani and Siddha [2]. They play a significant role in providing primary health care services to rural people in addition to large number of economic products. It is in fact secondary metabolites, like alkaloids, glycosides, tannins, phlobatannin, terpenoid, flavonoid, phenol, volatiles oils and many more compounds which serve as important therapeutic agents [3].
According to World Health Organization, 80% of the population of the world depends on traditional medical pr actitioners for their medicinal needs. Yet a scientific study of plants to determine
their antimicrobial active compounds [4]. The present study was conducted to evaluate antibacterial and antifungal activities of leaf extract and various fractions of this plant against selected strains of bacterial and fungal pathogens in order to detect new sources of antimicrobial agents [5]. Achyranthes aspera Linn. belong to the family Amaranthaceae. It is an annual, stiff erect herb, and found commonly as a weed throughout India and used by traditional healers for the treatment of fever, dysentery and diabetes[6]. Roots are used as astringents to wounds, in abdominal tumor and stomach pain [7]. The benzene extract of the stem bark shows abortifacient activity in the rat [8]. Leaf extracts were reported topossesthyroidstimulating and antiperoxidative properties [9]. The aqueous and methyl alcohol extracts of the plant also decreased blood glucose levels in normal and alloxan diabetic rabbits [10]. It is reported to contain alkaloids, flavonoids, saponins, steroids and terpenoids. The water soluble alkaloid achyranthine isolated from Achyranthes aspera possess anti-inflammatory activity [11]. The present study was carried out to test the antifungal efficacy of the leaves extract of Achyranthes aspera Linn with reference to fungal spp.

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Taxonomic Classification

Kingdom – Plantae

Subkingdom - Tracheobinota

Super Division - Spermatophyta

Division - Mangoliophyta

Class - Mangoliophsida

Subclass - Caryophyllidae

Order - Caryophyllales

Family - Amaranthaceae

Genus - Achyranthes

Species – Aspera

Botanical description

Synonyms

Latin - Achyranthes aspera

Sanskrit - Aghata

Hindi - Latjira, Chirchira

Gujarati - Safad Aghedo

Tamil - Shiru-kadaladi

Telugu - Uttaraene

Malayalam - Kadaladi

Punjabi - Kutri

Unani - Chirchitaa

Ayurvedic - Apaamaarga, Chirchitaa, Shikhari, Shaikharika

Persian - Khare-vazhun

Arabian - Atkumah

French - Achyranth a feuillesrudes, collant, gendarme

Spanish - Mosotillo, rabo de gato, rabo de chango, rabo de raton

Achyranthes aspera Linn. belongs to the family Amaranthaceae is a perennial stiff erect herb, 2.0 m high is growing up to 1000 m in height. Stems are square, leaves elliptic ovate or broadly rhombate, 5-22 cm long, 2.5 cm broad, and adpressed pubescent [12]. Achyranthes aspera L. also known as “Prickly chaff flower” in English. The plant is highly esteemed by traditional healers and used in treatment of asthma, bleeding, in facilitating delivery, boils, cold, cough, colic, debility, dropsy, dog bite, dysentery, ear complications, headache, leucoderma, pneumonia, renal complications, scorpion bite, snake bite, and skin diseases etc. Traditional healers claim that addition of Achyranthes aspera would enhance the efficacy of any drug of plant origin [13].

Geographical source

It is found on road sides, field boundaries and waste places as a weed throughout India up to an altitude of 2100 m and in South Andaman Islands [14].The plant is also widespread in Baluchistan, Ceylon, Tropical Asia, Africa, Australia and America

Traditional uses

The dried leaf powder (2-5gms) is taken with honey for diarrhoea. Leaf juice is useful remedy for skin diseases like prutitis and scabies. Leaf paste is applied externally for toxic bites. Whole plant ash is a good remedy for bleeding piles and abdominal problems. Root is used as tooth brush to clean the mouth and to cure halitosis. Infusion of the twig is also used as a wash for toothache. Root extract is used as an eye drop at bed time for night blindness [15]. For snake bites the ground root is given with water until the patient vomits and regains

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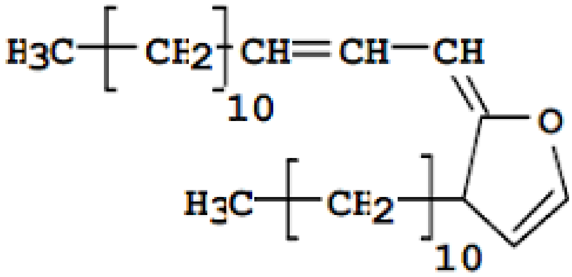
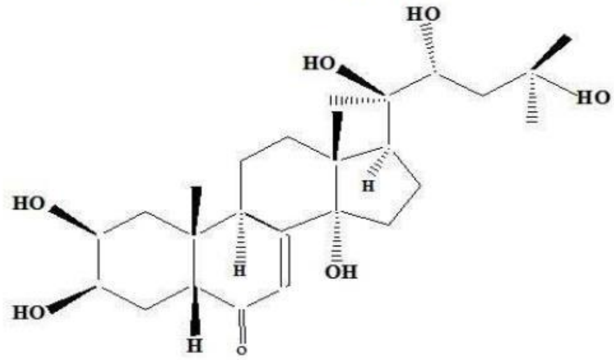
consciousness. Inhaling the fume of Achyranthes aspera mixed with Smilax ovalifolia roots is suggested to improve appetite and to cure various types of gastric disorders [16]. It is useful in haemorrhoids, leaves and seeds are emetic, hydrophobia, carminative, resolve swelling, digestive and expel phlegm. Ash of the plant is applied externally for ulcers and warts. The crushed leaves rubbed on aching back to cure strained back [17].

Phytochemistry
The plant is reported to yield a water-soluble base and a chloroform soluble base. The former was earlier designated as achyranthine and was characterized as a betaine derivative of N-methylpyrrolidine-3-carboxylic acid [18].The ethanol extract of the plant contained alkaloids and saponins while flavonoids and tannins were found absent [19]. A. aspera contains triterpenoid saponins which possess oleanolic acid as the aglycone. Ecdysterone, an insect moultinghormone, and long chain alcohols are also found in Achyranthes aspera [20]. Other chemical constituents such as achyranthine, betaine, pentatriaontane, 6- pentatriacontanone, hexatriacontane, and tritriacontane are also present [21].

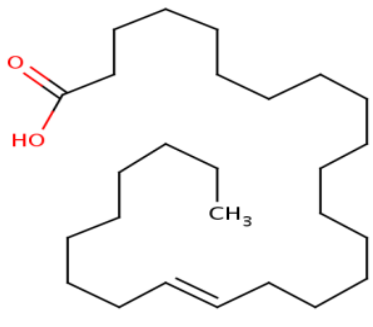


Cyclic Chain Aliphatic Fatty Acid

SAPONINS C (I) & D (II)



ECDYSTERONE



N-HEXACOS-14-ENOIC ACID

Structure of some phytoconstituents isolated from Achyranthes aspera

Pharmacological actions

Antimicrobial Activity
The agar-solid diffusion method was used to determine antibacterial and antifungal activities [22]. P. Saravanan et al. (2008) reported the solvent leaf extracts were tested for antibacterial and antifungal activities against E. coli, P. aeruginosa, P. vulgaris, S. aureus, Klebsiella species[23]. T.N. Misra et al. (1992) reported 17-

pentatriacontanol as a chief constituent isolated from essential oil of the shoots of plant, the oil shows antifungal activity against Asperigillus carneus[24].S. Sharma et al. (2006) studied the alcoholic extract which shows the presence of the triterpenoid saponin with dose dependent inhibitory activity against Staphylococcus aureus, a bacteria causing skin disease in human beings. Minimum inhibitory concentration was found to be highest (0.15 mg) for purified fraction. The identification of the compound on spectral analysis gave a triterpenoidal saponin purified fraction [25].

Plant extract of A. aspera leaves was screened against Escherichia coli species of bacteria and Candida albicans species of fungi were evaluated using the standard agar disc diffusion method. The disc diffusion method is used to detect the antimicrobial activity of plant extract. The solidified Nutrient agar plates were swapped with the test organism and the samples were impregnated. After the incubation the zone was measured. The antimicrobial activity of plant extracts was detected by the indication of zone around the disc [26].

Anti-allergic Activity
Abhaykumar Kamble, Department of Biochemistry, Gulbarga University, Kalaburagi, India, studies the Anti allergy activity of Achyranthes aspera caused by heavy metal potassium dichromate in albino mice [27].

S.B. Datir et al. (2009) reported that the petroleum ether extract (200 mg/kg, i.p.) of the plant shows significant antiallergic activity in both milk induced leukocytosis and milk induced eosinophilia in mice. Thus the antiallergic activity of A. aspera may be due to nonpolar constituents. The phytochemical screening of petroleum ether extract shows the presence of steroids. Literature shows the presence of steroids like β-sitosterol, ecdysone and ecdysterone. Thus these steroids present in the plant may be responsible for the antiallergic activity [28].

Anti-depressant Activity
C.C. Barua et al. (2009) showed that Methanolic extract of the leaves of Achyranthes aspera shows anti-depressant effect in mice and rats using forced swimming test in mice and rats and tail suspension test in rats [29].

Wound Healing Activity
S. Edwin et al. (2008) investigated the ethanolic and aqueous extracts of leaves of Achyranthes aspera for wound healing activity. The wound healing activity was studied using two wound models, excision wound model and incision wound model [30].

Cardiovascular Activity
Water-soluble alkaloid Achyranthine, isolated from Achyranthes aspera, dilated blood vessels, raised the rate and amplitude of respiration in frogs and dogs, and lowered blood pressure and heart rate. The alkaloid's contractile impact on the frog rectus abdominal muscle at 0.5 mg/ml muscle compared to acetylcholine's (0.1 mg/ml) and its spasmogenic impact was not as strong.The tubocurarine block [31].

Anti-oxidant Activity
P. Tahiliani & A. Kar (2000) studied various extracts of the leaves for anti-oxidant activity . D.S. Gayathri et al. (2009) also reported antioxidant activity on leaves and roots [32].

Anti-inflammatory and anti-arthritic activity
Rats with carrageenan-induced paw edema and the formalin model demonstrate anti-inflammatory activity in response to alcoholic extracts of leaves and seeds [33].

Hepatoprotective Activity
A.R. Bafna & S.H. Mishra (2004) reported that the methanolic extract of the aerial parts of Achyranthes aspera shows hepatoprotective activity on rifampicin induced hepatotoxicity in albino rats. Methanolic extract showed dose dependent decrease in the levels of SGPT, SGOT, ALKP and total bilirubin [34].

Immunomodulatory Activity
R. Chakrabarti & R.Y. Vasudeva reported that Achyranthes aspera show immuno-stimulantaction in Catlacatla. Achyranthes has significantly ($P < 0.05$) enhanced the BSA-specific antibody titers than the untreated control group throughout the study period. The efficiency of antigen clearance was also enhanced [35].

CONCLUSION
The use of medicinal plants in the management of various illnesses is due to their phytochemical constituents and dates back antiquity [36]. A.aspera methanolic leaves extracts have great potential to use a new phytomedicine against multiple resistant Candida albicans [37]. Recently the attention has been directed toward extracts and biologically active compounds isolated from popular plant species. The use of medicinal plants

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plays a vital role in convering the basic health needs in developing countries and these plants may offer a new source of antibacterial, antifungal and antiviral agents with significant activity against infective microorganisms [38, 39].Achyranthes aspera shows great promise as a multifunctional medicinal agent, more clinical trials ought to be conducted to validate its effectiveness.

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GLIMEPIRIDE LOADED NANOPARTICLES - A NOVEL APPROACH FOR THE TREATMENT OF DIABETES

Nilesh D Dhanve*, Dr. Aparark Moholkar, Rushikesh Patil and Nishinandan Suryawanshi
Department of Pharmaceutics, Channabasweshwar Pharmacy College (Degree) Latur - 413512

ABSTRACT
Diabetes is a group of metabolic disorders characterized by hyperglycaemia and abnormalities in carbohydrate, fat, and protein metabolism. For that we used various antidiabetic drug. In this article we focus on Glimepiride drug. Glimepiride lowers blood sugar by causing the pancreas to produce insulin and helping the body use insulin efficiently. we mainly used here nanotechnology. Nanotechnology word indicates use of technology at nanoscale. Any technology which deals with nanoscale is called as nanotechnology. Desired properties of therapeutic agents can be enhanced by use of nanotechnology. The aim of the study was investigate'Glimepiride loaded nanoparticles a novel approach for the treatment of diabetes mellitus.' Because of this technology we can get sustained release effect with maximum drug efficacy and with minimum drug toxicity.

Keywords: Diabetes, Glimepiride, nanotechnology, Hyperglycaemia.

INTRODUCTION
Diabetes is a group of metabolic disorders characterized by hyperglycaemia and abnormalities in carbohydrate, fat, and protein metabolism.

PATHOPHYSIOLOGY
1. Type 1 DM (5%–10% of cases) usually develops in childhood or early adulthood and results from autoimmune-mediated destruction of pancreatic β-cells, resulting in absolute deficiency of insulin. The autoimmune process is mediated by macrophages and T lymphocytes with autoantibodies to β-cell antigens (eg, islet cell antibody, insulin antibodies).
2. Type 2 DM (90% of cases) is characterized by a combination of some degree of insulin resistance and relative insulin deficiency. Insulin resistance is manifested by increased lipolysis and free fatty acid production, increased hepatic glucose production, and decreased skeletal muscle uptake of glucose.
3. Uncommon causes of diabetes (1%–2% of cases) include endocrine disorders (eg, acromegaly, Cushing syndrome), gestational diabetes mellitus (GDM), diseases of the exocrine pancreas (eg, pancreatitis), and medications (eg, glucocorticoids, pent-amidine, niacin, α-interferon).
4. Microvascular complications include retinopathy, neuropathy, and nephropathy. Macrovascular complications include coronary heart disease, stroke, and peripheral vascular disease.

CLINICAL PRESENTATION:-

A) TYPE 1 DIABETES MELLITUS:-
1. The most common initial symptoms are polyuria, polydipsia, polyphagia, weight loss, and lethargy accompanied by hyperglycaemia.
2. Individuals are often thin and are prone to develop diabetic ketoacidosis if insulin is withheld or under conditions of severe stress.
3. Between 20% and 40% of patients present with diabetic ketoacidosis after several days of polyuria, polydipsia, polyphagia, and weight loss.

B) TYPE 2 DIABETES MELLITUS
1. Patients are often asymptomatic and may be diagnosed secondary to unrelated blood testing.
2. Lethargy, polyuria, nocturia, and polydipsia can be present. Significant weight loss is less common; more often, patients are overweight or obese.

DIAGNOSIS

Criteria for diagnosis of DM include any one of the following:
1. A1C of 6.5% or more
2. Fasting (no caloric intake for at least 8 hours) plasma glucose of 126 mg/dL (7.0 mmol/L) or more

3. Two-hour plasma glucose of 200 mg/dL (11.1 mmol/L) or more during an oral glucose tolerance test (OGTT) using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water
4. Random plasma glucose concentration of 200 mg/dL (11.1 mmol/L) or more with Classic symptoms of hyperglycemia or hyperglycemic crisis:-

In the absence of unequivocal hyperglycemia, criteria 1 through 3 should be confirmed by repeat testing.

	FPG	2-h PPG	HbA_{1C}
ADA[19]	90–130 mg/dL (5–7.22 mmol/L)	<180 mg/dL (10 mmol/L)	<7%
IDF[17]	<110 mg/dL (6.11 mmol/L)	<145 mg/dL (8.06 mmol/L)	<6.5%
ADA/EASD Consensus[14]	70–130 mg/dL (3.89–7.22 mmol/L)	<180 mg/dL (10 mmol/L)	<7%
AACE[15]	<100 mg/dL (5.56 mmol/L)	<140 mg/dL (7.78 mmol/L)	≤6.5%

Abbreviations: FPG, fasting plasma glucose; PPG, postprandial glucose; HbA_{1C}, hemoglobin A_{1C}; ADA, American Diabetes Association; IDF, International Diabetes Federation, EASD, European Association for the Study of Diabetes; AACE, American Association of Clinical Endocrinologists.

Table no 1.:-

Drugs Used for Diabetes				
Subclass	**Mechanism of Action**	**Effects**	**Clinical Applications**	**Pharmacokinetics, Toxicities, Interactions**
Insulins				
Rapid-acting: Lispro, aspart, glulisine Short-acting: Regular Intermediate-acting: NPH Long-acting: Detemir, glargine	Activate insulin receptor	Reduce circulating glucose promote glucose transport and oxidation, glycogen, lipid, protein synthesis, and regulation of gene expression	Type 1 and type 2 diabetes	• Parenteral (subcutaneous or intravenous) • Duration varies • *Toxicity:* Hypoglycemia, weight gain, lipodystrophy (rare)
Sulfonylureas				
Glipizide Glyburide Glimepiride	Insulin secretagogue: Close K^+ channels in beta cells, increase insulin release	In patients with functioning beta cells, reduce circulating glucose, increase glycogen, fat, and protein formation gene regulation	Type 2 diabetes	• Orally active • Duration 10–24 h • *Toxicity:* Hypoglycemia, weight gain
Tolazamide, tolbutamide, chlorpropamide: Older sulfonylureas, lower potency, greater toxicity; rarely used				
Glitinides				
Repaglinide	Insulin secretagogue: Similar to sulfonylureas with some overlap in binding sites	In patients with functioning beta cells, reduces circulating glucose increases glycogen, fat, and protein formation gene regulation	Type 2 diabetes	Oral very fast onset of action duration 5–8 h *Toxicity:* Hypoglycemia
Nateglinide	Insulin secretagogue: Similar to sulfonylureas with some overlap in binding sites	In patients with functioning beta cells, reduces circulating glucose increases glycogen, fat, and protein formation gene regulation	Type 2 diabetes	Oral very fast onset and short duration (< 4 h) *Toxicity:* Hypoglycemia
Biguanides				
Metformin	Obscure: Reduced hepatic and renal gluconeogenesis	Decreased endogenous glucose production	Type 2 diabetes	Oral *Toxicity:* Gastrointestinal symptoms, lactic acidosis (rare). Cannot use if impaired renal/hepatic function congestive heart failure, hypoxic/acidotic states, alcoholism

Table no 2:- Drug Used For Diabetes

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Treatment :-

Alpha-Glucosidase inhibitors				
Acarbose,	Inhibit intestinal-glucosidases	-Reduce conversion of starch and disaccharides to monosaccharides -Reduce postprandial hyperglycemia	Type 2 diabetes	Oral Rapid onset *Toxicity:* Gastrointestinal symptoms cannot use if impaired renal/hepatic function, intestinal disorders
Thiazolidinediones – Glitazones				
Rosiglitazone	Regulates gene expression by binding to PPARy	Reduces insulin resistance	Type 2 diabetes	Oral long-acting (> 24 h) *Toxicity:* Fluid retention, edema, anemia, weight gain, macular edema, bone fractures in women, cannot use if CHF, hepatic disease may worsen heart disease
Pioglitazone	Regulates gene expression by binding to PPARy and PPARy	Reduces insulin resistance	Type 2 diabetes Can be combined with insulin	Oral long-acting (> 24 h) *Toxicity:* Fluid retention, edema, anemia, weight gain, macular edema, bone fractures in women cannot use if CHF, hepatic disease
Incretin-based drugs				
Exenatide	Analog of GLP-1: Binds to GLP-1 receptors	Reduces post-meal glucose excursions: increases glucose-mediated insulin release, lowers glucagon levels, slows gastric emptying, decreases appetite	Type 2 diabetes	Parenteral (subcutaneous) half-life ~2.4 h *Toxicity:* Nausea, headache, vomiting, anorexia, mild weight loss, pancreatitis
Sitagliptin	DPP-4 inhibitor: Blocks degradation of GLP-1, raises circulating GLP-1 levels	Reduces post-meal glucose excursions: Increases glucose mediated insulin release, lowers glucagon levels, slows gastric emptying, decreases appetite	Type 2 diabetes	Oral half-life ~12 h 24-h duration of action *Toxicity:* Rhinitis, upper respiratory infections, rare allergic reactions

Table no 3.:- Treatment Of Diabetes

In this study we will be focus on glimepiride drug.

Glimepiride

Glimepiride Tablets, USP are an oral blood-glucose-lowering drug of the sulfonylurea class. Glimepiride, USP is a white to yellowish-white, crystalline, odourless to practically odourless powder formulated into tablets of 1-mg, 2-mg, and 4-mg strengths for oral administration. Glimepiride Tablets, USP contain the active ingredient glimepiride, USP and the following inactive ingredients: lactose monohydrate, magnesium stearate, povidone, and sodium starch glycolate. In addition, Glimepiride 1-mg tablets contain Ferric Oxide (Iron Oxide Red), Glimepiride 2-mg tablets contain Ferric Oxide (Iron Oxide Yellow), and FD and C Blue #2 Aluminium Lake, and Glimepiride 4-mg tablets contain FD and C Blue #2 AluminiumLake.

Chemically, glimepiride is identified as 1-[[p-[2-(3-ethyl-4-methyl-2-oxo-3-pyrroline-1-carboxamido)ethyl]phenyl]sulfonyl]-3-(trans-4-methylcyclohexyl)urea.

TheCAS Registry Number is 93479-97-1

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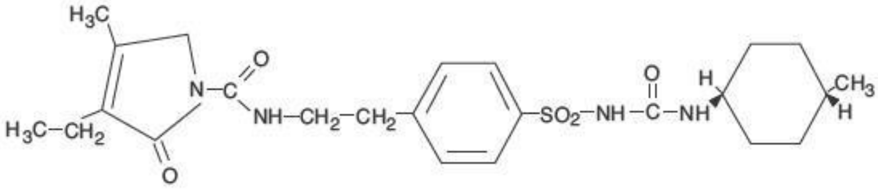
The structural formula is:



Structure no 1:- Glimepiride

MolecularFormula:C24H34N4O5S
MolecularWeight:490.62
Glimepiride is practically insoluble in water.

Dosing and Indications

Adult Dosing

1. **Important Note**
1. Beers Criteria: Use caution or avoid use as potentially inappropriate in older adults.
2. **Type 2 diabetes mellitus**
1. Initial, 1 to 2 mg orally once daily
2. Maintenance, increase in increments of 1 to 2 mg orally no more than every 1 to 2 weeks based on glycaemic response; MAX 8 mg/day

Paediatric Dosing

1. **Important Note**
1. Beers Criteria: Use caution or avoid use as potentially inappropriate in older adults.
2. **General Dosage Information**
1. not recommended in paediatric patients due to adverse effects on body weight and hypoglycaemia

Dose Adjustments

1. **Renal impairment:** Initiate at 1 mg/day.
2. **Hepatic impairment:** Initiate and titrate cautiously
3. **Elderly:** Initiate at 1 mg/day
4. **Dialysis:** Initiate at 1 mg/day.
5. **Debilitated or malnourished patients:** Initiate and titrate cautiously.
6. **Adrenal or pituitary impairment:** Initiate and titrate cautiously

Indications

FDA-Labelled

Indications
Type 2 diabetes mellitus

Contraindications/Warnings

Contraindications

1. History of allergic reaction to sulfonamide derivatives
2. Hypersensitivity to glimepiride or any of the product components

Precautions

1. Beers Criteria: Avoid use in older patients due to increased risk for severe prolonged hypoglycaemia.

2. Cardiovascular: An increased risk of cardiovascular mortality has been reported with the use of sulfonylurea anti-hyperglycaemic; evidence of macrovascular risk reduction has not been established with use.
3. Endocrine and metabolic: Hypoglycaemia may impair concentration during activities such as driving or operating machinery.
4. Endocrine and metabolic: Severe and potentially fatal hypoglycemia may occur; increased risk with elderly, debilitated, or malnourished patients, adrenal or pituitary impairment, with deficient caloric intake, with concurrent anti-hyperglycemic medications, following intense or prolonged exercise, or with concomitant alcohol use.
5. Hematologic: Haemolytic anemia may occur during use; patients with glucose-6 phosphate dehydrogenase (G6PD) deficiency are at an increased risk, use with caution or consider use of non-sulfonylurea agents.
6. Hepatic: Increased risk of hypoglycemia in patients with hepatic impairment
7. Immunologic: Hypersensitivity reactions such as cutaneous eruptions, anaphylaxis, dyspnea, angioedema, and Stevens-Johnson Syndrome have been reported; promptly discontinue use if suspected.
8. Renal: Increased risk of hypoglycemia in patients with renal impairment; dosage adjustment recommended
9. Special populations: Warning signs of hypoglycemia may be less pronounced or different in elderly patients, those with autonomic neuropathy, or patients taking concomitant beta-adrenergic blocking medications or sympatholytic agents; decreased awareness may result in severe hypoglycemia.
10. Special populations: Use not recommended in pediatric patients due to hypoglycemia and adverse effects on body weight

Pregnancy Category

Fetal risk cannot be ruled out. (MDX)

Breast Feeding

Micromedex: Infant risk cannot be ruled out.

Drug Interactions

Major

1. Aspirin (theoretical)
2. Bexagliflozin (theoretical)
3. Capecitabine (theoretical)
4. Chloroquine (theoretical)
5. Ciprofloxacin (theoretical)

Moderate

1. Acebutolol (probable)
2. Aminolevulinic Acid (probable)
3. Atenolol (probable)
4. Betaxolol (probable)
5. Bisoprolol (probable)

Adverse Effects

Common

1. **Endocrine metabolic:**Hypoglycaemia (4% to 19.7%)
2. **Gastrointestinal:**Nausea (5%)
3. **Neurologic:**Asthenia, Dizziness (5%), Headache (8.2%)

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Serious

Dermatologic: Cutaneous hypersensitivity (Less than 1%), Lichenoid drug eruption

Drug Name Info

US Trade Names

Amaryl

Class

1. 2nd Generation Sulfonylurea
2. Hypoglycaemic

Regulatory Status

RX

Generic Availability

Yes

Mechanism Of Action

Glimepiride is a sulfonylurea; it stimulates insulin release from functioning pancreatic beta cells by binding to the sulfonylurea receptor, leading to closure of the ATP-sensitive potassium channel, which results in insulin release and a subsequent decrease in blood glucose.

Pharmacokinetics

Absorption

1. Tmax, oral: 2 to 3 hours.
2. Effects of food: Cmax reduced by 8%, AUC reduced by 9%

Distribution

1. Protein binding: Greater than 99.5%
2. Vd: 8.8 L (113 mL/kg)

Metabolism

1. Oxidative biotransformation: Complete
2. Cyclohexyl hydroxy methyl derivative (major): Active
3. CYP2C9 substrate

Excretion

1. Renal excretion, oral: 60%
2. Faecal excretion, oral: 40%
3. Biliary excretion, IV: None
4. Total body clearance, IV: 47.8 mL/min
5. Total body clearance, oral (geriatric): Increased by 11%

Elimination Half Life

Cyclohexyl hydroxy methyl derivative: 3 hours.

Administration

Oral

1. give with breakfast or the first main meal
2. administer glimepiride at least 4 hours prior to colesevelam if used concomitantly

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Monitoring

1. Achievement of glycaemic control, including meeting HbA1c goal, is indicative of efficacy.
2. HbA1c: Twice yearly in patients who are meeting treatment goals; every 3 months in patients whose therapy has changed and/or who are not meeting glycaemic goals; more frequently as clinically warranted
3. Blood glucose: As needed to assist in meeting goals of therapy
4. Signs and symptoms of hypoglycaemia, especially in elderly and renally impaired patients
5. Signs and symptoms of hyperglycaemia

How Supplied

1. **Generic**
1. Oral Tablet: 1 MG, 2 MG, 4 MG
2. **Amaryl**
1. Oral Tablet: 4 MG
3. **Glimepiride AvPak**
1. Oral Tablet: 1 MG, 2 MG, 4 MG

Toxicology

Clinical Effects

SULFONYLUREAAND RELATED DRUGS

1. USES: Class of oral hypoglycaemic agents used to treat type II diabetes. PHARMACOLOGY: Antagonizes the potassium channel on beta islet cells of the pancreas resulting in increased release of insulin.
2. TOXICOLOGY: Hypoglycaemic effects develop in overdose.
3. EPIDEMIOLOGY: Poisoning is not common, but often results in symptomatic hypoglycaemia which can result in serious neurological injury.
4. INTENTIONAL EXPOSURE: Sulfonylurea poisoning has been associated with Munchausen-by-proxy syndrome and homicide attempts. In one study, it was suggested that more than 20% of poisonings reported in the literature were due to these events. Children may be at greater risk to develop complications than adults and become profoundly hypoglycaemic.
5. MILD TO MODERATE TOXICITY: Toxicity results almost exclusively from hypoglycaemia. Tremor, diaphoresis, nausea, headache, and tachycardia may occur in mild hypoglycaemia although these responses may not be seen in longstanding diabetics. Alternatively, patients with longstanding poor glycaemic control may become symptomatic at more "normal" serum glucose concentrations.
6. SEVERE TOXICITY: Severe CNS symptoms resulting from hypoglycaemia including seizures, altered mental status, delirium, focal neurologic effects, and coma may result. In addition, patients may have dysrhythmias (usually sinus tachycardia, atrial fibrillation, or premature ventricular contractions). Patients with underlying cardiac conditions are at risk for ischemic events secondary to the increased myocardial stress. Patients with prolonged severe hypoglycaemia may sustain permanent neurologic injury.
7. ADVERSE EFFECTS: Hypoglycaemia is the primary adverse effect associated with therapeutic use. Other common adverse effects include: nausea, vomiting and abdominal pain. Use of sulfonylurea with ethanol can result in a disulfiram-like reaction. Chlorpropamide and
8. Tolbutamide have been associated with the syndrome of inappropriate antidiuretic hormone.

Clinical Teaching

1. Drug may cause severe hypoglycaemia that may impair concentration and reaction times. Warn patient to use caution when doing activities requiring mental alertness or coordination, such as driving a car or operating heavy machinery.
2. This drug may cause nausea, asthenia, flu-syndrome, headache, or dizziness.
3. Advise patients to monitor for signs/symptoms of hypoglycaemia, and instruct on how to manage.

4. Instruct patient to take drug with breakfast or first main meal of the day.
5. Advise patient there are multiple significant drug-drug interactions for this drug. Consult healthcare professional prior to new drug use (including over-the-counter and herbal drugs).
6. Patient should not drink alcohol while taking this drug.

Nanotechnology

Nanotechnology word indicates use of technology at nanoscale. Over the past couple of decades nanotechnology is proving its importance in drug delivery. In Latin language, meaning of word nano is dwarf (small). In 1974, Tokyo science university Professor Norio Taniguchi coined the word nanotechnology and since then it is being used. (1) Any technology which deals at nanoscale is called as nanotechnology. Nano word indicates size of 10-9 meter.

Nanotechnology is multidisciplinary field covering areas like engineering, electronics, physics, molecular biology, biophysics, medical and pharmaceuticals. The properties of material at nanoscale are different than macro scale. (2) These changed particles of drug molecule in nano scale can lead to increased performance in different dosage form. If we trace back the use nanotechnology in medicine, we can find the use of colloidal gold in ancient time. The growth of nanoscience can be drawn to the time of the Greeks and Democritus in the 5th century B.C. (3) Nanotechnology in dosage form development have many advantages like enhanced solubility, increased dissolution rate, enhanced stability, reduction in dosage, increase in bioavailability and rapid onset of action. (4) Nanotechnology is playing vary important role to fight against various life-threatening diseases like cancer.

It helps in detection of various neurodegenerative diseases like Alzheimer’s disease and Parkinson’s disease, diabetes mellitus, sensing viruses and microorganism. Nanotechnology can be used in pharmaceutical sciences like development of nanomedicines, diagnosis, tissue engineering and development of biomarkers, biosensors, targeted drug delivery. (5) Various nano based technologies are used in pharmaceutical sciences like Quantum dots, Dendrimers, Carbon nanotubes, Liposomes, Polymeric nanoparticles, Metallic nanoparticles, Polymeric micelles, Nanocomposites and many more.

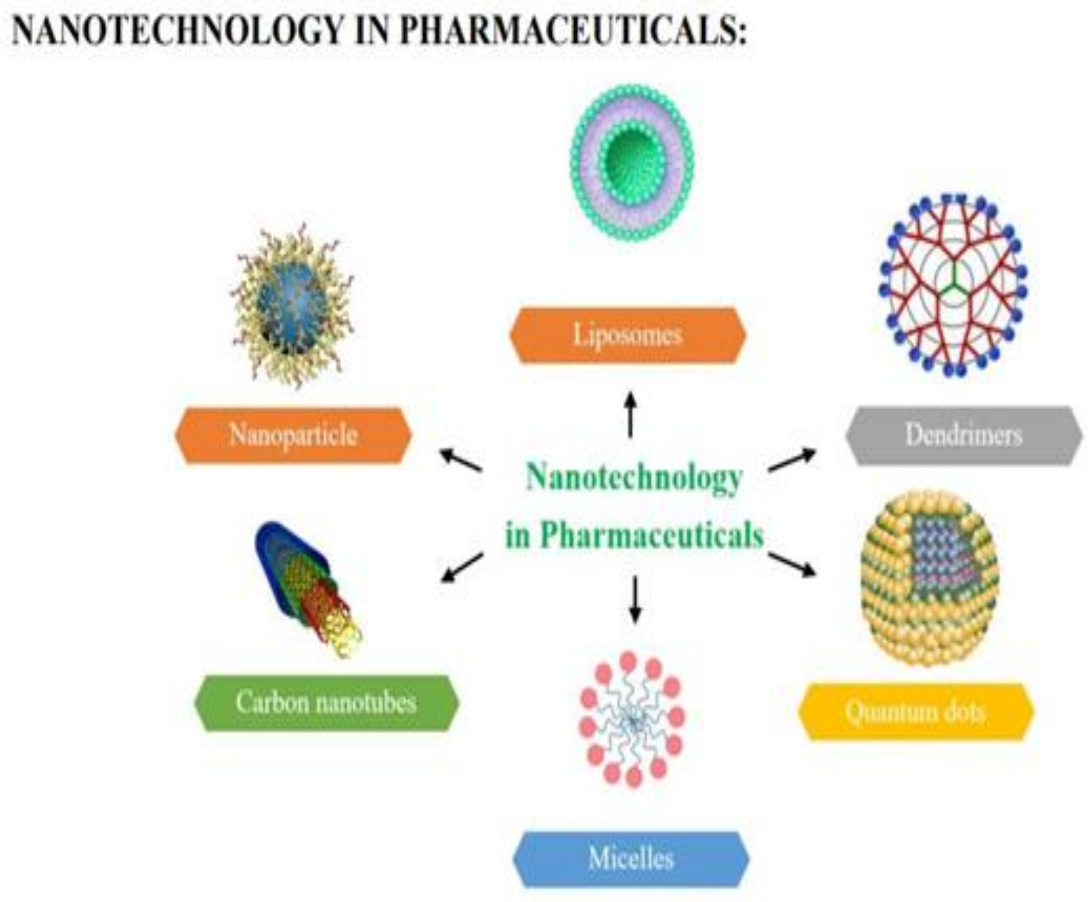

Fig no.1:-Nanotechnology in Pharmaceutics

Fig no.2:- Application Of Nanotechnology In Drug Delivery

ORAL DRUG DELIVERY:

Oral drug delivery remains one the prominent route of drug administration. It is oldest as well as commonest route of drug administration owing to its several advantages. However, this route fails to deliver certain category of drugs like water insoluble drugs, protein and peptides, drugs which gets destroyed by gastric environment. In such cases nanotechnology can play a vital role. Drugs loaded in nanoparticles will be protected from gastric environment as well as solubility of such drugs can be increased which in turn increases the bioavailability. Also, protein and peptide delivery through oral route is possible by use of nanotechnology.

CONCLUSION

Diabetes mellitus (DM) is a group of metabolic disorders characterized by hyperglycaemia and abnormalities in carbohydrate, fat, and protein metabolism.we Can control it by using various antidiabetic drugs.We mainly focus on sulfonylurease class drug i.e Glimepiride. It's used leads to hypoglycaemic effect. Then further we focused on nanotechnology. Nanotechnology is the future of medicines. It has enormous potential as drug delivery system. . Nanotechnology is used to deliver therapeutic and pharmacological agents. Desired properties of therapeutic agents can be enhanced by use of nanotechnology.So here we used as 'Glimepiride loaded nanoparticles as novel delivery approach in treatment of diabetes mellitus.'Because of this technology we can get sustained release effect with maximum drug efficacy and with minimum drug toxicity.

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QUERICETINE LOADED NONOFIBER - A NOVEL APPROACH IN HYPERTENSION

Rushikesh S Patil*, Dr Apararrk Moholkar, Nnaishindan Suryawanshi and Nilesh Dhanve
Department of Pharmaceutics, Channabasweshwar Pharmacy College (Degree) Latur - 413512

ABSTRACT

One of the most well-known flavonoids, quercetin, has long been a part of the human diet. Numerous health benefits, such as those related to antioxidant, anti-inflammatory, antiviral, and anticancer properties, as well as the ability to mitigate certain cardiovascular diseases (such as heart disease, hypertension, and high blood cholesterol), have been linked to the use of quercetin. Nevertheless, quercetin's low bioavailability, chemical instability, and poor solubility in water severely restrict its range of uses.Delivery system use can increase the drug's bioavailability, stability, and effectiveness.

Flavonoid quercetin for its antibacterial, anticancer, and antioxidant properties is quercetin, which is present in high concentration in a variety of foods and plants. Quercetin is becoming more and more used in studies on wound dressings because of its superior capacity to scavenge reactive oxygen species. quercetin loaded polycaprolactone (PCL)/gelatin (GLN) electrospun nanofiber was synthesized and theirhypertensive activity was studied.sustained release of QT was demonstrated in vitro. These results reveal that CNF is an ideal natural nanoscale dietary carrier and offers high encapsulation efficiency for healthcare supplementation. This work also provides a promising nanoformulation candidate for managing sustained antioxidant and antihypertensive requirments.

Keywords: *quercetin, flavonoids, antioxidant, anti-inflammatory, electrospun nanofiber, polycaprolactone*

INTRODUCTION

Nanofibers are polymeric filaments with a diameter of less than 1μm. These ultrathin strands have unique characteristics such as high surface area-to-volume ratio, elevated porosity and mechanical properties, and extreme flexibility and low basis weight. Due to increasing interest in generation of nanofibers for a diverse range of applications, several nanofiber manufacturing techniques have been introduced, with the most commonly used being self-assembly (Hartgerink et al., 2001), phase separation (Nam and Park, 1999), and electrospinning (Doshi and Reneker, 1995; Reneker and Chun, 1996)[1]. Quercetin (3,3′,4′,5,7-pentahydroxyflavone) belongs to a group of dietary flavonoids and polyphenols and occurs in high quantities in many vegetables and fruits, including capers, fig, cranberry, red onion, radish leaves, asparagus, broccoli, walnuts, and coriander [2].Quercetin is a well-known plant flavanol that exhibits multiple biological activities, including antioxidant, anti-inflammatory and anticancer activities. The role of quercetin in wound healing has been widely explored by a range of researchers in different models. However, the physicochemical properties, such as solubility and permeability, of this compound are low, which ultimately limits its bioavailability on the target site. To overcome these limitations for successful therapy, scientists have developed a range of nanoformulations that provide effective therapeutic potential[3]. Under normal conditions, endogenous antioxidants provide oxidative stability by taking precautions against reactive oxygen species (ROS) increase [4]. Quercetin is flavonoid compound found in many plants and nutrients such as red grapes, green tea, onions, apples, St. John’s wor [5]. As well as quercetin is known for its antioxidant activity [6] in the literature, there are many studies on its anticancer [7], antimicrobial [8] and antiviral [9] properties. As quercetin one of the most powerful agents in scavenging reactive oxygen species, its use in wound healing and wound dressing studies are increasing [10].

Blood pressure (BP) is controlled by neural and humoral mechanisms. Neural regulation is carried out by the autonomic nervous system whereas humoral regulation is performed by a variety of substances released by different cell types [11]. Treatment of hypertension depends on the etiology of the disease and includes diet alterations, weight loss, exercise, and pharmacological interventions. Quercetin therapeutic uses are diverse and have been widely reported to impact positively on chronic conditions such as cancer[12] hypertension, and inflammatory-based disorders[13] some of which may be attributed to its potent antioxidant effects. Hypertension is a complex, multifactorial polygenic disorder, with different animal models attesting to this. In the spontaneously hypertensive rat model (SHR), quercetin lowered blood pressure,[14] 3 which has been attributed to the downregulation of NADPH oxidase, increases in endothelial nitric oxide synthase (eNOS) activity, and prevention of endothelial dysfunction[15]It has been reported that quercetin and wine polyphenols might be of therapeutic benefit in cardiovascular diseases; however, controlled clinical studies are still lacking[16].Combined analysis of 9 RCT arms revealed a significant reduction of DBP (WMD: −2.63 mm Hg,

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95% CI: −3.26, −2.01, *P*<0.001) following supplementation with quercetinRemoval of the study by Zahedi et al [43]yielded an effect size equivalent to −0.98 mm Hg (95% CI: −2.44, 0.49, *P*=0.191).

Quercetin

Phytochemicals, or phytonutrients, are biologically active plant constituents that occur naturally to protect against insect invasion, disease, and infection. Phytochemicals also provide color, flavor, and aroma. Flavonoids are a specific class of phytochemicals which are divided into more than 10 different subclasses based on their molecular structure. The structure of the flavonoid also determines particular contributions to the health benefits associated with fruit and vegetable consumption[17]. Quercetin is absorbed in the small intestine and colon where it and its glycosides are conjugated with glucuronic acid in the intestinal epithelium. It is then bound to albumin and transported to the liver [**18**]. Very little free quercetin is found in circulation, and most appears in the blood in glucuronide form and as quercetin metabolites.

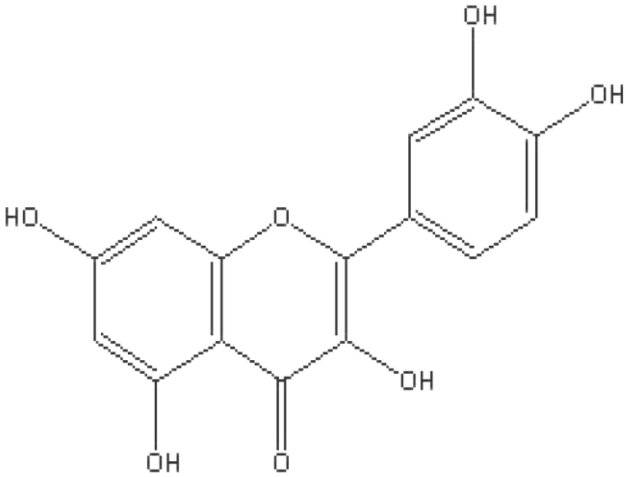

Figure 1. Quercetin aglycone.

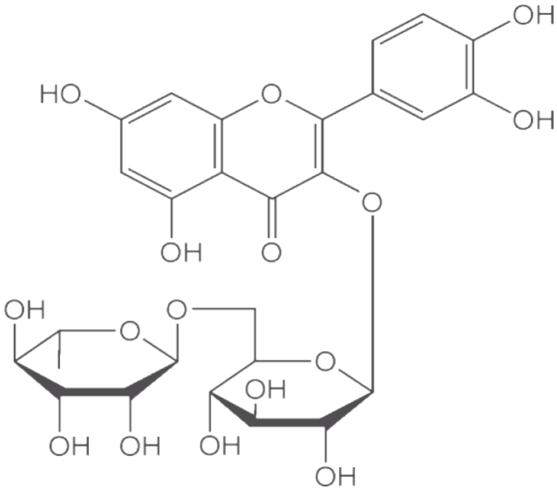

Figure 2. Conjugated quercetin

Quercetin: A Treatment for Hypertension?

Effects of Quercetin on BP in Animals

quercetin decreases BP and/or reduces the severity of hypertension in spontaneously hypertensive rats [20], rats fed a high-fat high-sucrose diet. Quercetin has also been shown to have in vitro vasodilator effects inisolated rat arteries [21]. While translating results observed in animals directly to humans should be done with caution, these studies nevertheless provide proof of principle that a quercetin-induced reduction in BP might be responsible for the reduction of CVD risk observed in humans with high quercetin diets[22].

Effects of Quercetin on BP in Humans

Epidemiological studies have found an inverse relationship with flavonoid intake and chronic disease [23]. Evidence from the Zutphen Elderly Studysuggests a strong cardio-protective effect of several flavonoids, including quercetin [24]. In this study the risk of coronary death was reduced by as much as 68% in men who consumed >29 mg flavonols/day compared to men who consumed <10mg flavonols/day. While the specific association between quercetin intake and BP was not examined in this study, the authors did report an inverse relationship between high quercetincontaining foods and BP [25]. The ability of quercetin to lower BP in hypertensive but not prehypertensive or normotensive models is not unique to this flavonoid. For example, the BP lowering effect of a diet rich in fruits and vegetables in hypertensive patients is well known; however, no reduction in BP is observed in normotensive subjects after a similar dietary intervention [26].

Bioavailability of Quercetin

The bioavailability of quercetin depends on the absorption and metabolism of this flavonoid. Absorption is dependent upon the type ingested (e.g., quercetin aglycone or quercetin glycosides), the food matrix in which it is found, and individual differences in colon flora [27, 28]. Quercetin glycosides (Figure 2) have a carbohydrate moiety and are more commonly found in foods [29]. Supplements are sold in both forms and studies indicate that both are readily bioavailable [30].

Possible Methods for Lowering Blood Pressure

There is evidence to support a number of possible mechanisms through which quercetin may lower blood pressure and lessen the severity of hypertension in both humans and animals. Quercetin, for instance, may lessen oxidative stress, obstruct the RAS, and/or enhance vascular and/or endothelial function.

Oxidative Stress

In the past, the mechanism for quercetin-induced BP reduction in hypertensive animals and humans has been attributed to a reduction in oxidative stress. Animal studies that have observed reduced BP after quercetin supplementation have also shown improvements in oxidant status, such as reduction in plasma lipid peroxides and urinary isoprostanes when compared to untreated animals[31]. It was hypothesized that improvement in oxidant status was the underlying mechanism behind improved vascular function observed in these studies [31,32] While a great deal of evidence obtained from hypertensive animal models indicates that quercetin might be effective in lowering oxidant load, available data from humans is equivocal. In general, higher doses of quercetin have been evaluated in animals vs. humans, and this may lead to significant differences in the intracellular concentrations of quercetin, and subsequent antioxidant effects. For example, we have previously observed reductions in liver malondialdehyde levels in quercetin supplemented rats (150 mg quercetin/kg) [33],, but no change plasma antioxidant power or urinary isoprostanes in quercetin supplemented humans (~8.1 mg quercetin/kg) [34].

Rennin-Angiotensin System

The RAS is involved in the regulation of BP and controls fluid loss. Long-term overactivation of the RAS is associated with hypertension and can have negative cardiovascular effectsInterference with the RAS by pharmacological ACE inhibitors such as captopril and imidapril can reduce circulating angiotensin II, a potent vasoconstrictor, resulting in lower blood pressure and fewer cardiovascular events in high-risk populations [35].

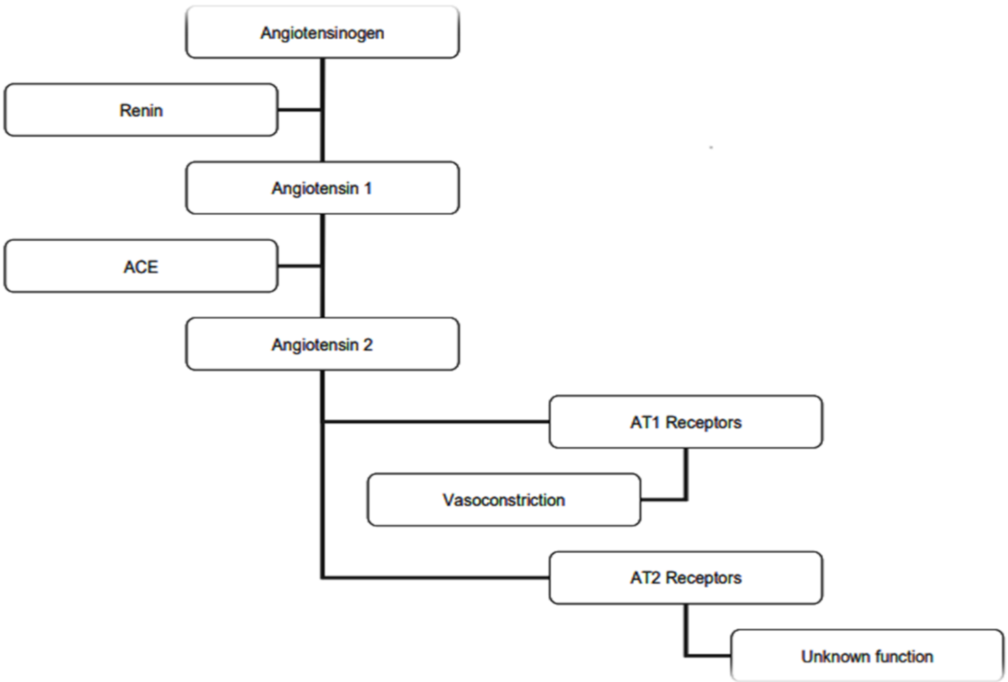

Figure-The renin-angiotensin system (RAS).

Pharmacological inhibitors, such as captopril and imidapril, inactivate the ACE molecule via binding a zinc molecule at the active site and slow the conversion of angiotensin I to angiotensin II[36]. Some flavonoids are also known to bind metal ions, such as zinc. Quercetin is particularly known for this property [37] and there is evidence that quercetin may inhibit ACE activity via this mechanism [38].

Safety of Quercetin

Quercetin is believed to be antimutagenic in vivo and long-term studies have found that quercetin is not carcinogenic [39] Very few negative side effects have been noted with short-term [40], but there have been reports of nausea, headache, and tingling of the extremities with chronic quercetin supplementation of 1,000 mg/day (as reviewed by Harwood et al [41]. Quercetin is also an inhibitor of CYP3A4, an enzyme that breaks down many commonly prescribed drugs in the body; therefore, quercetin should not be taken with drugs that depend on this enzyme for metabolism. Since many flavonoids have been found to inhibit platelet aggregation (via inhibition of thromboxane A2)[42] it is also possible that pharmacological doses of quercetin could increase risk of bleeding when taken with anticoagulant drugs.

Recent formulation of quercetin

a. Quercetin Capsule

b. Quercetin Tablet

c. Quercetin Gel

d. Quercetin Cream

CONCLUSIONS

Despite the uncertainty of quercetin's mechanism of action of BP reduction in humans, it holds promise for the treatment of hypertension and promoting cardiovascular health. Research on animal models, both in vitro and in vivo, has revealed a variety of mechanisms of action that may result in the lowering of blood pressure observed in hypertensive humans. Further controlled randomized human research studies are required to confirm quercetin's efficacy in addition to identifying primary mechanisms. it must be ascertained if quercetin is a useful treatment for hypertension in all of its forms, regardless of its pathological cause. Before suggesting quercetin as a treatment option for the general public, more research on the safety of quercetin supplementation must be done, particularly long-term studies involving women and people of different ethnicities.

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CHALLENGES AND PROPOSED SOLUTIONS FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS 2030: CONTRIBUTION OF EDUCATION

Dr. Mandira Gupta[1] and Ms. Anuradha Daheriya[2]
Principal, Institute of Vocational Studies (GGSIPU), New Delhi
Assistant Professor, Institute of Vocational Studies (GGSIPU), New Delhi

ABSTRACT
Providing quality education to all plays a central role for socio-economic development of a country. As a signatory to the Sustainable Development Goals, India has committed to ensuring inclusive and quality education to all children by 2030. This includes collaborative efforts in sharing the experience and expertise in diversified areas such as universal mass education, higher and professional education, open and distance education with special emphasis on quality and gender equality. India has made substantial progress in implementing Education for All. Several programmes and policies have been initiated to provide free and compulsory education to all children in the age group of six to fourteen years with initiatives such as Sarva Siksha Abhiyan and Right to Education. To meet the changing dynamics regarding quality education, innovation and research, New Education Policy 2020 aims to make India a knowledge hub by equipping its students with skill development and up gradation including vocational training and focus on technology. Economic survey of India 2019-20 also emphasizes role of education on entrepreneurship, stating that "literacy and education in the district foster local entrepreneurship significantly". The paper discusses various goals for Sustainable Development and in particular related to education including various programmes and initiatives by Govt. to achieve the targets and their status. This paper also discusses various challenges being faced for implementation including the desired learning outcomes and proposes few solutions to overcome the challenges. As compared to the aging population worldwide, India has an added advantage with its young population, with an average age of 29 years, which can be harnessed with an improvement in health, education, and skill development.

Keywords: *Sustainable Development Goals (SDGs), Technical and Vocational Education and Training (TVET), Education for Sustainable Development (ESD), Global Citizenship Education (GCED), Central Sector Schemes (CSS), Skill development*

SUSTAINABLE DEVELOPMENT GOALS:

The United Nations General Assembly adopted the universal, integrated, and transformative 2030 Agenda for Sustainable Development, along with a set of 17 Sustainable Development Goals and 169 associated targets on 25 September 2015. These goals are indivisible and encompass economic, social, and environmental dimensions.

- Goal 1: End poverty in all its forms everywhere
- Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 3: Ensure healthy lives and promote well-being for all at all ages
- Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Goal 5: Achieve gender equality and empower all women and girls
- Goal 6: Ensure availability and sustainable management of water and sanitation for all
- Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all
- Goal 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
- Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10: Reduce inequality within and among countries
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12: Ensure sustainable consumption and production patterns
- Goal 13: Take urgent action to combat climate change and its impacts

- Goal 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
- Goal 15: Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels
- Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

This paper discussed in detail the initiatives taken in India for achieving Goal four which focus on providing quality education to all, their status, various challenges being faced and proposed solutions to overcome challenges.

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

It aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. It comprises of following targets to be achieved by 2030:

4.1 - Free Primary and Secondary Education: To ensure that all children receive equitable and quality Primary and Secondary education leading to relevant and effective learning outcomes. The provision of 12 years of free, publicly-funded, inclusive, equitable, quality primary and secondary education, of which at least nine years are compulsory, leading to relevant learning outcomes should be ensured for all, without discrimination.

Centrally Sponsored /Central Sector Schemes:

- Sarva Shiksha Abhiyan
- National Programme of Mid-Day Meal in Schools
- Rashtriya Madhyamik Shiksha Abhiyan
- National Means-cum-Merit Scholarship Scheme
- Strengthening of Teacher Training Institutions
- Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching
- National Scheme for Incentive to Girl Child for Secondary Education
- Pre-matric scholarships for SC, OBC and vulnerable groups
- Pre-matric scholarships for children of those engaged in unclean occupations and prone to health hazards
- Pre-matric Scholarship to students with disabilities
- Other scholarships & fellowships for SC, OBC Students
- Free coaching for SC students
- Hostels for SC & OBC students
- Pre-matric scholarships for ST students
- Pre-matric scholarships for minority students
- National Child Labour Project (including grants-in-aid to voluntary agencies & reimbursement of assistance to bonded labour)

4.2 - Equal access to quality Pre-primary education: To ensure that all girls and boys have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education. The provision of at least one year of free and compulsory quality pre-primary education is encouraged to be delivered by well-trained educators, as well as that of early childhood development and care.

Centrally Sponsored /Central Sector Schemes: Umbrella ICDS (Aganwadi Services)

4.3 - Equal access to affordable, technical vocational and higher education: To ensure equal access for all women and men to affordable and quality technical, vocational, and tertiary education, including University. It is imperative to reduce barriers to skills development and Technical and Vocational Education and Training

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(TVET), starting from the secondary level, as well as to tertiary education, including University, and to provide lifelong learning opportunities for youth and adults. The provision of tertiary education should be made progressively free, in line with existing international agreements.

Centrally Sponsored /Central Sector Schemes (CSS):

- Rashtriya Uchhatar Shiksha Abhiyan
- Scholarship for College and University Students
- Interest Subsidy and Contribution for Guarantee Funds
- Technical Education Quality Improvement Programme
- Post-matric scholarships for SC, OBC and other vulnerable community students
- Post-matric scholarships for ST students
- National Fellowship and Scholarship for Higher Education of ST Students
- Vocational Training Centres in Tribal Areas
- Post-matric scholarships for minorities students
- Merit-cum-means based scholarship for minorities students for professional and technical courses undergraduate and postgraduate
- Free Coaching &Allied Scheme for Minorities
- Support for minorities students clearing preliminary examinations conducted by UPSC, SSC, State PSCs, etc.
- Interest subsidy on education loans for overseas studies for minorities students
- Maulana Azad National Fellowship for minorities students
- Multi-Sectoral Development Programme for Minorities (MsDP)
- Umbrella Programme for Skill Development of Minorities:

i. Seekho aur Kamao – Skill Development Initiatives for minorities

ii. Upgrading Skills and Training in Traditional Arts/Crafts for Development (USTAAD) for minorities

iii. Nai Manzil- The Integrated educational and Livelihood initiatives

- Pradhan Mantri Kaushal Vikas Yojana:

i. Development of Skills (Umbrella Scheme)

ii. Development of Entrepreneurship (Umbrella Scheme)

iii. National Board for Skill Certification

iv. National Skill Development Agency

v. Model ITIs/Multi Skill Training Institutes

vi. Apprenticeship and Training (Umbrella Scheme)

vii. Scheme of Polytechnics

4.4 - Increase the number of people with relevant skills for financial success: Substantially increases the number of youth and adults who have relevant skills, including technical and vocational skills, for employment and entrepreneurship.

(i) Access: Equitable access to TVET needs to be expanded while quality is ensured. Learning opportunities should be increased and diversified, using a wide range of education and training modalities, so that all youth and adults, especially girls and women, can acquire relevant knowledge, skills and competencies for decent work and life.

(ii) Skills acquisition: Beyond work-specific skills, emphasis must be placed on developing high-level cognitive and non-cognitive/transferable skills, such as problem solving, critical thinking, creativity, teamwork, communication skills and conflict resolution, which can be used across a range of occupational fields.

Centrally Sponsored /Central Sector Schemes (CSS):

- Pradhan Mantri Kaushal Vikas Yojana:

i. Development of Skills (Umbrella Scheme)

ii. Development of Entrepreneurship (Umbrella Scheme)

iii. National Board for Skill Certification

iv. National Skill Development Agency

v. Model ITIs/Multi Skill Training Institutes

vi. Apprenticeship and Training (Umbrella Scheme)

vii. Scheme of Polytechnics

- Vocational Training Centres in Tribal Areas
- Umbrella Programme for Skill Development of Minorities:

i. Seekho aur Kamao – Skill Development Initiatives for minorities

ii. Upgrading Skills and Training in Traditional Arts/Crafts for Development (USTAAD) for minorities

iii. Nai Manzil- The Integrated educational and Livelihood initiatives

4.5 - Elimination of all discrimination in education: To eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations.

(i) Inclusion and Equity: All people, irrespective of sex, age, race, color, ethnicity, language, religion, political or other opinion, national or social origin, property, or birth, as well as persons with disabilities, migrants, indigenous peoples, and children and youth, especially those in vulnerable situations or other status, should have access to inclusive, equitable quality education and lifelong learning opportunities. Vulnerable groups that require particular attention and targeted strategies include persons with disabilities, indigenous peoples, ethnic minorities, and the poor.

(ii) Gender Equality: All girls and boys, women, and men, should have equal opportunity to enjoy education of high quality, achieve at equal levels and enjoy equal benefits from education. Adolescent girls and young women, who may be subject to gender-based violence, child marriage, early pregnancy, and a heavy load of household chores, as well as those living in poor and remote rural areas, require special attention. In contexts in which boys are disadvantaged, targeted action should be taken for them. Policies aimed at overcoming gender inequality are more effective when they are part of an overall package that also promotes health, justice, good governance, and freedom from child labor.

Centrally Sponsored /Central Sector Schemes (CSS):

- National Scheme for Incentive to Girl Child for Secondary Education (NSIGSE)
- Prime Minister's Girls' Hostel
- Assistance to Disabled Persons for purchase of Fitting Devices (ADIP)
- Deendayal Disabled Rehabilitation Scheme (DDRS) Scholarships for students with disabilities
- Support to Establishment/ Modernization/ Capacity augmentation of Braille Presses
- Establishment of Colleges for Deaf
- National Program for Persons with Disabilities
- National Fellowship for Persons with Disabilities (PwD)
- Pre-and post-matric Scholarship to students with disabilities
- National Overseas Scholarship for Students with Disabilities
- Free Coaching for SC and OBC Students
- Boys and Girls Hostels

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- SIPDA (Schemes for the Implementation of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995
- Pradhan Mantri Kaushal Vikas Yojana:

i. Development of Skills (Umbrella Scheme)

ii. Development of Entrepreneurship (Umbrella Scheme)

iii. National Board for Skill Certification

iv. National Skill Development Agency

v. Model ITIs/Multi Skill Training Institutes

vi. Apprenticeship and Training (Umbrella Scheme)

vii. Scheme of Polytechnics

4.6 - Universal literacy and numeracy: To ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.

The principles, strategies and actions for this target are underpinned by the contemporary understanding of literacy as a continuum of proficiency levels in each context. It goes beyond the understanding of a simple dichotomy of 'literate' versus 'illiterate.' Therefore, action for this target aims at ensuring that by 2030, all young people and adults across the world should have achieved relevant and recognized proficiency levels in functional literacy and numeracy skills that are equivalent to levels achieved at successful completion of basic education.

Centrally Sponsored /Central Sector Schemes (CSS):

- Saakshar Bharat
- Vanbandhu Kalyan Yojana - Development of Particularly Vulnerable Tribal Groups (PVTGs)
- National Service Scheme (NSS)
- Schemes for Youth development & Education (Nehru Yuva Kendra Sangathan, National Programme for Youth and Adolescent Development, etc.)

4.7 - Sustainable Development and Global Citizenship: To ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development.

It is vital to give a central place to strengthening education's contribution to the fulfilment of human rights, peace, and responsible citizenship from local to global levels, gender equality, sustainable development, and health. The content of such education must be relevant, with a focus on both cognitive and non-cognitive aspects of learning. The knowledge, skills, values, and attitudes required by citizens to lead productive lives, make informed decisions, and assume active roles locally and globally in facing and resolving global challenges can be acquired through education for sustainable development (ESD) and global citizenship education (GCED), which includes peace and human rights education, as well as intercultural education and education for international understanding.

Centrally Sponsored /Central Sector Schemes (CSS):

- Saakshar Bharat
- Vanbandhu Kalyan Yojana - Development of Particularly Vulnerable Tribal Groups (PVTGs)
- National Service Scheme (NSS)
- Schemes for Youth development & Education (Nehru Yuva Kendra Sangathan, National Programme for Youth and Adolescent Development, etc.)
- Kala Sanskriti Vikas Yojana
- Pradhan Mantri Kaushal Vikas Yojana:

i. Development of Skills (Umbrella Scheme)

ii. Development of Entrepreneurship (Umbrella Scheme)

iii. National Board for Skill Certification

iv. National Skill Development Agency

v. Model ITIs/Multi Skill Training Institutes

vi. Apprenticeship and Training (Umbrella Scheme)

vii. Scheme of Polytechnics

4.8 – Build and upgrade inclusive and safe schools: Build and upgrade education facilities that are child, disability, and gender sensitive and provide safe, non-violent, inclusive, and effective learning environments for all.

This target addresses the need for adequate physical infrastructure and safe, inclusive environments that nurture learning for all, regardless of background or disability status.

Centrally Sponsored /Central Sector Schemes (CSS):

- Sarva Shiksha Abhiyan
- Umbrella Programme for Education of SC, ST, OBC and minorities students
- Umbrella ICDS
- Umbrella Programme for Education of SC, OBC and vulnerable group students
- Umbrella Programme for Education of ST students
- Umbrella Programme for Education of minorities students

4.9 –Expand higher education scholarships for developing countries: Scholarship programmes can play a vital role in providing opportunities for young people and adults who would otherwise not be able to afford to continue their education. Where developed countries offer scholarships to students from developing countries, these should be structured to build the capability of the developing country. While the importance of scholarships is recognized, donor countries are encouraged to increase other forms of support to education. In line with the SDG4- Education 2030 focus on equity, inclusion and quality, scholarships should be transparently targeted at young people from disadvantaged backgrounds.

4.10 - Increase the supply of qualified teachers in developing countries: To substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States. Teachers are the key to achieving all the SDG 4 targets. It requires urgent attention, with a more immediate deadline, because the equity gap in education is exacerbated by the shortage and uneven distribution of professionally trained teachers, especially in disadvantaged areas. As teachers are a fundamental condition for guaranteeing quality education, teachers and educators should be empowered, adequately recruited, and remunerated, motivated, professionally qualified, and supported within well-resourced, efficient, and effectively governed systems.

Centrally Sponsored /Central Sector Schemes (CSS): Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching

Concerned Ministries/Departments for the above programmes include HRD (School Education & Literacy), Social Justice & Empowerment, Tribal Affairs, Minority Affairs, Labor and Employment, Women and Child Development, Skill Development & Entrepreneurship, Youth Affairs & Sports, Higher Education, External Affairs, Culture, Social Justice & Empowerment,

Challenges and proposed solutions for providing education for all:

- **Gaps in allocation of funds:** To achieve all the targets of Goal-4; the total financial requirement for India is of the order of Rs. 142 lakh Crores (USD 2,258 billion). While there is no financial gap identified in case of primary and secondary schooling due to provisions and finance allocations under Right to Education Act, there are significant gaps in case of early childhood development and tertiary and higher education. There is a gap of Rs. 27 lakh Crores (USD 429 billion) out of the total of Rs. 35 lakh Crores (USD 555 billion) required for ensuring access to quality early childhood development, care, and pre-primary education. Further, India will require an additional Rs. 19 lakh crores (USD 301 billion) for ensuring quality technical, vocational, and tertiary education. To enhance the standards of Indian higher education to match world standards, additional finance may be required over and above what is estimated here.

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- **Budget erosion due to willful defaulters and NPAs in Public sector banks:** Economic Survey of India 2020 discusses about the shortage of funds in education due to high level of Non-Performing Assets (NPAs) in Public Sector Banks. It states that "had the money siphoned away by willful defaulters stayed in the economy, the budget allocation would have increased by Rs 138 Cr towards health, education and social protection."
- **Low literacy rate:** While, the National Literacy Mission Authority has taken proactive initiative for alignment of Saakshar Bharat with Sansaad Adarsh Gram Yojana in achieving 100% literacy. Current Literacy rate of India is 77.7%. One of the main factors contributing to this relatively low literacy rate is availability of schools in vicinity in rural areas. There is a shortage of classrooms to accommodate all the students along with the concern of not having proper sanitation and drinking water facilities in most schools.
- **High drop-out rates:** Though drop-out rates have been declining from year to year, it remains a major challenge. With the increased number of schools, improved facilities in schools and enrolment, the annual dropout rate at primary level for all categories of students has lowered down over last few years; however, the same has increased at upper primary and secondary level for all categories. Besides infrastructure, lack of qualified teachers, pupil teacher ratio, crimes against children like, child labor, child marriage and child trafficking are the main reasons that causes school drop outs.
- **Quality Education:** Though India has made substantial progress in enrolments across level of education, there is enough scope to strengthen quality parameters. Given the fact that, quality is difficult to define, measure and monitor, education should be inclusive in all dimensions of children's holistic development which includes skills, knowledge, values, and attitudes, besides access to health and nutrition. Evidences have shown that adequate investments in quality related inputs like textbooks and teacher training lead to better outcomes.
- **Focus on employability and entrepreneurship:** The aim of education should be to increase employability and develop entrepreneur skills. Measures to increase the literacy levels rapidly through the institution of more schools and colleges will spur entrepreneurship and consequently local wealth creation.
- **Need for collective efforts in decentralized framework:** Decentralization of school management through the School Level Improvement Plans (SLIP) can create a positive impact in overall improvement. Parents, teachers, school management committees and local communities need to work collectively to improve the quality of learning for children. Empowering teachers is required to strengthen their professional motivation thereby enhance their sense ownership of the school. In the decentralization framework, the SLIP activities can strengthen the participation of teachers, school management committees, parents, and community involvement in the schools. Purchase of cleaning materials, books, bookshelves, musical instruments, clearing of the school playground, small scale repairs to school benches, toilets etc. can add to the enabling environment for enhanced learning. To support planning at local level, training to government officials at districts school management committee members and head teachers may be provided. Further, to improve the quality of education, focus should be on in-service teacher training wherein teachers are trained in interactive teaching approaches and receive subject based training.
- **Monitoring of implementation:** To measure and quantify the Sustainable Development Goal-four effectively, standardization and periodicity of data related to education is required. These indicators can be compared across all states as well as across districts to measure the achievements. This exercise will also help in understanding where the states lag so that targeted policies and interventions can be directed to achieve desired education outcomes. India has already identified the nodal ministries and departments to achieve sustainable development goals. Education is a crosscutting issue and a goal which requires inter-sectoral initiatives to be strictly implemented, reviewed, and monitored on a regular basis along with the allocation of adequate resources to finance education needs.

CONCLUSION

Various initiatives have been taken by the Government of India, State Governments, and educational institutions to achieve the goal of providing quality education to all children by 2030 as part of Sustainable Development Goals of United Nations, to which India is a signatory. These efforts include increasing literacy levels with a wider scope of literacy, primary, secondary, higher education with focus on skillset development, employability, and technology adoption. The ongoing journey is facing challenges in terms of gaps in allocation of funds, high drop-out rate, gaps in quality education, gaps in skillsets and inadequate implementation and monitoring of schemes. Some of the solutions to resolve these issues are training and development of officials who frame and monitor policies, teachers, and other staff, creating infrastructure, focus on digital literacy and skillset development. Decentralization can also prove to be useful for empowering local communities and teachers to take initiatives and decisions leading to higher involvement and accountability.

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A STUDY ON CUSTOMER SATISFACTION TOWARDS SOCIAL MEDIA MARKETING WITH REFERENCE TO MUMBAI SUBURBAN

Dr. Adhir Vasant Ambavane[1] and Mr. Manoj Arjun Sangare[2]
Associate Professor[1] and Assistant Professor[2], KET's V.G. Vaze College of Arts, Science & Commerce (Autonomous), Mulund (East), Mumbai, Maharashtra, India

ABSTRACT
Customer satisfaction is the key factor for successful marketing. Customers are the link to any level and type of business success. A business organization should focus on a large number of customers. Customers are sovereign so they should be managed as assets, further, they are also heterogeneous & differ from each other in their buying behaviour.

Social media penetration is significantly growing across the world. It has become the most effective marketing platform for establishing long-term relations with customers & satisfying them because it is one of the most stress-free and profitable digital marketing platforms that can be used to increase business viability. Social media marketing has changed the interaction of consumers and buyers. With a strong social media strategy and the ability to create engaging content, marketers can engage and influence their targeted audiences. The research paper explored social media activities. The study aims to evaluate customer satisfaction in social media marketing. The participants in this study were experienced users of five social media platforms YouTube, Facebook, Twitter, Instagram & LinkedIn in the Mumbai suburb.

The present study is based on primary data; researchers have collected data from respondents through a structured questionnaire. The sample size for the present study was 201 respondents and a combination of convenience & simple random sampling methods was used for the study. The results revealed that social media marketing has influenced the buying decisions of the buyers.

Keywords: Social Media Marketing, Digital Marketing, Customer Satisfaction, Sovereign.

INTRODUCTION
Building relations with customers via social media is a significant element of today's marketing strategy. Social media can positively influence sales and to a large extent brand loyalty and connection. Although social media was initially used primarily for personal use and to maintain personal interactions, with their development and growing popularity they have become a valuable tool to build a community around brands. The massive popularity of social media amongst consumers and businesses has transformed the traditional means of conducting business and marketing. Consumers are increasingly engaging in social media such as YouTube, Facebook, Twitter, Instagram & LinkedIn etc., across the generations, and spend more time on such platforms, resulting in an increasing amount of communication through social media. Increasing the presence and participation of consumers/customers in social media poses both opportunities and challenges to marketers, as consumers make their buying decisions on peer interaction on social media. So, with a strong social media strategy and by creating engaging content marketers can engage their audience.

Social media portals allow not only the publication of marketing content but also direct contact with customers through messages and comments. Hence, social media is an excellent way to provide modern customer service. It's beneficial for both customers and the company because it's easy for both.

Social media marketing can simply be the use of social media channels to promote a company and its products. Social media, in a way, converts consumers into marketers and advertisers, and consumers can create positive or negative pressure on the company, its products, and its services, depending both on how the company is presented online and on the quality of products and services presented to the customer (Roberts and Kraynak 2008, 146).

Consumers using social media platforms can generate, edit, and share online information about companies, products, and services. They can also create online communities and networks that direct where information flows out of a business's control. Customers perceive this information as more reliable than straightforward business communication. Hence, peer opinion becomes a major influence on buying behaviour.

Social media provide desirable and enjoyable experiences for users in virtual environments that are not possible without them. For this reason, the popularity of social media platforms has been rapidly increasing over the past few years. In recent, a report showed that the monthly active users of YouTube, Facebook, Twitter, Instagram & LinkedIn are approximately 2.5 billion, 2.9 billion, 544 million, 1.3 billion, and 310 million, respectively.

A large number of companies are making social media an important part of marketing strategy based on highly promising features such as; large and swift expansion of internet users, ease of use, speed of internet, etc. Marketers are motivated to engage in social media marketing due to the high growth of the internet and registered social media users. It's well known that social media is a marketing channel that many e-commerce brands have already used effectively to skyrocket their firms' growth.

STATEMENT OF PROBLEM

Today social media has become one of the effective platforms for direct marketing of goods & services. Many companies are using it to attract new customers as well as to reduce customer defection rates. It was observed that social media features such as content, trust, and benefits play a significant role in influencing customer retention and satisfaction. Companies try to build loyalty & patronage among them through social media marketing. Due to the vast use of social media customers can influence the reputation & business of the companies positively or negatively. Therefore, marketers should also use it to flourish in the 21st Century.

REVIEW OF LITERATURE

For the present study, the researchers reviewed various published journals, research articles, & dissertations that were related to customer satisfaction with social media marketing.

Vikas Gautam, & Sharma, V. (2017, June 9)., The study results provided evidence of the positive significant effect of social media marketing and customer relationships on purchase intentions.

Chandwani, V. S. (2016)., The results of this study by researchers at JJT University concluded that, the comparison of social networking channels as a whole and traditional marketing channels as a whole result in favour of social networking channels as respondents significantly preferred social networking channels over traditional marketing channels. The independent channel comparison reveals that some of the social networking channels are even not preferred and some of the traditional marketing channels are preferred. Online Marketing, Facebook, Twitter and E-Mail are preferred significantly by customers when compared with traditional marketing channels but traditional channels like Television, Newspaper and Text messages are also preferred by most customers. Social networking channels are appreciated but not at the cost of the traditional marketing channels Television, newspapers and Text messages.

Erkan Akar & Birol Topçu (2011), The study proved that social media as a rising trend creates a marketplace that attracts a wide range of users.

LIMITATION

This study has some limitations, which means the findings need to be carefully analysed.

1. **Human Limitations:** The study measured the customer satisfaction of only 201 respondents who interact through social media.
2. **Place limitations:** The study is limited to the customers of the Mumbai Suburban Area.
3. **Convenience sampling** may have caused an overrepresentation of specific respondent groups.

OBJECTIVES

1. To study the profile of customers.
2. To find out reasons behind Customer Satisfaction towards Social Media Marketing.
3. To interpret the factors which are responsible for customer satisfaction towards Social Media Marketing.

HYPOTHESIS

Social Media Marketing has a significant impact on customer satisfaction.

RESEARCH METHODOLOGY

The research methodology has to be strong to minimize errors in data collection and analysis. Due to this, researchers have selected a survey/structured questionnaire method for data collection. It is described in the following table:

Type of Data	Primary & Secondary
Sampling Method	Random Sampling
Sample size	201 respondents
Research tool	Structured Questionnaire
Research Method	Descriptive
Data Collection method	Survey

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Survey Area	Mumbai Suburban
Tools to analyse data	Averages & percentage

ANALYSIS, INTERPRETATION OF DATA & FINDINGS

To analyze the gathered data and draw observed conclusions and interpretations, tabulations and graphical representations were incorporated.

Table 1: Characteristics of Respondents (N=201)

	Characteristics	Frequency	Percentage (%)
Gender	Female	135	67.7
	Male	64	31.8
	Prefer not to say	1	0.5
Age	Upto 20	155	77.1
	21-30	41	20.4
	31-40	4	2
	41-50	0	0
	51 & above	1	0.5
Occupation	A Student	186	92.5
	Retired	1	0.5
	Employed	12	6
	Self-Employed	1	0.5
	Homemaker	0	0
	Not employed	1	0.5
Education	Primary	3	1.5
	Secondary	40	19.9
	Diploma	4	2
	Degree	138	68.7
	Masters	11	5.5
	Other	5	2.5
Marital Status	Unmarried	193	96
	Married	7	3.5
	Prefer not to specify	1	0.5

Interpretation:

It was found that out of the 201 respondents, there were proportionately greater numbers of females in the study sample with 135 (67.7%) and 64 (31.8%) males and 1 (0.5%) preferred not to mention their gender. The study sample contained a greater number of younger age groups up to 20 years with 155 (77.1%), 41 (20.4%) belonging to 21-30 age group, 4 (2%) belonging to 31-40, & only 1 (0.5 %) respondent was 51 & above years old. From the above table, it was observed that 186 (92.5%) respondents belonged to the students' category, only 12 (6%) were employed respondents 0.5% of respondents each were retired, self-employed and homemakers respectively. The educational profile indicated that the majority of respondents were doing their degree education with 138 (68.7%), then it is classified as primary with 3 (15%), secondary with 40 (19.9%), diploma with 4 (2%), masters with 5 (2.5%) and others with 5 (2.5%). There were 193 (96%) reported their marital status to be single, 7 (3.5%) were reported married and 1 (0.5%) preferred not to mention their marital status.

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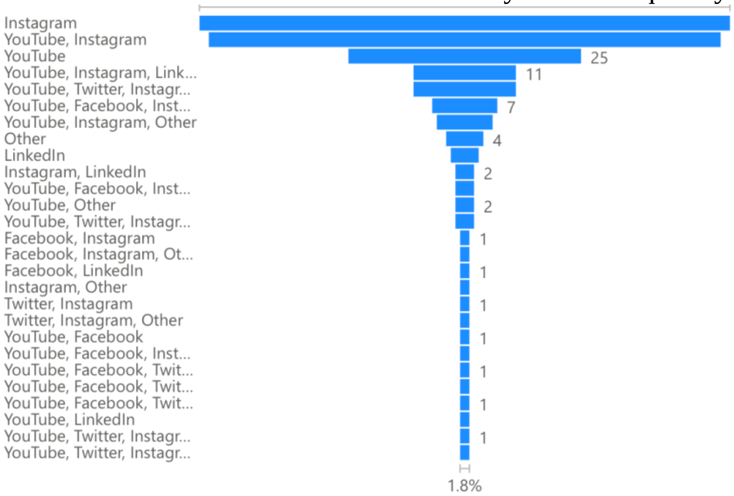
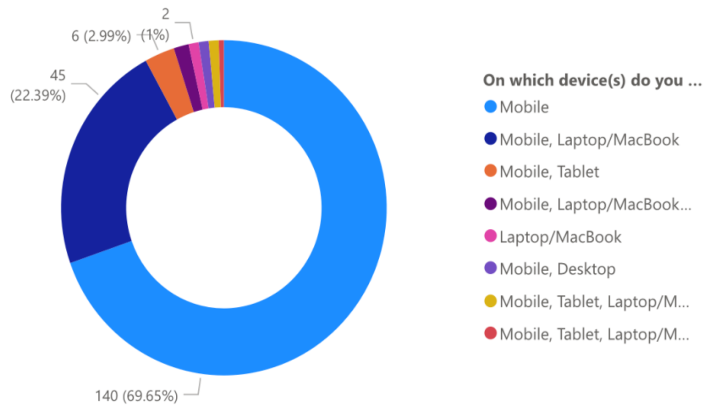
Chart 1: Which Social Media Platform do you use Frequently?



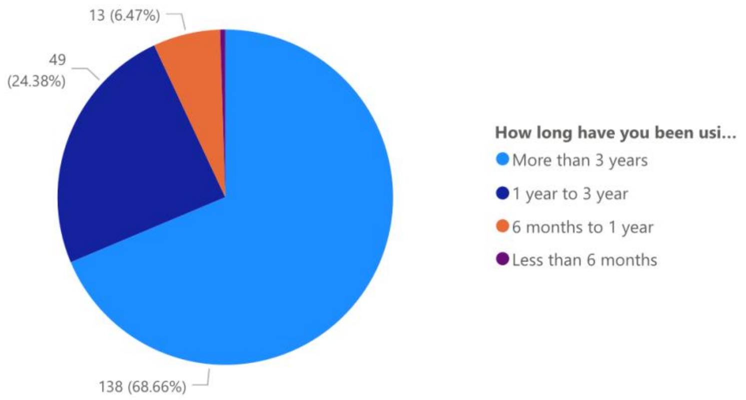
Interpretation:
It was found from this funnel that the count of the table was highest for Instagram with 57 (28.36%), followed by YouTube, LinkedIn, & Twitter.

Chart 2: On Which Device(S) Do You Use Social Media?



Interpretation:
Mobile had the highest Count of tablets at 140, followed by Mobile, Laptop/MacBook and Mobile, Tablet. Mobile, Tablet, Laptop/MacBook, and Desktop had the lowest Count of Table at 1. Mobile accounted for 69.65% of the Count of the Table.

Chart 3 & 4:



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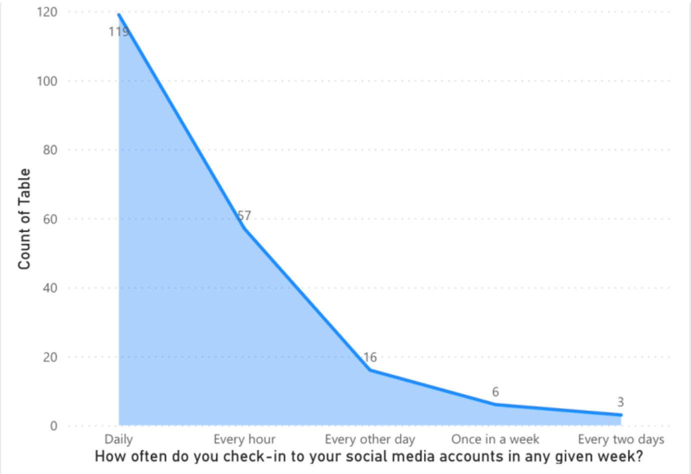
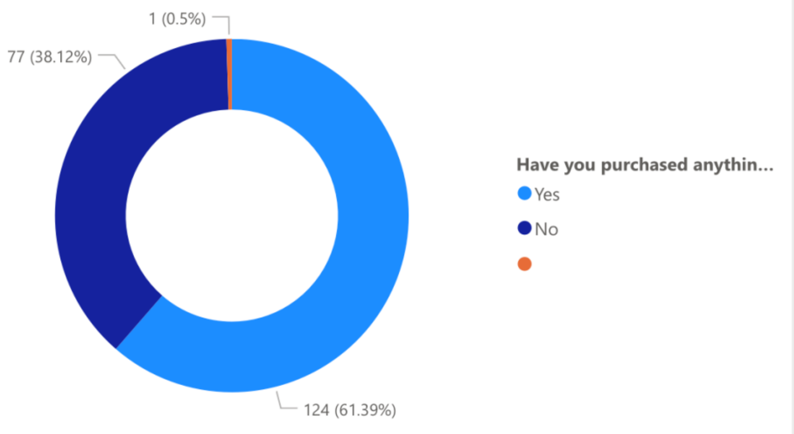


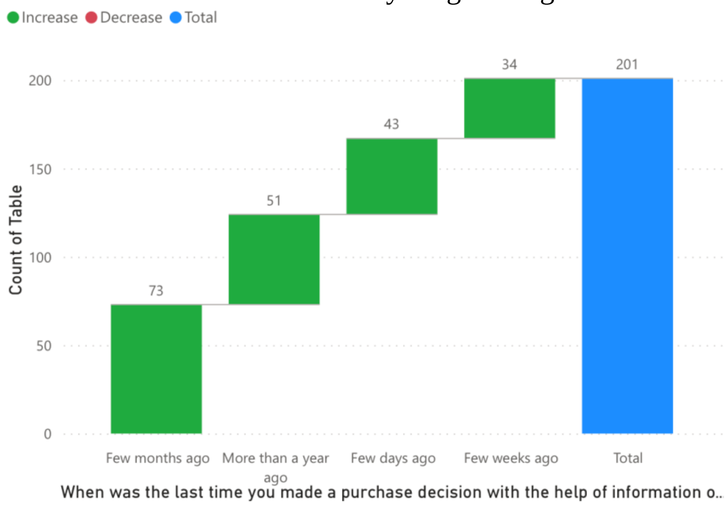
Interpretation:
When it was asked to the respondents how long they had been using social media, more than 3 years had the highest count at 138 (68.66%), followed by 1 year to 3 years, 6 months to 1 year and less than 6 months. **Chart 4 indicates** that 119 respondents check their social media daily, followed by every hour 57, every other day 16, and once a week, 6 and 3 every two days.

Chart 5: Have You Purchased Anything Through Social Media?



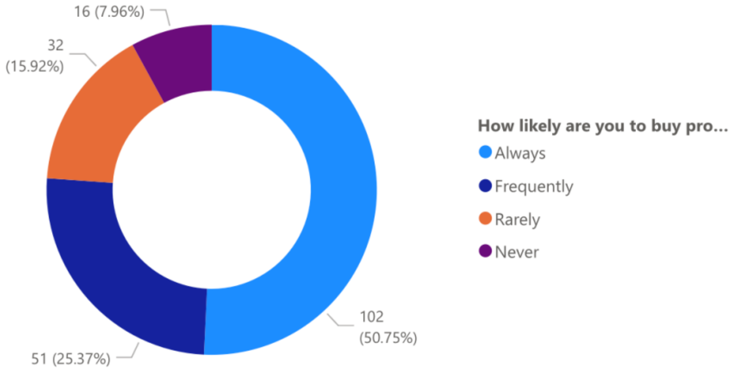
Interpretation:
The majority of respondents are active buyers using social media with 124 (61.39%), followed by saying no with 77 (38.12%).

Chart 6: Have You Purchased Anything Through Social Media?



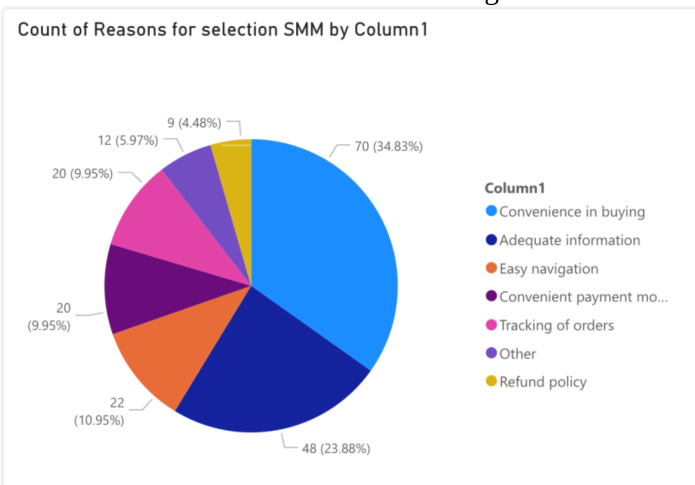
Interpretation:
Based on this waterfall chart, 73 respondents made purchase decisions with the help of information on social media a few months ago, followed by more than a year ago with 51, a few days ago with 43 and a few weeks ago with 34.

Chart 7: How Likely Are You To Buy Products Recommended Online?



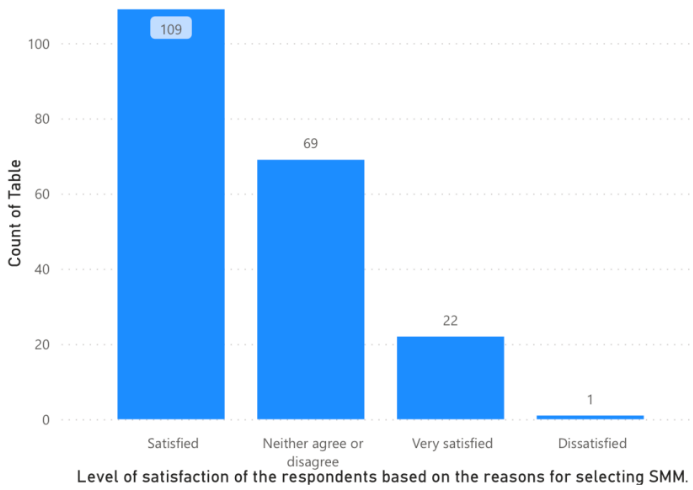
Interpretation:
The majority of respondents i.e. 102 (50.75%) always buy products recommended online, followed by frequently, rarely and never.

Chart 8: Reasons for Selecting Smm



Interpretation:
Convenience in buying had the highest count for reasons for selection of social media marketing at 70 (34.83%), followed by Adequate Information and Easy Navigation. Refund policy had the lowest count for reasons for selecting social media marketing at 9.

Chart 9: Level of Satisfaction of the Respondents Based On the Reasons for Selecting Smm.



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Interpretation:
109 (54.23%) respondents were satisfied with the reasons for selecting social media marketing, followed by neither agree nor disagree, very satisfied and dissatisfied.

Table 2: How Satisfied Are You With The Following Variables Of Social Media Marketing?

	Well maintained web pages	Content quality	Fulfilment of my expectations	Offerings as per my expectations	Happy/Fun elements after visiting webpages	Promotions, Discounts and Deals on Social Media	User friendly	Response time	Learn about new products	Social media referrals	Format of the posts	Consistency	Social media influencers	Average %
Strongly Agree	20.90	26.87	16.42	13.93	20.40	19.40	23.88	14.43	28.86	15.42	20.40	18.91	19.40	19.94
Agree	60.20	51.74	48.76	50.25	48.76	52.74	58.71	54.23	51.74	47.76	53.73	54.23	40.30	51.78
Neither agree nor disagree	14.43	19.40	28.86	29.35	22.89	22.39	14.43	25.37	16.92	30.85	21.89	22.39	28.36	22.89
Disagree	3.48	1.49	5.47	5.97	6.47	3.98	1.99	4.48	1.99	3.98	3.48	3.48	5.97	4.02
Strongly Disagree	1.00	0.50	0.50	0.50	1.49	1.49	1.00	1.49	0.50	1.99	0.50	1.00	5.97	1.38
	100.00	100.00	100	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	42	54	33	28	41	39	48	29	58	31	41	38	39	
	121	104	98	101	98	106	118	109	104	96	108	109	81	
	29	39	58	59	46	45	29	51	34	62	44	45	57	
	7	3	11	12	13	8	4	9	4	8	7	7	12	
	2	1	1	1	3	3	2	3	1	4	1	2	12	
	201	201	201	201	201	201	201	201	201	201	201	201	201	

Interpretation:
As shown in this table, the respondents expressed their satisfaction level with the given 13 variables like well-maintained web pages, content quality, fulfilment and offerings as per their expectations, happy and fun elements on sites, user-friendly, consistency in posting products, information, & social media influencers etc.

In detail, approximately 70% of the total respondents were satisfied with the given variables and we cannot ignore that around 23% of the total respondents preferred to take a neutral stand on the given variables and the rest were expecting much from the e-marketers.

RECOMMENDATION AND SUGGESTIONS

- Invest in creating a user-friendly website to give a positive experience on-site. This can be done by making navigation simple to use, optimizing the site for mobile users, securing the site & creating FAQ pages.
- E-Marketers should offer benefits with tangible value to customers who interact with them on social media channels, such as discounts or rewards in the form of points.
- E-Marketers should use their social media channels as customer service channels, allowing them to submit queries, share opinions and provide feedback to the vendors via social media channels. They should have a well-informed team managing incoming communications in a positive, direct manner.
- Host competitions on social media channels to stimulate interaction with customers.
- Safety measures should be taken to avoid fraudulent websites.
- Proactive use of social media to keep customers informed & alert them about problems & promotions.
- Conduct online customer satisfaction surveys on social media channels
- Highlight your customers through social media by telling the stories of ordinary people achieving extraordinary results with your products & services.
- Humanize your brand through social media.

SIGNIFICANCE OF THE STUDY

The findings of this study can help marketers in adopting effective social media marketing efforts, and it can also support future success. This study may help discover areas that may be weak when using social media marketing for business. It can guide & assist marketers in increasing the efficacy of their social media marketing.

CONCLUSION

Undeniably, social media has gained a higher degree of popularity in the online world. The technology evolution forces marketing networks to introduce unique business models to retain customers and have a competitive advantage.

Currently, most businesses have been utilizing one or other social media platforms for social media marketing in their strategy. Social Media Marketing is taking over traditional marketing shortly & with customer satisfaction businesses will be better placed to survive in the ultra-competitive social media-influenced era.

AREA FOR FURTHER RESEARCH

In the future, further study is suggested to examine the social media activities in customer buying behaviour.

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TECHNOLOGICAL DISRUPTIVE INNOVATION IN BANKING INDUSTRY WITH RESPECT TO MULUND AREA

Ms. Swapna Daulat Jagtap
Assistant Professor, Accountancy Department, The Kelkar Education Trust's, V. G. Vaze College of Arts, Science & Commerce (Autonomous)

ABSTRACT
In today's technical world many different innovations takes place, innovation means the action or process of creating something new, in fact the present scenario of the world demands creativity to become successful in our life. According to Harvard Business Review the theory of Disruptive Innovation introduced in 1995 as a 'Powerful way of thinking about innovation-driven growth.'

Banks plays an important role in our life; it helps in fulfilling our needs related to financial activities, but in this growing word the changing needs and perception of customer, changing regulations, and changing situation like COVID-19 demands innovations in the banking sector. Use of ATM, Credit card, Online Banking, different schemes of government, different mobile applications like Google pay, Bhim, Phonepay, PayTm are some of the Innovations in Banking Sector which results in increased use of technology for services of banking, growth in our banking sector, it also results in digitalization which is proved to be a Disruptive innovation in Banking Sector.

This Study is an attempt to study the technological innovations in Banking Industry and its impact on Performance of Banks and efficiency towards consumer satisfaction. I have used secondary data and primary data for this study.

INTRODUCTION
In India Banking forms the base for the economic Development. In recent time banking is multidimensional service sector, despite of accepting deposits and giving loan, banking gives you many more services to insure the smooth flow of finance in an economy and also to satisfy their customer. Banking has introduced lot of services keeping in view the needs and convenience of the customers.

In Banking sector services like

ATM – Automated teller Machine: Through this machine we are having access to money kept in our account 24 hours 7 days, we can use this machine to withdraw money, pay utility bills etc.

Electronic Clearing Services (ECS): Through these services we can link our monthly payment like loan instalments, policy premium to be transferred automatically through our bank account every month.

National Electronic Fund Transfer (NEFT) and Real time Gross Settlement (RTGS): Through these services we can transfer our fund to other account quickly by filling a form of bank which will take 2 to 3 days to transfer the fund.

Point of Sale: Through this service we can pay bill amount using debit card or credit card

And many more such services like **Internet Banking, Electronic data interchange, Mobile Banking, Structured financial Messaging Solutions, Core Banking Solutions has been introduced**, these all are the result of updated technology so we can call it as technological innovations. Banks has also introduced mobile apps for the banking services, it is a one place where you can avail many facilities like payment of utility bills, requesting cheque book/ account statement, opening different accounts, transfer of funds and many more

Disruptive Innovations can be called as innovation which creates a new market and network in the same line of business. All the above innovations in banking sector results in increase of the banking services and created technical awareness in customer leads to increase in use of banking in a new way.

REVIEW OF LITERATURE
A research paper 'Technological Innovations in Indian Banking Sector: Changed Face of Banking' by Seema Malik aims to study how innovations have contributed to the development of Indian banking & study the challenges faced by Indian banks in the changing scenario, concluded that the no. of ATMs have been doubled in past few years, mobility and customer convenience viewed as primary factor of growth, the scope of mobile and internet banking is big. from this paper we can say lot of technological innovations takes place and technology gives scope for the innovation like mobile or internet banking etc. in banking sector which leads to survival and increase use of banking services.

In a research paper “New Technological changes in Indian Banking Sector” Dr. G. Anbalagan concluded that, the Indian Banking sector has improved the term and new technology. The innovative banking technology changing reforms have changed the face of Indian banking and financial sector. The banking system has improve the manifolds in terms of product and services, technology, banking system, trading facility etc. it is the evident that the banking system has grown in India to compare with other country. Future, the banks comprehends their customer and bank will be meeting their requirements. Indian Banking Sector provide better services with other developed banks.

OBJECTIVES

The researcher aims to

- Study and analyze the performance of technological innovations in banking sector.
- Study the views of customers.

LIMITATIONS OF THE STUDY

Due to time limit and current scenario of COVID 19 the data is collected from limited no. of respondents' trough online survey of GOOGLE form

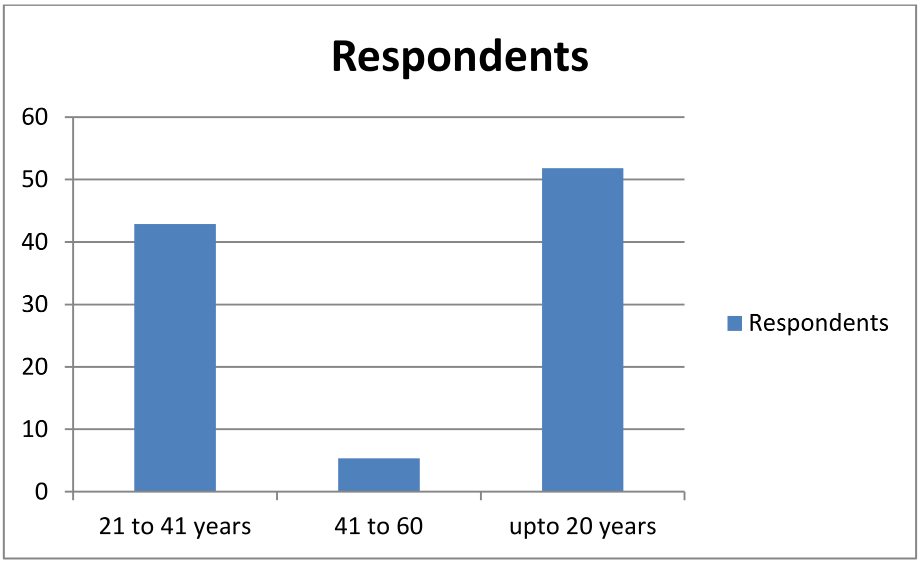
SOURCES OF DATA

The researcher has used both primary and secondary data for the purpose of this study.

Report on Trends and Progress of Banking in India 2019-20 used for the study of the performance of technological innovations in banking sector.

A survey made to study the views of customers.

Respondent to the survey



FINDINGS

After analyzing Report on Trends and Progress of Banking Sector 2019-20 (Secondary Data) and result of survey through GOOGLE form the researcher has found that almost 90% of the customers visit the bank only once in a month. Most of the customer likes to do the payment and through online mode almost 86% of the customers are using online mode and services of the banks.

According to report published by the RBI there is 14% increase in the debit card payments, 13% increase in the credit card payment, 40% increase in UPI payments in the year 2019-20 as compared to the year 2018-19

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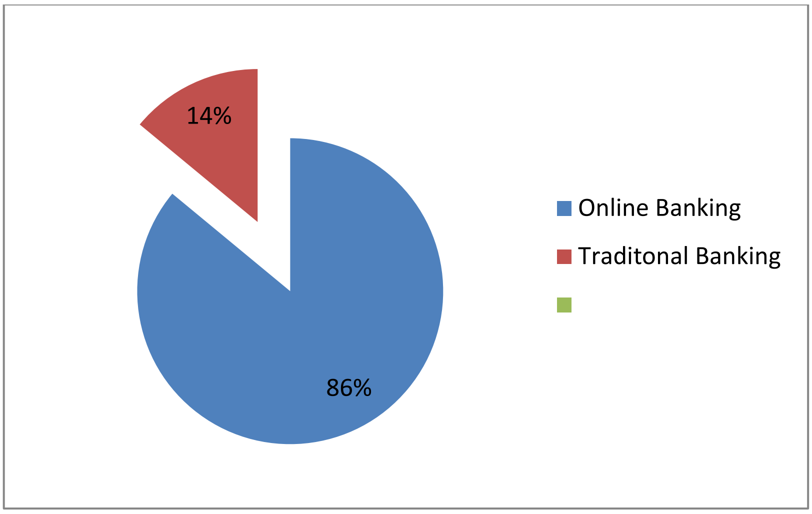

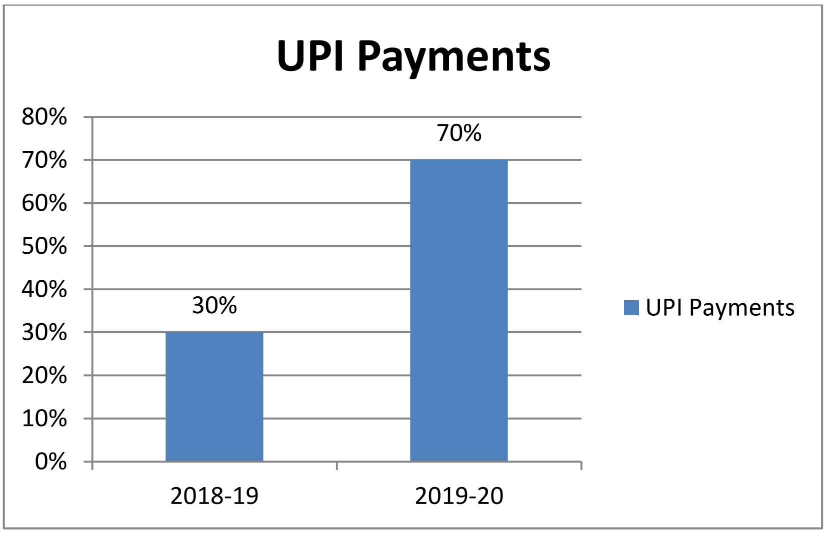

According to the survey the customers find using online means of banking is convenient as it saves time, it does not require any paper work, customers find it easy to do the transactions only by one click.

But some customers finds it difficult to use technology due Lack of awareness and lack of knowledge of using technology like laptops and android mobiles even some customers above the age of 50 don't know that how to use the ATM for withdrawal of cash, the customers also not comfortable in using the technology in way of mobile apps, UPI apps, internet banking due to Safety issue.

Some customers liked the facilities given by banks such as online transactions, Digital Banking, Account opening in just 30 min; Quick customer services, monthly statement given by banks, requesting account statements, cheque books etc. through mobile apps. Even some banks gives D Mat account services and conducts the webinar for awareness and information about the stock markets.

CONCLUSION

Indian banking sector has introduced many technological innovations which facilitates customer convenience in present scenario. The technological innovation and present scenario of COVID 19 results increased use of online banking by the customer. Increased use of technology leads to digitalization. In present scenario most of the people have started using UPI payment apps, net banking, and mobile banking apps. Hence use of technology is proved as disruption to traditional banking.

Customers above the age of 50 find it difficult to use all the technology introduced by bank and hence happy & stick to use the traditional banking

SUGGESTIONS

- Banks should undertake awareness program for use of technology. The awareness program can be an e-content uploaded on YouTube, it can be workshops etc. banks can appoint a person for giving demo of all the services provided by the banks.

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- Banks should provide improved security services for use of technology
- Every bank should provide good customer services, quick account opening services and credit points for use of online banking services.

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EXPLORING MEDIATING-MODERATING FACTORS BETWEEN TRANSFORMATIONAL LEADERSHIP AND INNOVATIVE WORK BEHAVIOR: A SYSTEMATIC LITERATURE REVIEW

Rajesh Kumar[1] and Shivam Kumar[2]
[1]Himachal Pradesh University Business School, Himachal Pradesh University, Shimla, India
[2]Himachal Pradesh University Business School, Himachal Pradesh University, Shimla, India

ABSTRACT

The dynamic and ever-evolving nature of the modern workplace necessitates a deep understanding of leadership dynamics and their impact on employee behavior. Transformational leadership, characterized by inspirational motivation, idealized influence, individualized consideration, and intellectual stimulation, has gained prominence in recent years as a key driver of innovative work behavior. This systematic literature review aims to comprehensively explore the mediating and moderating factors that influence the connection between innovative work behavior and transformational leadership. Through an exhaustive examination of existing research, this review identifies key mediating-moderating factors, methodological approaches, and gaps in the literature, offering insights for future research and practical implications for organizational leaders.

Keywords: *Transformational leadership, innovative work behavior, innovative behavior, IWB*

1. INTRODUCTION

In today's knowledge-based economy, work is relied on knowledge and less rigid structured. Innovation is an essential component of the organizational success in this competitive and dynamic business environment (Grošelj et al., 2020). Organizations face ongoing challenges from one another, which increases the need for flexibility and adaptation to the complex globalized environment, therefore innovation is needed now more than ever (Stanescu et al., 2020). Organizations are required to continuously enhance their products and services in order to outperform their competition through innovation (Srirahayu et al., 2024).The success of modern organizations in the highly competitive and dynamic environment comes from significant evolutionary developments that rely on learning, creativity, effective leadership, and continuous improvement (Zaman & Abbasi, 2020). In today's extreme and competitive global market, individuals, groups, communities, organizations, and countries must prioritize innovation to stay ahead (Zainal & Mohd Matore, 2021). Innovation in organizational practices is especially significant since it can highly affect numerous elements of organizational life, such as working conditions and job productivity of employees or cost reduction of the business (Zappalà et al., 2021). Innovation theory frequently highlights that innovation encompasses more than just creativity; it also involves putting produced ideas into practice. As a result, De Jong and Den Hartog developed innovative work behaviors that not only explain the issue of how to come up with ideas but also help develop the behaviors required for implementing them (Prameswari et al., 2020). Innovation is vital for businesses to survive in challenging business environments and enable the organization to improve performance, gain a competitive advantage, expand, and ensure survival (Matookchund & Steyn, 2020). Innovation may occur in two forms: radical innovation, which involves introducing something completely new to the market, or incremental innovation, which involves making little improvements to already-existing goods or services (Tan et al., 2023). In order to achieve organizational innovation, organizations rely heavily on employees' innovative behavior (Sung & Kim, 2021).

Innovative work behavior involves generating, promoting, and implementing innovative ideas, products, services, or procedures within a role, group, or organization (Umair et al., 2023). An employee's innovative work behavior means beyond the basic job duties and responsibilities, if compared to the daily job performance, innovative work behavior comprises development and implementation of innovative ideas (Bin Saeed et al., 2019). This type of behavior occurs when ideas for enhancing personal and business performance are generated, championed, and implemented (Afsar et al., 2014). Employees that are able to generate ideas and transform them into effective products and services can achieve higher business results (Pradhan & Jena, 2019). Innovative work behavior consists of all individual efforts in an organization that aim to develop, promote, and adopt valuable innovations (Jia & Li, 2024). Innovative work bahvior in this knowledge-based economy is seen as an important tool that is vital to getting an advantage over rivals because no company can thrive without constant innovation (Yusuf et al., 2023). Innovative work behavior encompasses all individual activities in an organization to discover, promote, and execute meaningful innovations (Kaymakcı et al., 2022).

Leaders are very much concerned about innovation and managers all around the world who have to deal with promoting innovative work behavior among the employees who experience a variety of challenges (Tan et al., 2021). A transformational leader pushes team members to reach their full potential by assisting them in developing fresh perspectives on issues that improve their innovative thinking (Tayal et al., 2022). Transformational leaders are those leaders who inspire their team members to go above and beyond expectations by taking into account their personal needs raising the possibility that workers will react in a creative way (Sung & Kim, 2021). Transformational leaders foster the employees learning and development, promoting new ideas and sharing knowledge to promote creativity and innovation (Gomes et al., 2021). Previous research has indicated that leaders possessing a transformational mindset are more successful in fostering innovative behavior in their subordinates as compared to those with transactional leadership (Khan et al., 2019).

A number of academics and scholars have discovered that transformational leadership is particularly effective in promoting employees' innovative work behavior and it has been identified that there is a strong connection between innovative outputs and transformational leadership is dependent on a number of factors and is more complicated than previously thought (Bin Saeed et al., 2019). However, few research has been conducted to investigate the mediation-moderation factors between transformational leadership and innovative work behavior but very little attention has been given on gaining a comprehensive understanding of mediating-moderating factors that impact on innovative work behavior through transformational leadership. Therefore, the purpose of this paper is to perform a comprehensive literature review to discover the various mediating-moderating variables that strengthen the association between innovative work behavior and transformational leadership and how it affects the employee's performance. This paper also highlights gaps and future research scope.

2. RESEARCH METHODOLOGY

Since the objective of the study to find out the mediating-moderating factors between transformational leadership and innovative work behavior. In order to find the mediating and moderating factors, we performed a systematic literature review by analyzing relevant articles with the topic.

2.1 Research Approach

This study focuses to develop mediating-moderating models which includes various factors that strengthens the impact of transformational leadership on fostering innovative work behavior. The identified articles must meet a specific standard to be considered for this review.

2.2 Data Collection

Scopus database has been used for this study as it is more extensive and reliable. To search the relevant articles, we have used the keywords like “Transformational leadership”, “Innovative work behavior”, “Innovative behavior”, “IWB”.

2.3 Inclusion Criteria

The identified articles have to fit a set of requirements in order to be considered for this review. Thus, considered all the articles that were published on the Scopus database for this comprehensive evaluation of the literature. The articles additionally need to be published in high impact journals as these are considered to give reliable data and hence have a significant influence in the field.

2.4 Data extraction procedure

The initial step in the sample analysis was to look for irrelevant data. Following that, the abstracts were evaluated in relation to the inclusion criteria. If the work was still relevant, the methodology and discussion parts were read and summarized to find out the factors which have either mediating or moderating influence that strengthens the relationship.

Figure 1 illustrates a flow chart describing the stages of selecting papers for this review. Step 1 found a total of 162 items; Step 2 reduced the sample by 90 articles after checking the title and abstracts of the remaining 74 articles for compliance with the inclusion criteria, which resulted in the removal of 4 articles, leaving 70. The introduction, methodology, and discussion portions of these papers were thoroughly reviewed against the inclusion criteria that matched all of the inclusion standards.

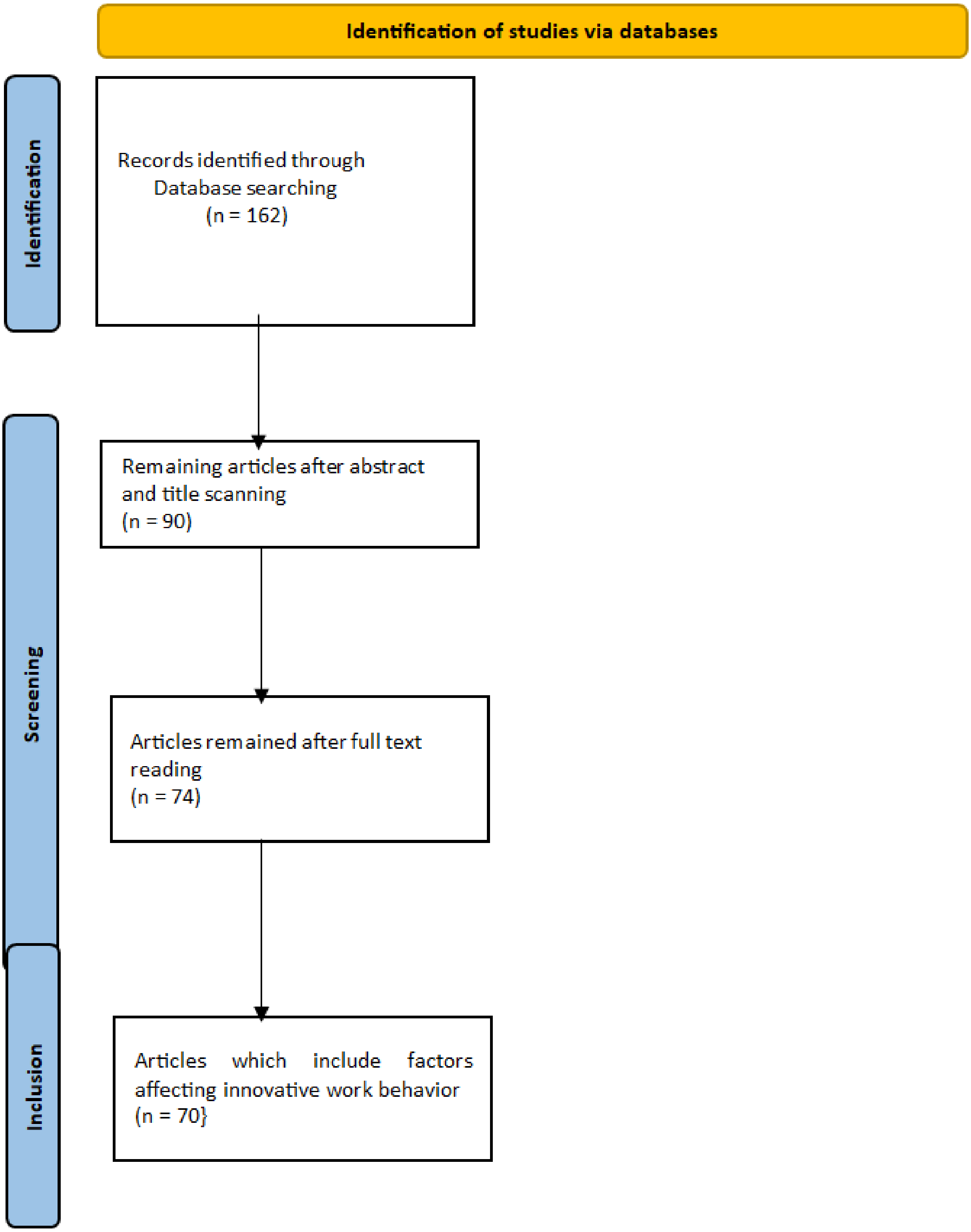

Figure 1. Prisma flow chart visualizing the article selection process

3. Identification of Mediating Factors:

S No.	Factors	Papers Included
1	Work engagement	Barkat et al. (2023);Thanh et al. (2022); Gemeda and Lee (2020) ;Kurniawan et al. (2021); Aryee et al. (2012); Li et al. (2019); Contreras et al. (2020); Lin et al. (2023)
2	Commitment to change	Jun and Lee (2023)
3	Task orientation	Goulaptsi et al. (2020)
4	Psychological	Garg et al. (2023); Umrani and Afsar (2019); Stanescu et al. (2020);

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	empowerment	Afsar et al. (2014); Udin and Dananjoyo (2024); Lim et al. (2024); Mohammed and Al-Abrrow (2024); Setiawan et al. (2020); Alwali (2023)
5	Leader-member exchange (LMX)	Yusoff et al. (2020); Surucu et al. (2021); Vermeulen et al. (2022); Sharif et al. (2024)
6	Perceived support for innovation and Innovation readiness	Tan et al. (2021)
7	Creative self-efficacy	Lim et al. (2024); Afsar and Masood (2018)
8	Knowledge sharing	Rehmani et al. (2022); Suryanarayana (2022); Bednall et al. (2018); Suhana et al. (2019); Choi et al. (2016); Masood and Afsar (2017); Udin and Dananjoyo (2024); Bahagia et al. (2024); Rafique et al. (2022); Sharif et al. (2024)
9	Absorptive capacity	Contreras et al. (2020)
10	Thriving at work	Alwahhabi et al. (2023)
11	Perceived autonomy & competence	Messmann et al. (2022)
12	Employee engagement	Nguyen and Petchsawang (2024)
13	Organizational embeddedness	Amankwaa et al. (2019)
14	Innovative climate	Srirahayu et al. (2024); Zhang et al. (2018); Kang et al. (2015); Korku and Kaya (2023); Naami and Asadi (2011)
15	Collaborative HRM	Su et al. (2020)
16	Organizational trust	Yudiatmaja et al. (2023)
17	Organizational commitment	Arsawan et al. (2022); Abdullah et al. (2015)
18	Trust in leader and connectivity with the leader	Li et al. (2019)
19	Psychological capital	Bak et al. (2022); Karimi et al. (2023)
20	Organizational culture	Rashwan and Ghaly (2022)
21	Organizational climate	Afsar and Masood (2018)
22	Job autonomy and supportive management	Amankwaa et al. (2019)
23	Job crafting	Afsar et al. (2019)
24	Meaningful work	Pradhan and Jena (2019)
25	Intrinsic motivation and Proactive behavior	Yi et al. (2019); Masood and Afsar (2017)
26	Motivation to learn	Afsar and Umrani (2020)
27	Organizational identification and employee voice	Lin (2023)
28	Affective commitment	Azinga et al. (2023)
29	Altruism	Alnajjar and Hashim (2020)

Source: Authors' construct

4. MEDIATING FACTORS AND THEIR EFFECT ON INNOVATIVE WORK BEHAVIOR

Work engagement works as an important mediator, indicating that engaged employees are more likely to exhibit innovative behavior and perform better (Barkat et al., 2023). This emphasizes the need of sustaining high levels of engagement in order to maximize transformational leadership's overall contribution to organizational innovation (Thanh et al., 2022). Additionally, Commitment to change serves as a bridge between transformational leadership and innovative employee behavior. Transformational leaders can indirectly impact and improve their staff' innovative behaviors by cultivating a strong commitment to organizational change, emphasizing the value of adaptability in generating innovation (Jun & Lee, 2023). Moreover, Task orientation helps to encourage employees to accept new ideas and methods, resulting in innovative behavior. Thus, emphasizes the importance of a concentrated, goal-oriented approach to encouraging creativity (Goulaptsi et al., 2020).

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Furthermore, psychological empowerment acts as a mediator in the relationship between innovative activity at work and transformational leadership (Garg et al., 2023). Transformational leaders promote employee empowerment, which improves intrinsic motivation and information sharing, both of which are essential for encouraging innovative work behavior (Umrani & Afsar, 2019).

In addition, Leader-member exchange (LMX) serves as a bridge between transformational leadership and innovative behavior at work (Yusoff et al., 2020). A high-quality leader-employee connection creates trust and mutual respect, resulting in innovative outcomes inside the organization (Surucu et al., 2021). The relationship between transformational leadership and innovative behavior is mediated by perceived innovation support and readiness. This emphasizes the need of an organizational climate that encourages and prepares for innovation, allowing employees to participate in innovative activities (Vermeulen et al., 2022). Furthermore, Knowledge sharing is a vital link between transformational leadership and innovative workplace behavior (Rehmani et al., 2023).

Transformational leadership encourages innovative behavior among employees by improving information flow and collaboration, emphasizing the importance of a knowledge-sharing culture in driving innovation (Masood & Afsar, 2017). On the other hand, absorptive capacity serves as a link between transformational leadership and innovative workplace behavior. It ensures that employees can absorb and apply new information, hence increasing their inventive talents, which is required for transformational leadership to effectively drive innovative work behavior (Contreras et al., 2020). Then, thriving at work bridges the gap between transformational leadership and innovative work behavior. Transformational leaders indirectly promote a more creative workforce by increasing employees' sense of vitality and learning, emphasizing the importance of employee well-being in driving innovation (Alwahhabi et al., 2023). Moreover, perceived autonomy and competence are critical mediators in promoting innovative behavior. Employees that feel autonomous and competent are more likely to engage in innovative activities, emphasizing the importance of these psychological demands in fostering innovation (Messmann et al., 2022). This link emphasizes the importance of leadership in creating an environment conducive to innovation by boosting employees' confidence in their creative talents (Afsar & Masood, 2018). Consequently, transformational leadership and innovative work behavior are mediated by organizational embeddedness. Employees who feel connected and integrated within their organization are more likely to engage in innovative behavior, demonstrating the value of organizational integration in encouraging innovation (Amankwaa et al., 2019). Additionally, the relationship between transformation leadership and innovative workplace behavior is mediated by the innovation climate (Srirahayu et al., 2024). A favourable innovation climate, driven by transformational leadership, creates an environment conducive to innovation, resulting in unique outcomes within the organization (Zhang et al., 2018). Then, individual innovative behavior and transformational leadership are mediated by collaborative human resource management (HRM). Transformational leaders indirectly enhance innovation by encouraging collaborative HR practices, emphasizing the importance of HRM in promoting innovative work behavior (Su et al., 2020). Additionally, transformational leadership and innovative work behavior are mediated by organizational trust. Building trust inside the organization strengthens the positive benefits of transformational leadership on promoting innovation, emphasizing the significance of trust in creating innovative outcomes (Yudiatmaja et al., 2023). Furthermore, organizational commitment helps to mediate the interaction between transformational leadership and innovative work behavior. High staff commitment promotes innovative behavior, implying that cultivating commitment is vital for realising transformational leadership's innovative potential (Arsawan et al., 2022). Moreover, the relationship between transformational leadership and innovative work behavior is mediated by trust and connectivity with the leader also. Strong trust and connections with leaders have a favourable impact on work engagement and innovative behavior, emphasizing the role of relational trust in promoting innovation (Li et al., 2019). Then, the relationship between transformational leadership and innovative workplace behavior is mediated by psychological capital (Bak et al., 2022). Psychological capital, which includes self-efficacy, hope, resilience, and optimism, demonstrates the relevance of employees' psychological resources in generating innovative behavior under transformational leadership (Karimi et al., 2023).

Furthermore, Transformational leadership and innovative work behavior are mediated by organizational culture. A healthy organizational culture directs the influence of transformational leadership on creative behavior, emphasizing the importance of culture in promoting innovation (Rashwan & Ghaly, 2022). Moreover, transformational leadership's effect on innovative work behavior is mediated by creative self-efficacy. Employees' trust in their creative talents is essential for converting transformational leadership into innovative outcomes (Afsar & Masood, 2018). Consequently, the relationship between transformational leadership and innovative workplace behavior is mediated by the organizational climate also. It serves as a bridge, ensuring that the beneficial influence of transformational leadership transfers into creative behavior, emphasizing the need of a supportive environment in promoting innovation (Afsar & Masood, 2018). In addition, job autonomy and supportive management serve as bridge between transformational leadership and innovative work behavior. Giving people the flexibility and support they need to innovate boosts their innovative capacities, emphasizing the importance of autonomy and support in encouraging innovation (Amankwaa et al., 2019).

Job crafting also influence the relation between transformational leadership and innovative workplace behavior. Transformational leaders encourage people to change their job duties in ways that promote creativity, highlighting the importance of proactive job redesign in fostering innovative behavior (Afsar et al., 2019). Then, meaningful work helps regulate the interaction between transformational leadership and innovative workplace behavior. Transformational leaders encourage innovation by making work meaningful for their workers, emphasizing the significance of meaningfulness in encouraging innovative behavior (Pradhan & Jena, 2019).

Intrinsic motivation and proactive behavior completely mediate the association between transformational leadership and innovative work behavior (Yi et al., 2019). Transformational leaders promote sustained innovation by increasing intrinsic motivation and fostering proactive behavior, emphasizing the importance of these elements in supporting innovative work behavior (Masood & Afsar, 2017). However, Motivation to learn improves employees' abilities and knowledge, both of which are essential for innovation. Transformational leaders indirectly encourage innovative work behavior among their workers by cultivating a culture that values continuous learning (Afsar & Umrani, 2020). Moreover, Transformational leadership and innovative work behavior are linked through organizational identification and employee voice. Transformational leaders instil a strong sense of belonging and identity within the organization, encouraging people to engage in creative problem-solving and innovation. Furthermore, they foster an open environment in which employees feel free to voice their thoughts and opinions, increasing their sense of ownership and participation (Lin, 2023). The association between transformational leadership and innovative behavior among employees is mediated by affective commitment. The increased affective commitment motivates employees to go above and beyond their normal responsibilities, fostering a strong desire to contribute to the organization's success (Azinga et al., 2023). Altruism acted as a bridge between transformational leadership and innovative workplace behavior. Women demonstrated a strong correlation between altruism and innovative work behavior than males (Alnajjar & Hashim, 2020).

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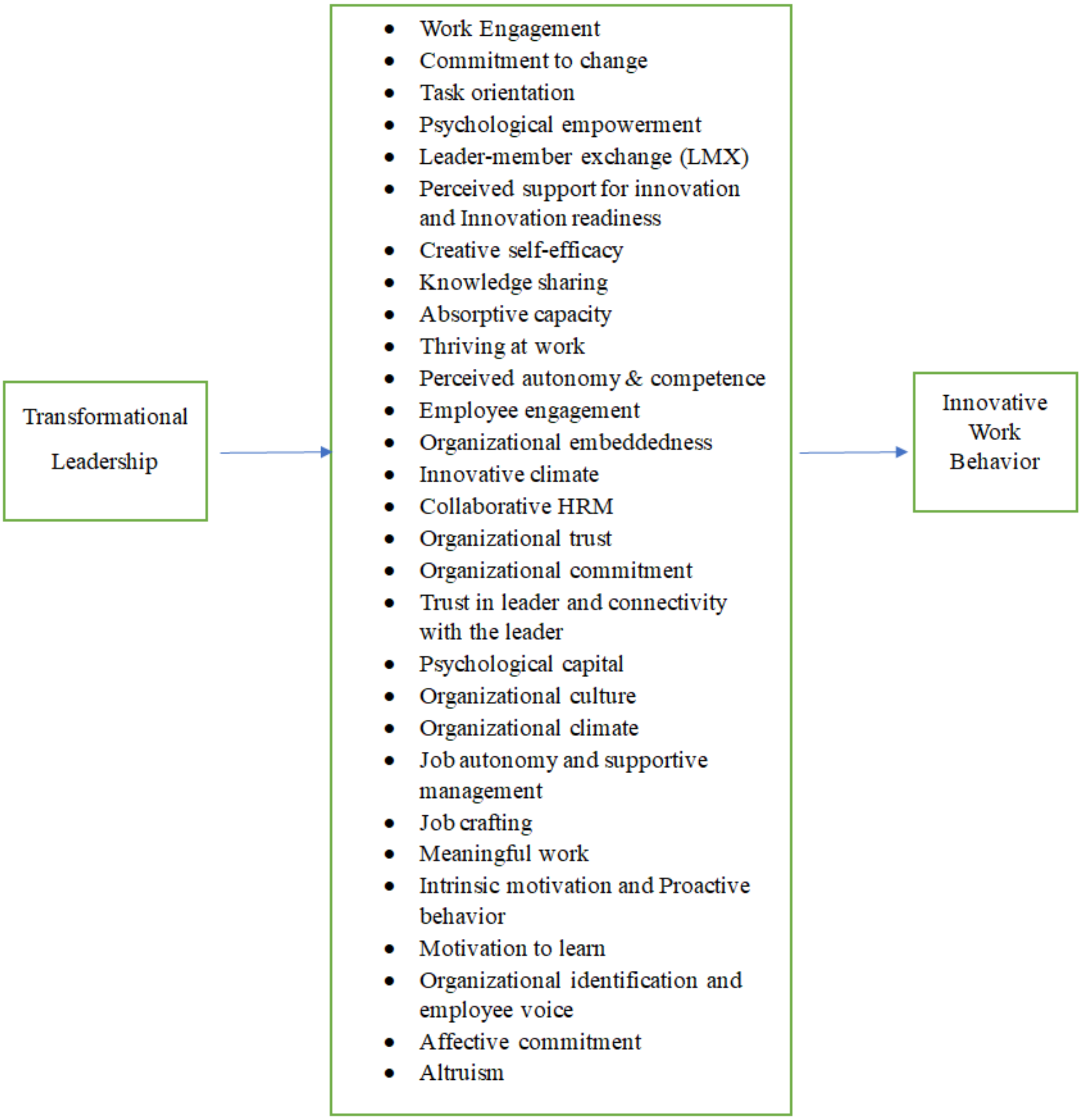

Figure 2. Factors affecting innovative work behavior

5. Identification of Moderating Factors:

S No.	Factors	Papers Included
1.	**Psychological empowerment**	Kustanto et al. (2020); Grošelj et al. (2020); Pieterse et al. (2009) ; Li et al. (2019); Lin et al. (2023); Khan et al. (2019)
2.	**Affective commitment**	Khaola and Musiiwa (2021)
3.	**Attachment anxiety**	Umrani and Afsar (2019)
4.	**Organizational justice**	Khaola and Musiiwa (2021); Lim and Moon (2022)
5.	**Radical change**	Feng et al. (2016)
6.	**Knowledge sharing**	Afsar et al. (2019)
7.	**Innovativeness**	Zhang et al. (2018)
8.	**Self-construal**	Afsar et al. (2014)
9.	**Verbal rewards**	Hansen and Pihl-Thingvad (2019)
10	**Perceived organizational**	Choi et al. (2016)

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	support	
11	**Task complexity**	Afsar and Umrani (2020)
12	**Innovation climate**	Afsar and Umrani (2020)

Source: Authors' construct

6. MODERATING FACTORS AND THEIR EFFECT ON INNOVATIVE WORK BEHAVIOR

Employees with high degrees of psychological empowerment have more autonomy, which encourages creativity (Kustanto et al., 2020). High degrees of empowerment result in the most innovative behavior, which improves transformational leadership's ability to nurture innovation (Grošelj et al., 2020). Furthermore, Affective commitment and organizational fairness both help moderate the impact of transformational leadership on innovative work behavior. Transformational leadership also impact on the innovative behavior when employees have high degrees of affective commitment and perceive high organizational justice, emphasizing the relevance of fairness and emotional attachment in promoting creativity (Khaola & Musiiwa, 2021). Additionally, the existence of attachment anxiety has a positive interaction effect, indicating that employees with higher attachment anxiety are more likely to benefit from transformational leadership in terms of innovative behavior (Umrani & Afsar, 2019). Transformational leadership also influences the innovative behavior through the radical change. This suggests that transformational leadership is most effective at generating innovation at the time of extreme change (Feng et al., 2016). Moreover, knowledge sharing behavior also play a mediating role between transformational leadership and innovative behavior. Fostering a culture of knowledge sharing improves transformational leadership's impact on innovation by encouraging people to exchange information and ideas, which boosts their innovative capacities (Afsar et al., 2019). In addition, innovativeness enhances the relationship by reinforcing the link between transformational leadership and innovative behavior. In organizations with a high level of innovativeness, transformational leadership has a substantial impact on promoting creativity (Zhang et al., 2018). Then, self-construal influences the transformational leadership and innovative work behavior as a mediating factor. The association is stronger for employees with a higher interdependent self-construal and a lower independent self-construal, implying that individuals who regard themselves as part of a group or community respond more positively to transformational leadership in terms of innovative behavior (Afsar et al., 2014). Consequently, verbal awards, when combined with transformational leadership, emphasize behaviors that contribute to the organization's vision, hence increasing innovation (Hansen & Pihl-Thingvad, 2019). Perceived organizational support (POS) improves the impact of transformational leadership on innovative work behavior. POS increases employees' intrinsic motivation to address organizational problems, strengthening the impact of transformational leadership on creativity (Choi et al., 2016). Task complexity and innovation Climate influences the link between transformational leadership and workers' innovative work behaviors. When tasks get more complicated, transformational leadership has a greater positive impact on innovative work behavior. Transformational leaders provide people with the vision, support, and encouragement they need to navigate and solve complicated problems creatively (Afsar & Umrani, 2020).

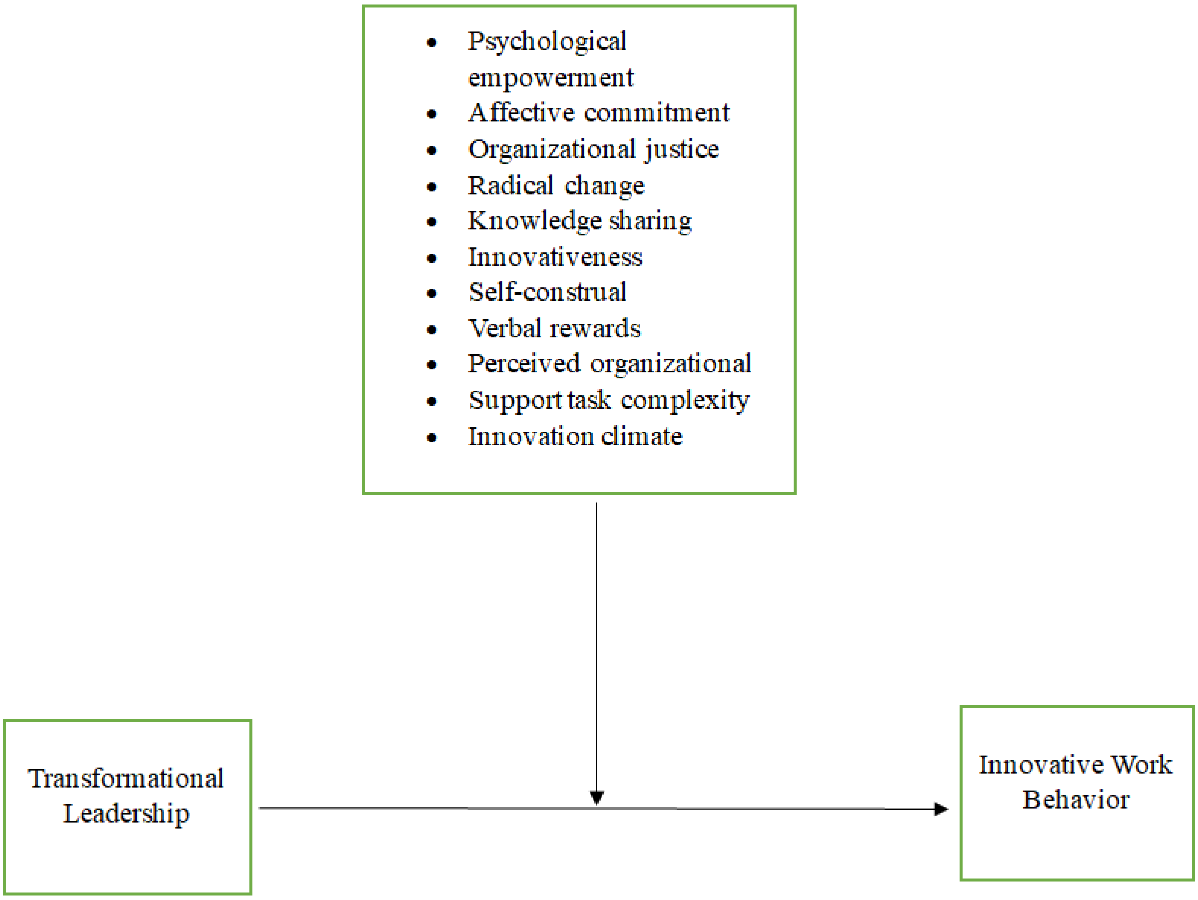

Figure 3. Factors affecting innovative work behavior

7. DISCUSSION

The findings provide insight on the numerous crucial mediating factors that contribute to this dynamic relationship. The concept of work engagement is central to this relationship, acting as a key mediator (Lin et al., 2023). Employees that are engaged are more likely to display innovative behaviors, implying that promoting high levels of engagement might maximise transformational leadership's impact on organizational innovation. Another essential mediator is commitment to change, which emphasizes the role of adaptation and organizational change in driving innovation (Jun and Lee, 2023). Transformational leaders that build a strong commitment to change can indirectly improve their employees' innovative behaviors by fostering a culture of flexibility and adaptability. Task orientation is also an important factor in this relationship. Transformational leaders can promote an environment in which people are more open to new ideas and procedures, hence promoting innovative behaviors. Another significant mediator is psychological empowerment, since transformational leaders can have a positive effect on employee empowerment, which in turn increases intrinsic motivation and information sharing—both of which are necessary for developing innovative work behavior (Umrani and Afsar, 2019). Similarly, leader-member exchange (LMX) facilitates this relationship by fostering trust and mutual respect, both of which are essential for organizational creativity. The organizational climate, including perceived innovation support and readiness, is critical for turning transformational leadership into innovative results (Afsar and Masood, 2018). A friendly and prepared organizational climate encourages employees to participate in innovative activities, emphasizing the importance of a suitable environment for innovation.

Knowledge sharing is another important mediator. Transformational leadership encourages innovative conduct by fostering an environment of information flow and cooperation. This conclusion emphasizes the need of cultivating a knowledge-sharing culture to drive innovation (Rehmani et al., 2023). The concept of absorptive capacity helps to bridge the gap between transformational leadership and innovative workplace conduct. Transformational leaders may improve the innovative capacities of their teams by ensuring that people can acquire and utilise new information. Thriving at work also acts as a facilitator, with transformational leadership indirectly encouraging creativity by improving employees' sense of vitality and learning. Perceived autonomy and competence are crucial in promoting creativity. Employees that feel autonomous and competent are more likely to participate in innovative activities, emphasizing the need of fulfilling these psychological demands.

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Organizational embeddedness also plays a role in this relationship, demonstrating that people who feel engaged and integrated within their organization are more likely to innovate (Amankwaa et al., 2019). Organizational culture and environment are critical to improve the influence of transformational leadership on innovative workplace conduct. A healthy culture and an environment conducive to innovation ensure that transformational leadership's beneficial influences on creative behaviors (Rashwan and Ghaly, 2022). HR strategies, particularly collaborative HRM, and organizational trust play important roles. Transformational leaders promote innovation by encouraging collaborative practices and instilling trust in the organization. This highlights the significance of trust and collaboration in achieving new results. Furthermore, psychological capital, which includes self-efficacy, hope, resilience, and optimism, is required for innovative behavior under transformational leadership (Karimi et al., 2023). Employee psychological resources are critical for turning transformational leadership into innovation. Job autonomy, supportive management, and job crafting all help to buffer this relationship. Providing people with the flexibility and assistance they require to innovate increases their inventive capacity. Furthermore, making work meaningful and increasing intrinsic motivation and proactive behavior are critical for maintaining innovation. The study emphasizes the significance of organizational identification and employee voice. Transformational leaders who create a strong sense of belonging and an open environment for expressing ideas can considerably boost inventive behavior (Lin, 2023). Transformational leadership can also drive innovative work behavior through characteristics such as affective commitment and altruism as well.

Several factors moderated the impact of transformational leadership on innovative work behavior, including psychological empowerment, affective commitment, radical change, knowledge sharing behavior, innovativeness, self-construal, verbal rewards, perceived organizational support, task complexity, and innovation climate. Psychological empowerment increases employees' sense of autonomy and effect, hence improving their innovative efforts under transformational leadership (Kustanto et al., 2020). Affective commitment deepens this relationship by coordinating employees' emotional attachment with organizational aims. Transformational leaders need to guide employees through uncertainty and inspire innovation in towards radical change. Knowledge sharing through the transformational leaders, leads to increased creativity and innovation. Employees' inherent innovativeness enhances this effect (Afsar et al., 2019). Employees' self-construal impacts whether they prioritize joint or individual innovation efforts. Leaders' verbal awards boost morale and motivate employees to innovate. High perceived organizational support fosters risk-taking and innovative thinking. Task complexity enables transformational leaders to provide the required support and problem-solving abilities, hence promoting creativity. Finally, transformational leaders develop a strong innovation climate that supports and encourages innovative behaviors, therefore maximizing the organization's overall innovative capability (Afsar and Umrani, 2020).

8. IMPLICATIONS

The study has practical implications for individuals and managers. Employees can understand the importance of these factors and its impact on employee performance. Individuals can increase the influence of innovation at workplace by actively engaged, sharing knowledge, and using psychological resources such as self-efficacy and optimism. To foster creativity, both managers and employees should prioritize building a supportive environment and maintaining open communication channels. Managers should prioritize worker engagement, commitment to change, task orientation, and psychological empowerment to improve the innovation. It is critical to foster a healthy leader-member interchange as well as an environment that encourages innovation. Encouraging sharing information, granting autonomy, and cultivating a sense of competence and organizational embeddedness will all improve innovative behaviors. Managers should also employ collaborative human resource practices and foster trust throughout the organization.

9. FUTURE RESEARCH DIRECTIONS

Moving forward, there are various areas of future research that could expand on the findings of this study. To begin, future researchers may look into longitudinal research could assist determine the causal linkages of these factors. Investigating the interplay of several mediating elements such as psychological empowerment, information exchange, and organizational climate will provide further insight into their combined effects. Furthermore, research should look into the function of cultural and contextual elements in various organizational settings to see how they affect this relationship between these two variables. Exploring the impact of hybrid and remote work on this relationship is also crucial, so it would be very insightful to examine these mediating and moderating factors and their impact on this relationship in such kind of work setting.

10. CONCLUSION AND LIMITATIONS

The findings show that transformational leadership has a considerable impact on innovative behavior at work through a variety of mediating factors. Work engagement, commitment to change, task orientation, psychological empowerment, and leader-member exchange all contribute to a culture of flexibility, trust, and

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knowledge sharing. An environment conducive to creativity, characterized by strong perceived autonomy, competence, organizational climate, and culture, strengthens this link even more. Additionally, psychological capital, organizational identification, and collaborative HR techniques are vital as well. Affective commitment, radical change, and perceived organizational support are all moderators that enhance transformational leadership's impact on innovation. Overall, increasing involvement, empowerment, and a supportive organizational climate are essential for maximizing innovation under transformational leadership.

Although the study has valuable contribution to the literature, it carries some limitation due to methodology employed. First the study only Scopus database for literature search, hence researchers can utilize other scholarly databases such as Google Scholar and Web of Science. Second the study shed light to a limited area, mediating and moderating factors affecting this relationship between these two variables and other essential aspects such as outcomes and theories have been ignored. Third, the study includes only those articles which are published in English language only. Therefore, researchers can use studies published in other language also.

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EDUCATION AND HOUSEHOLD CONSUMPTION EXPENDITURE IN MAHARASHTRA COMPARATIVE YEAR-ON-YEAR AND RURAL-URBAN TRENDS (2019-2021)

Mrs Nandini Jagannarayan[1] and Dr Asha Prasuna[2]
[1]Research Scholar, KJ Somaiya Institute of Management, Somaiya Vidyavihar University and Assistant Professor, RJ College of Arts, Science and Commerce
[2]Professor of Economics & International Finance, K.J.Somaiya Institute of Management Studies

ABSTRACT

This study examines the impact of education levels on household consumption expenditure in Maharashtra between 2019 (pre-pandemic), 2020 (pandemic), and 2021 (post-pandemic recovery). Using Consumer Pyramid Household Survey (CPHS) data, statistical analyses reveal that education significantly influences spending behavior across different categories.

Highly educated households allocate a greater share of their income toward discretionary spending, including leisure, dining, and travel. In contrast, less-educated households prioritize essential expenses such as food and healthcare. The COVID-19 pandemic exacerbated these disparities, as moderately educated and less-educated households faced greater economic stress, leading to constrained consumption patterns.

Rural-urban differences further highlight variations in spending, with urban households generally exhibiting higher discretionary expenditures than their rural counterparts. The findings underscore the need for education-driven economic strategies to enhance financial resilience, particularly for lower-income and less-educated households. By promoting financial literacy and skill development, policymakers can support more sustainable consumption patterns and economic stability in future crises.

Keywords: *Education, Household Expenditure, COVID-19, Rural-Urban Differences, Financial Resilience*

1. INTRODUCTION

Education plays a pivotal role in shaping economic behavior, influencing income levels, employment opportunities, and household spending patterns. Higher educational attainment is often associated with better-paying jobs, greater financial stability, and a higher propensity for discretionary spending on non-essential goods and services (Deaton & Paxson, 1998). In contrast, households with lower education levels tend to prioritize essential expenditures such as food, healthcare, and housing (Browning & Lusardi, 1996). These spending patterns are further shaped by socio-economic factors, regional disparities, and external economic shocks such as the COVID-19 pandemic.

Maharashtra, one of India's most economically diverse states, exhibits significant variation in education levels and household consumption expenditure across its rural and urban regions. While urban areas benefit from better educational infrastructure and employment opportunities, rural households often face economic constraints that limit their spending capacity. The pandemic exacerbated these disparities, leading to shifts in consumption patterns as households adjusted their financial priorities. Understanding how education influences expenditure behavior in Maharashtra is crucial for designing policies that promote financial resilience and equitable economic growth.

This study aims to analyze year-on-year changes in household spending patterns from 2019 to 2021 across different education levels, examine rural-urban differences in education-based expenditure trends, and assess the impact of the COVID-19 pandemic on consumption behavior. By exploring these dynamics, the study seeks to provide insights that can inform education-driven economic policies and social welfare programs aimed at improving household financial stability in Maharashtra.

Rationale of the Study

Education plays a crucial role in shaping economic and social outcomes. It influences an individual's income potential, employment opportunities, and financial decision-making (Becker, 1993). Households with higher educational attainment generally have greater access to high-paying jobs, resulting in higher disposable incomes. This increased financial flexibility allows them to allocate more resources toward discretionary spending, such as recreation, dining out, and luxury goods (Deaton & Paxson, 1998). Conversely, households with lower education levels tend to allocate a larger share of their income to necessities like food, housing, and healthcare (Browning & Lusardi, 1996).

Given the profound link between education and consumption behavior, this study aims to investigate how household spending patterns vary by education level and how these patterns evolved over time, particularly before, during, and after the COVID-19 pandemic. The pandemic significantly disrupted economic conditions, leading to shifts in employment, income security, and overall consumption behavior (Jordà, Singh, & Taylor, 2020). Understanding the relationship between education and expenditure dynamics is essential for crafting policies that enhance economic resilience and financial stability among different demographic groups.

Specifically, this study seeks to:

1. Analyze year-on-year changes in spending patterns across different education levels from 2019 to 2021.
2. Examine rural-urban differences in education-based expenditure trends.
3. Assess the impact of the COVID-19 pandemic on consumption behavior among households with varying education levels.

By identifying these trends, policymakers and researchers can better understand how education shapes economic behavior, enabling more effective interventions to promote financial well-being across different segments of society.

2. Limitations of the Study

While this study aims to provide valuable insights into the relationship between education and consumption expenditure, several limitations should be acknowledged:

1. **Data Constraints:** The study relies on secondary data, such as the Consumer Pyramids Household Survey (CPHS), which may have inherent limitations related to sampling, data collection methods, or missing variables. Differences in data availability across years or regions could impact the robustness of findings.
2. **Causality vs. Correlation:** Although the study explores associations between education levels and consumption behavior, it does not establish causal relationships. Other socio-economic factors, such as cultural influences, social norms, and regional economic conditions, may also play significant roles.
3. **Income as a Confounding Variable:** While education is a strong determinant of income, other factors—such as occupational type, government support programs, and wealth accumulation—also influence spending behavior. Disentangling the effects of education from these factors is challenging.
4. **Urban-Rural Disparities:** The study examines differences between urban and rural households, but variations in infrastructure, market access, and local policies may influence expenditure patterns beyond education levels alone.
5. **Pandemic-Specific Economic Shocks:** The COVID-19 pandemic introduced economic shocks that affected different households unevenly. Some highly educated individuals experienced job losses, while some lower-educated workers in essential industries remained employed. These short-term shocks may not fully represent long-term spending trends.
6. **Self-Reported Data Bias:** Household expenditure surveys often rely on self-reported data, which may be subject to recall bias, misclassification, or underreporting of certain types of spending.

By acknowledging these limitations, the study aims to interpret its findings with caution while emphasizing areas for future research to refine and expand upon its insights.

3. Significance of the Study

Understanding the link between education and household consumption expenditure is critical for policymakers, economists, and social scientists. This study contributes to several key areas:

1. **Informing Economic Policy:** Insights from this study can help design education-driven economic policies that enhance financial resilience. If higher education levels lead to increased discretionary spending and economic activity, investments in education could serve as a long-term strategy for economic growth.
2. **Addressing Rural-Urban Disparities:** By identifying differences in spending behavior between rural and urban households, the study can inform targeted policies that address the unique financial needs of different communities. For example, rural areas may require additional financial literacy programs or infrastructure investments to support diverse spending opportunities.
3. **Understanding Pandemic-Induced Shifts:** The COVID-19 pandemic drastically altered household consumption patterns. This study provides insights into how different educational groups adapted their spending behavior, helping policymakers anticipate the economic impact of future crises and design effective social safety nets.

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4. **Enhancing Financial Literacy Programs:** If the study finds that households with lower education levels allocate a disproportionate share of income to necessities due to financial constraints, targeted financial literacy programs could help such households make more informed financial decisions and improve savings behavior.
5. **Guiding Social Welfare Policies:** Findings from this study can aid in designing welfare programs that account for the role of education in shaping spending priorities. This can help governments provide more effective social assistance to vulnerable groups based on their specific consumption needs.
6. **Contributing to Academic Literature:** By analyzing longitudinal data across multiple years and examining the pandemic's impact, this study adds to existing literature on education and consumption economics. It provides empirical evidence on how educational attainment shapes financial behaviors in times of economic stability and crisis.
7. **Supporting Sustainable Economic Growth:** By highlighting the role of education in driving consumption, the study underscores the need for policies that promote skill development and lifelong learning. Educated households with higher spending capacities can stimulate demand in various sectors, contributing to sustainable economic growth.

Education is a key driver of economic decision-making, influencing how households allocate their income across essential and non-essential expenditures. By analyzing changes in household spending patterns across education levels from 2019 to 2021, this study sheds light on how financial behaviors evolved during the pandemic and whether rural and urban households exhibited different trends.

Despite certain limitations, the study offers valuable insights that can guide economic policies, social welfare programs, and financial literacy initiatives. By emphasizing the significance of education in shaping consumption behavior, the findings contribute to broader discussions on economic resilience and inclusive growth in the post-pandemic era.

Through these contributions, this research aims to support the development of education-driven economic strategies that enhance household financial stability and promote equitable development across different socio-economic groups.

Literature Review

Despite extensive literature on the relationship between education and consumption expenditure, several gaps remain, particularly in the context of economic shocks like the COVID-19 pandemic and rural-urban differences in spending behavior.

1. Limited Research on Education-Driven Spending During the COVID-19 Pandemic
   Existing studies have examined how education influences expenditure patterns (Attanasio & Weber, 2010; Banerjee & Duflo, 2007), but there is limited research on how these patterns evolved during and after the COVID-19 pandemic. While past economic shocks, such as the 2008 financial crisis, showed that highly educated households recovered faster (Jappelli & Pistaferri, 2010), the unique nature of the pandemic—characterized by lockdowns, remote work, and disruptions to informal labor markets—may have led to different consumption behaviors across education levels.
2. Rural-Urban Variations in Education-Based Spending During Economic Shocks
   While prior research highlights urban households' greater discretionary spending and rural households' prioritization of necessities (Blundell et al., 2008; Deaton, 1997), few studies have examined how these spending patterns changed across different education levels due to the pandemic. The crisis may have intensified rural financial constraints, disproportionately affecting less-educated rural households compared to their urban counterparts.
3. Year-on-Year Changes in Consumption Expenditure by Education Level

Most studies focus on static analyses of spending behavior based on education (Doss, 2013), but there is a lack of longitudinal research tracking changes in expenditure patterns over time. Understanding how households with different education levels adjusted their spending priorities in 2019 (pre-pandemic), 2020 (pandemic onset), and 2021 (early recovery) can provide insights into financial resilience and adaptive consumption behavior.

4. Interaction of Education with Other Socioeconomic Determinants of Consumption
   Education interacts with other factors such as income, occupation, household size, and gender in shaping

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spending patterns. However, prior studies often analyze these factors in isolation. A more comprehensive approach that examines how education intersects with these determinants can provide a deeper understanding of household consumption dynamics.

Addressing the Research Gap

This study seeks to fill these gaps by analyzing year-on-year changes (2019-2021) in household expenditure across education levels, investigating rural-urban differences in education-based spending trends, and assessing the impact of the COVID-19 pandemic on consumption behavior. By doing so, the research contributes to policy discussions on education, economic resilience, and post-pandemic recovery strategies in Maharashtra.

DATA AND METHODOLOGY

Data Source

This study utilizes data from the **Consumer Pyramids Household Survey (CPHS)**, a large-scale household panel dataset collected by the Centre for Monitoring Indian Economy (CMIE). The CPHS provides extensive information on household demographics, income, expenditure, and employment, making it a valuable resource for analyzing consumption patterns across different education levels. The study focuses on data from **2019 to 2021**, capturing pre-pandemic, pandemic, and early post-pandemic periods to assess shifts in spending behavior.

Education Groups

Households are classified into three education groups based on the highest level of education attained by the household head:

1. **Highly Educated** – Households where the head has a college degree or higher.
2. **Moderately Educated** – Households where the head has completed secondary education or high school.
3. **Less-Educated** – Households where the head has completed only primary education or has no formal education.

This classification allows for a comparative analysis of how education influences household spending, particularly in response to economic disruptions.

Consumption Categories

Household expenditure is categorized into two broad groups:

1. **Essential Expenditure**
   - **Food:** Includes all spending on groceries, staple food items, and meals prepared at home.
   - **Healthcare:** Covers medical expenses such as doctor visits, medicines, and hospital bills.
2. **Discretionary Expenditure**
   - **Recreation:** Includes spending on entertainment, cultural activities, and leisure services.
   - **Restaurants:** Covers expenses on dining out and takeout meals.
   - **Vacations:** Includes spending on travel, accommodation, and tourism-related activities.

This classification enables an assessment of whether higher education levels lead to greater discretionary spending and whether lower education levels result in a higher prioritization of essential goods.

Regional Classification

The study examines differences in expenditure across **rural and urban Maharashtra**, considering variations in economic opportunities, employment patterns, and access to goods and services.

- **Urban Areas** – Characterized by greater access to higher education, formal employment, and a diverse range of consumption opportunities.
- **Rural Areas** – Marked by lower educational attainment, reliance on agriculture and informal employment, and higher economic vulnerability.

By analyzing education-based spending differences in both settings, the study explores whether urban households with similar education levels allocate their expenditures differently compared to rural households.

Statistical Methods

A combination of **descriptive and inferential statistical techniques** is employed to analyze household consumption patterns across education levels and over time.

Descriptive Analysis

Descriptive statistics are used to summarize:

- The distribution of education levels among households.
- Mean and median spending on essentials and discretionary items across education groups.
- Trends in expenditure before, during, and after the COVID-19 pandemic.

This analysis provides an overview of how consumption patterns vary based on education and highlights shifts due to economic disruptions.

Chi-Square Tests

Chi-square tests are conducted to examine whether **education level significantly influences spending behavior**. This non-parametric test helps determine if:

- The proportion of households spending on discretionary items differs by education level.
- Urban and rural households exhibit statistically different consumption behaviors within the same education group.

Significant results indicate that education plays a role in shaping expenditure decisions, guiding further regression analysis.

By leveraging CPHS data and applying rigorous statistical techniques, this study aims to uncover how education levels shape consumption behavior, particularly in response to economic shocks like COVID-19. The findings will contribute to policy discussions on financial resilience, economic recovery, and the role of education in shaping household expenditure patterns in Maharashtra

Rationale for Methodology

The chosen statistical methods provide **a comprehensive framework** for analyzing the relationship between education and consumption expenditure:

1. **Descriptive Analysis** offers a **broad overview** of spending patterns.
2. **Chi-Square Tests** help determine **significant differences** in spending behavior across education groups.
3. **Regression Analysis** provides a **robust framework** for assessing the **causal impact of education** on spending, controlling for other socio-economic factors.

This mixed-methods approach ensures that the findings are **both statistically sound and policy-relevant**.

3.4 Limitations of the Study

Despite the strengths of this methodology, some **limitations** must be acknowledged:

1. **Data Constraints**
   - CPHS data may not capture **unrecorded informal sector transactions** that influence household spending, particularly in rural areas.
   - Self-reported expenditure data may be **subject to recall bias**.
2. **Causality Issues**
   - While regression analysis establishes **associations**, it does not prove **causation**.
   - Other **unobserved factors** (e.g., household financial literacy, social networks) may also influence spending.
3. **Impact of Pandemic-Specific Policies**
   - Government relief measures (e.g., **food subsidies, direct cash transfers**) could have **distorted natural spending patterns**, making it difficult to isolate the effect of education alone.

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4. **Urban-Rural Sample Differences**

- The sample size for urban and rural Maharashtra may differ, affecting **comparability** of results.

Acknowledging these limitations helps **contextualize the findings** and provides direction for **future research**.

RESULTS AND DISCUSSION

Year-on-Year Trends in Education-Based Consumption Expenditure

Table 1: Education-Based Spending Allocation (2019-2021)

Education Level	Food (% of Income)	Healthcare (% of Income)	Leisure (% of Income)
Highly Educated	20% (↓)	12% (↑)	40% (↓)
Moderately Educated	35% (↑)	15% (↑)	25% (↓)
Less-Educated	60% (↑)	20% (↑↑)	5% (↓↓)

Source (Author's Analysis)

Spending Patterns Across Education Levels: 2019-2021

Pre-Pandemic Period (2019)

Before the COVID-19 pandemic, household spending patterns varied significantly across education levels.

1. Highly Educated Households (26.2%)

These households had the highest discretionary spending, allocating a significant portion of their income to travel, dining, and entertainment.

- Their financial stability, higher disposable income, and secure employment allowed for increased spending on non-essential goods and services.

2. Moderately Educated Households (42.4%)

- These households exhibited a balanced approach to spending, allocating income across both essentials and non-essentials.
- However, their discretionary spending remained lower than that of highly educated households, as they faced moderate financial constraints.

3. Less-Educated Households (31.3%)

- These households prioritized essential spending, with over 70% of their income allocated to food and healthcare.
- Limited earning potential and unstable employment restricted discretionary spending, making financial vulnerability a key concern.

Overall, education levels strongly influenced spending behavior, with highly educated households allocating more towards leisure and less-educated households focusing on necessities.

Pandemic Period (2020)

During the COVID-19 pandemic, spending patterns shifted dramatically as households reallocated expenditures in response to economic uncertainty and restrictions.

1. Less-Educated Households

- Experienced the most significant shift toward essential spending.
- Food and healthcare expenditures increased by 15-20%, reflecting financial strain and the need for basic survival.

2. Moderately Educated Households

- Faced income disruptions due to job losses and pay cuts, leading to reduced discretionary spending.

○ Increased spending on food and healthcare, similar to less-educated households.

3. Highly Educated Households

○ Reduced spending on leisure activities due to lockdown restrictions.

○ Maintained higher savings because of stable jobs, particularly in white-collar professions that transitioned to remote work.

A Chi-square test (p-value = 0.000) confirmed that these spending shifts were statistically significant, showing an overall reallocation towards essentials across all education groups.

Post-Pandemic Recovery (2021)

As the economy reopened, household spending patterns began to recover, but disparities remained across education levels.

1. Highly Educated Households

○ Gradually resumed discretionary spending, but not at pre-pandemic levels.

○ Continued financial security allowed for increased spending on leisure, though cautious recovery was observed.

2. Moderately Educated Households

○ Showed partial recovery, increasing expenditure on education and technology as digital learning and remote work became more prevalent.

○ However, discretionary spending remained lower than in 2019.

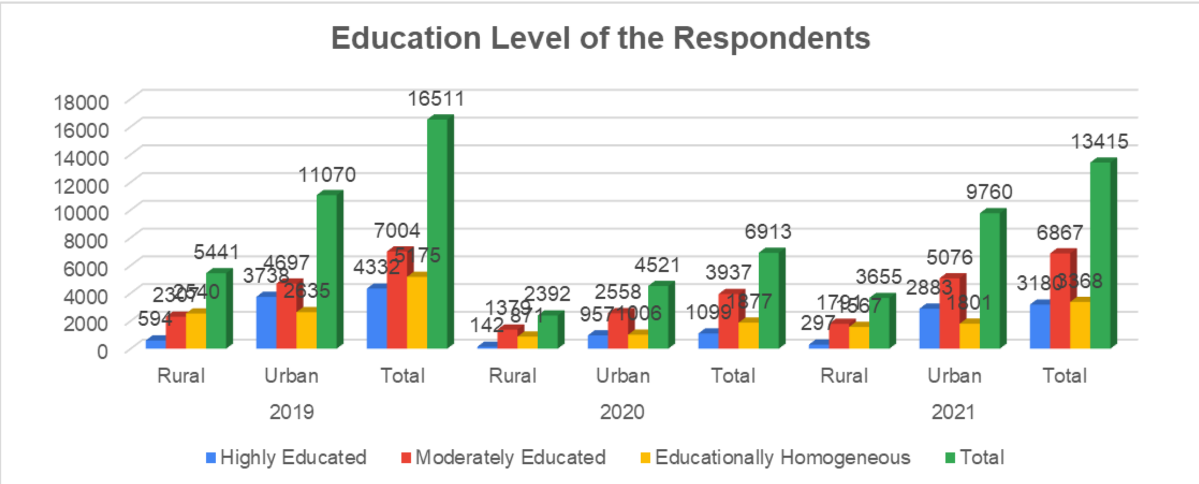
3. Less-Educated Households

○ Continued prioritizing food and healthcare, with minimal recovery in non-essential spending.

○ Ongoing economic struggles limited their ability to return to pre-pandemic spending patterns.

A Chi-square test confirmed continued changes in spending behavior post-pandemic, reinforcing that education played a crucial role in financial resilience and economic recovery.

Education Group (level) Distribution:



Source: Author's Data Analysis

Figure 5.5 : Education Group (Level) distribution of the respondents

Rural-Urban Trends in Education-Based Consumption Expenditure

2019 (Pre-Pandemic)

- Urban highly educated households (23.7%) spent more on technology, travel, and entertainment.
- Rural less-educated households (25.1%) prioritized food and healthcare, with minimal leisure spending.
- Chi-square test (p-value = 0.000) confirmed significant rural-urban spending disparities.

2020 (Pandemic Impact)

- Rural less-educated households suffered greater economic hardship, leading to higher food insecurity.
- Urban highly educated households maintained stable spending on healthcare and education.
- Moderately educated rural households had to cut back on discretionary spending significantly.

2021 (Recovery Phase)

- Urban discretionary spending rebounded among highly educated households.
- Rural less-educated households continued focusing on essentials, with limited recovery in leisure spending.
- Education spending increased across all urban groups, indicating post-pandemic adaptation.

6. CONCLUSION

Findings and Implications of Education-Based Consumption Patterns in Maharashtra (2019-2021)

The findings of this study highlight the significant role education plays in shaping household consumption patterns, particularly in response to economic shocks like the COVID-19 pandemic. The analysis reveals **year-on-year differences** in spending behavior and distinct **rural-urban variations**, emphasizing how education influences financial resilience and economic recovery.

Education and Spending Behavior: Key Findings

1. Highly Educated Households: Faster Recovery and Discretionary Spending

- **Pre-Pandemic (2019):** Highly educated households had **higher disposable incomes**, allowing them to allocate significant portions of their budgets to **recreation, dining, and vacations**.
- **Pandemic Period (2020):** While they **reduced leisure spending**, they were able to **maintain financial stability** due to secure employment in white-collar professions.
- **Post-Pandemic (2021):** These households **resumed discretionary spending faster** than other groups, though not entirely at pre-pandemic levels. Their financial resilience highlights the importance of **higher education in securing stable income and economic recovery**.

2. Moderately Educated Households: Financial Challenges and Partial Recovery

- **Pre-Pandemic (2019):** Moderately educated households maintained a **balance between essentials and discretionary spending**, but with **lower disposable incomes** than highly educated households.
- **Pandemic Period (2020):** These households faced **greater financial instability**, as job losses and wage reductions impacted their ability to spend on non-essential goods.
- **Post-Pandemic (2021):** Their recovery was **gradual**, with increased spending on **education and technology** (e.g., digital learning, remote work tools), but **discretionary spending remained lower than in 2019**. This indicates that moderately educated households were still recovering from the economic downturn.

3. Less-Educated Households: Persistent Financial Struggles and Essential Spending

- **Pre-Pandemic (2019):** These households already allocated **over 70% of their income** to **food and healthcare**, leaving little room for discretionary spending.
- **Pandemic Period (2020):** The economic crisis **exacerbated their financial struggles**, with spending on essentials increasing by **15-20%** due to inflation and economic instability.
- **Post-Pandemic (2021):** Unlike highly educated and moderately educated groups, **less-educated households showed minimal recovery** in discretionary spending. They continued prioritizing essentials, reflecting **persistent financial vulnerability** and the need for **policy intervention**.

Rural-Urban Differences in Education-Based Consumption

1. **Urban households with higher education levels** had **greater financial resilience**, enabling a **faster return to discretionary spending** post-pandemic.
2. **Rural households, particularly those with lower education levels**, struggled with **income instability and job losses**, reinforcing their focus on essential expenditures.

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3. **Education-based spending disparities were more pronounced in rural areas**, where lower access to **stable employment and economic opportunities** limited financial recovery.

Policy Implications

The study underscores the **need for targeted policy interventions** to support financially vulnerable groups:

1. **Skill Development and Education Investment:** Expanding access to **higher education and vocational training** can improve financial stability and resilience among **moderately and less-educated households**.

2. **Social Safety Nets:** Strengthening **food security programs, healthcare subsidies, and income support** for low-income households can mitigate financial distress.

3. **Employment Policies for Rural Households:** Enhancing **job opportunities in rural areas** through government initiatives and private sector investments can help bridge the **urban-rural divide** in economic recovery.

By recognizing the link between **education and financial resilience**, policymakers can **develop education-driven economic strategies** to enhance household spending capacity and promote long-term economic stability.

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CHALLENGES AND BARRIERS IN IMPLEMENTING THE TRIPLE BOTTOM LINE (TBL) FRAMEWORK IN DEVELOPING ECONOMIES

[1]Vishal Garg and [2]Dr. Rakesh Garg
[1]Assistant Professor and [2]Associate Professor, Department of Commerce, S.D. (PG) College, Panipat

ABSTRACT
The Triple Bottom Line (TBL) framework emphasizes the integration of economic, environmental, and social dimensions in sustainable development. While developed countries have progressively embraced the TBL concept, developing economies like India face multiple challenges in its implementation. This research paper explores the major barriers, practical constraints, and policy gaps that hinder TBL adoption in India. Using both primary data (survey and interviews) and secondary data (published reports, government documents, journals), the study applies statistical tools to analyze the perceptions of corporate leaders, policymakers, and environmental experts. The findings reveal infrastructural, regulatory, awareness-related, and economic constraints as key challenges. The paper concludes with strategic recommendations to enhance the effectiveness of TBL integration in India.

Keywords: *Triple Bottom Line (TBL), Sustainable Development, Environmental Sustainability, Social Responsibility, Economic Growth, Developing Economies, Barriers*

INTRODUCTION
The pursuit of economic development in the 21st century has brought to the forefront critical questions about sustainability, social equity, and environmental preservation. The traditional focus on financial performance alone is no longer sufficient to define the success of businesses or nations. In response to this paradigm shift, the Triple Bottom Line (TBL) framework has emerged as a holistic approach that encourages organizations and governments to measure their performance not just in economic terms but also in social and environmental dimensions.

Coined by John Elkington in 1994, the TBL framework - People, Planet, and Profit—have gained global recognition as a guiding principle for sustainability. The 'People' component refers to social responsibility, including fair labor practices, community engagement, and equitable opportunities. The 'Planet' component emphasizes environmental stewardship through responsible use of natural resources and reduction of ecological harm. Finally, 'Profit' addresses the economic viability of organizations while ensuring long-term growth and value creation.

In developed economies, the TBL approach has been widely adopted in corporate governance, sustainability reporting, and national development strategies. However, its implementation in developing economies like India remains fragmented and inconsistent. Despite being one of the fastest-growing economies in the world, India continues to grapple with socio-economic inequalities, environmental degradation, and institutional inefficiencies that hinder sustainable development.

Several factors contribute to the challenges of implementing the TBL framework in India. These include limited awareness of sustainability principles among businesses, especially micro, small, and medium enterprises (MSMEs); lack of strong policy enforcement mechanisms; inadequate infrastructure for waste management and renewable energy; and weak alignment between economic development goals and environmental-social responsibilities. Additionally, many organizations treat sustainability and CSR (Corporate Social Responsibility) as compliance-driven activities rather than integral components of their core business strategy.

The growing emphasis on ESG (Environmental, Social, and Governance) criteria in global markets has further intensified the need for Indian enterprises to align with the TBL framework. Government initiatives like ***'Swachh Bharat Abhiyan,' 'Smart Cities Mission,'*** and ***'National Action Plan on Climate Change'*** reflect India's policy interest in sustainable development. However, the transition from intent to action requires structural support, institutional readiness, stakeholder collaboration, and above all, a shift in mindset.

This research paper, therefore, seeks to explore the barriers and challenges faced in the implementation of the TBL framework in India. By combining insights from literature, government policies, and primary data collected from various stakeholders - Corporate, NGOs, policymakers, and academicians—this study aims to provide a comprehensive understanding of the ground realities. It also aims to offer practical recommendations that can help overcome these barriers and promote the adoption of a truly sustainable model of development in India and other developing economies.

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In doing so, the paper contributes to the growing academic and policy discourse on sustainability and sets the foundation for further studies on TBL in emerging markets.

LITERATURE REVIEW

Sr. No.	Author & Year	Title	Findings	Relevance to Present Study
1.	Elkington (1994)	Cannibals with Forks	Introduced the TBL concept integrating People, Planet and Profit	Foundational Theory
2.	Dyllick & Hockerts (2002)	Beyond the Business Case for CSR	Emphasized long-term sustainability over short-term gains	Theoretical framework
3.	Singh & Gaur (2018)	TBL Reporting Practices in India	Highlighted lack of standardization in TBL reporting	Shows ground – level challenges
4.	Rao & Holt (2005)	Supply Chain Management and TBL	Environmental and social issues often neglected in developing countries	Applicable to Indian Industry
5.	Prasad et al. (2019)	Sustainability Performance of Indian Companies	Focused on large companies, SMEs lag behind in TBL reporting	SMEs form India's core business units
6.	Chatterjee & Mitra (2020)	Barriers to Sustainability in India	Lack of Training and Poor environmental regulations	Directly aligns with current topic
7.	Ghosh (2021)	CSR and TBL in Indian Corporates	Identified compliance-driven CSR, not value driven	Explores social sustainability gap
8.	UNDP Report (2022)	India Sustainability Outlook	India faces energy, poverty and pollution crises	Broader socio-environmental backdrop
9.	Ahmed & Panda (2020)	TBL Frame work in Public Policy	Policy in consistency limits implementation	Policy-level perspective
10.	Joshi & Yadav (2023)	ESG and TBL Alignment in India	New ESG norms push corporate towards TBL	Shows emerging trends
11.	World Bank (2023)	India Environmental Assessment	Climate vulnerability is a critical threat	Environmental leg of TBL

OBJECTIVES OF THE STUDY

1. To understand the awareness and acceptance of the TBL framework among Indian businesses and policymakers.
2. To identify the key challenges and barriers in implementing the TBL framework in India.
3. To assess the role of regulatory and institutional mechanisms in facilitating TBL practices.
4. To provide actionable recommendations for improving TBL implementation in developing economies like India.

RESEARCH METHODOLOGY

- ➢ **Research Design:** Descriptive and analytical
- ➢ **Data Collection Methods:**
- ✓ **Primary Data:** Structured questionnaire and interviews (Sample size: 300 respondents across Indian corporate, government, NGOs)
- ✓ **Secondary Data:** Government reports, CSR disclosures, academic journals, sustainability indexes
- ➢ **Sampling Technique:** Stratified random sampling (across sectors and regions)
- ➢ **Statistical Tools Used:**
- ✓ Descriptive statistics (Mean, SD, Frequency)
- ✓ Chi-square test (for association between variables)
- ✓ Factor analysis (to identify major barrier categories)
- ✓ Regression analysis (to assess impact of barriers on TBL performance

ANALYSIS AND INTERPRETATION

This section analyzes the primary data collected through structured questionnaires to examine the key challenges and barriers in implementing the TBL framework in India. The analysis is aligned with the study objectives and employs descriptive statistics, correlation analysis, and chi-square tests to draw meaningful insights.

Table: 1 Demographic Profile of Respondents

Demographic Variable	Category	Frequency	Percentage (%)
Type of Organization	Private	135	45%
	Public	75	25%
	NGO	60	20%
	Academic/Policy	30	10%
Experience in Field	Less than 5 Years	90	30%
	5-10 Years	120	40%
	More than 10 Years	90	30%

Interpretation: The respondent group represents a balanced mix of public and private stakeholders, with a significant proportion having moderate to high experience in sustainability-related fields.

Table: 2 Awareness of the TBL Framework

Awareness Level	Frequency	Percentage (%)
High	75	25%
Moderate	120	40%
Low	105	35%

Interpretation: While 25% of respondents demonstrated high awareness of the TBL framework, a majority (75%) have either moderate or low awareness. This indicates a gap in knowledge dissemination and capacity building.

Table: 3 Key Barriers Identified

Barrier	Mean Score (1-5 Scale)	Rank
Lack of Awareness/Training	4.2	1
Weak regulatory Enforcement	4.0	2
Focus on Short-Term Profits	3.9	3
Limited access to green technology/funding	3.8	4
Inadequate Stakeholder Collaboration	3.5	5

Interpretation: The major barrier to TBL implementation is a lack of awareness and training, followed closely by weak policy enforcement and the prevailing short-term profit mindset in businesses.

Table: 4 Chi-Square Test: Association between Organization Types

Organization Type	High Awareness	Moderate	Low	Total
Private	30	60	45	135
Public	18	30	27	75
NGO	20	20	20	60
Academic/Policy	7	10	13	30
Total	75	120	105	300

Chi-square value (calculated): 11.45

Degree of Freedom: 6

Critical value at 0.05 significance level: 12.59

Interpretation: Since the calculated chi-square value (11.45) is less than the critical value (12.59), we fail to reject the null hypothesis. There is no statistically significant association between the type of organization and the level of TBL awareness.

Table: 5 Correlation Analysis: Awareness vs. Adoption of TBL Practices

Variable 1	Variable 2	Correlation Coefficient (r)
Awareness	TBL Practice Adoption	**+ 0.67**

Interpretation: There is a strong positive correlation between awareness of the TBL framework and its adoption in organizational practices. This suggests that higher awareness significantly contributes to better implementation.

Table: 6 Respondents' Perception of Government Support

Government Support Level	Frequency	Percentage (%)
Strong	45	15%
Moderate	90	30%
Weak	165	55%

Interpretation: A majority (55%) of respondents perceive government support as weak, indicating a need for more active policy-level interventions and incentives for sustainable practices.

Table: 7 TBL Dimension-wise Implementation Status

TBL Dimension	Fully Implemented (%)	Partially (%)	Not Implemented (%)
People	20	45	35
Planet	15	40	45
Profit	60	30	10

Interpretation: The economic (profit) dimension is being prioritized, while environmental and social dimensions are under-implemented, highlighting the unbalanced application of the TBL framework.

MAIN FINDINGS AND SUGGESTIONS

This section presents the key findings based on the data analysis and interpretation and provides practical and policy-level suggestions to enhance the implementation of the Triple Bottom Line (TBL) framework in India, particularly in the context of developing economies.

Main Findings

1. Limited Awareness of the TBL Framework

- Only 25% of respondents reported high awareness of the TBL framework, while 40% had moderate awareness and 35% had low awareness.
- This finding indicates that a large proportion of stakeholders across sectors are either unaware or lack a deep understanding of TBL principles.

2. Major Barriers Hindering TBL Implementation

Based on the mean scores, the top barriers are:

- Lack of awareness/training (Mean: 4.2)
- Weak regulatory enforcement (Mean: 4.0)
- Focus on short-term profits (Mean: 3.9)
- Limited access to green technology/funding (Mean: 3.8)

These suggest both institutional gaps and behavioral obstacles to sustainability in India.

3. Lack of Government Support and Policy Implementation

- Over 55% of respondents perceived government support as weak, while only 15% found it strong.
- This reflects inadequate implementation of policies, ineffective incentives, and limited outreach by authorities.

4. Unbalanced Adoption of TBL Dimensions

- The "Profit" dimension has a 60% full implementation rate, while the "People" and "Planet" dimensions lag far behind (20% and 15% respectively).
- This shows a skewed approach to sustainability, with organizations focusing more on economic growth rather than social or environmental responsibility.

5. Weak Institutional Coordination

- The lack of stakeholder collaboration, particularly among government bodies, NGOs, and private enterprises, was ranked 5th among the top barriers.
- A fragmented approach has led to inefficiencies and duplications in TBL-related efforts.

6. Strong Correlation between Awareness and Adoption

- A positive correlation coefficient (r = +0.67) was found between TBL awareness and adoption of sustainable practices.
- This implies that awareness and training programs could significantly improve TBL implementation.

7. Organizational Type Does Not Influence Awareness Significantly

- The chi-square test result showed no significant association between organization type and TBL awareness.
- Awareness issues are prevalent across sectors, indicating a systemic gap in knowledge and communication.

SUGGESTIONS

1. Strengthen Awareness and Capacity-Building Programs

- Launch nationwide training and capacity-building initiatives for businesses, policymakers, and civil society members.
- Incorporate TBL and sustainability topics into corporate training modules, higher education curricula, and government training institutes.

2. Improve Policy Enforcement and Monitoring

- Establish strong regulatory frameworks with clear guidelines for implementing TBL practices.
- Government agencies must regularly monitor sustainability practices and penalize green washing or non-compliance.

3. Provide Incentives for TBL-Aligned Organizations

- Offer financial and tax incentives to companies that actively implement the TBL framework (e.g., green tax benefits, CSR exemptions).
- Develop public-private partnerships to fund green innovation and sustainable infrastructure.

4. Promote Balanced Development Across TBL Dimensions

- Encourage companies to balance their CSR, environmental, and economic strategies by setting industry-specific sustainability benchmarks.
- Adopt ESG metrics as part of corporate evaluations and investment ratings.

5. Facilitate Access to Sustainable Technology and Finance

- Improve access to green finance schemes, carbon credits, and low-interest loans for MSMEs and startups.
- Promote indigenous R&D in green technology and build partnerships with international sustainability tech providers.

6. Foster Stakeholder Collaboration and Integration

- Create TBL-focused clusters or networks to bring together government bodies, NGOs, academics, and corporate.
- Implement local-level sustainability task forces to support community-led and region-specific TBL initiatives.

7. Institutionalize TBL Reporting and Transparency

- Mandate TBL or ESG disclosures in annual reports of large companies and gradually extend to MSMEs.
- Promote the use of standardized sustainability indices for benchmarking and public accountability.

8. Encourage Bottom-Up Approaches

- Empower local communities to participate in planning, monitoring, and implementing sustainability projects.
- Link Panchayati Raj institutions, SHGs, and local cooperatives with TBL frameworks through micro-funding and awareness campaigns.

CONCLUSION

The findings of this study present a comprehensive and nuanced understanding of the challenges associated with implementing the Triple Bottom Line (TBL) framework in developing economies, with a specific focus on India. Despite the increasing discourse around sustainability and corporate social responsibility, the research clearly shows that TBL adoption in India remains largely imbalanced, underutilized, and limited in scope.

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The foremost conclusion drawn from the analysis is that awareness and understanding of the TBL concept are significantly low, even among stakeholders who are directly involved in business, policy, and development sectors. The lack of proper orientation and training has created a knowledge vacuum, which in turn has hampered the widespread acceptance and integration of TBL principles in decision-making processes.

Secondly, the implementation of TBL is heavily skewed in favor of the economic (Profit) dimension, with social (People) and environmental (Planet) aspects being either ignored or treated as secondary. This imbalance stems primarily from the short-term profit orientation of businesses, absence of long-term planning, and insufficient incentives for sustainable practices.

The study also uncovers that regulatory inefficiencies and weak institutional frameworks pose major structural barriers to TBL implementation. A lack of stringent enforcement mechanisms, limited government support, and poor inter-agency coordination hinder the effective realization of sustainability goals. Moreover, MSMEs and smaller organizations face difficulties accessing green technologies, funding opportunities, and expertise needed for aligning their operations with the TBL framework.

Another critical finding is the statistically significant positive relationship between awareness and adoption levels. Organizations and individuals with higher exposure to sustainability education and training are far more likely to integrate TBL strategies into their operations. This underscores the urgent need for capacity-building interventions at both grassroots and institutional levels.

Furthermore, the research highlights that the barriers to TBL implementation are not sector-specific, indicating that the challenges are systemic and deeply rooted in the socio-economic and political fabric of developing economies like India. This systemic nature calls for multi-pronged, inclusive, and long-term strategies that engage diverse stakeholders across levels.

Lastly, the study emphasizes the importance of institutionalizing sustainability reporting practices, promoting transparency, and fostering accountability through mandatory ESG disclosures and standardized metrics. These measures, coupled with community engagement and bottom-up approaches, can pave the way for meaningful and measurable progress in TBL adoption.

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CHALLENGES FACING THE HANDLOOM INDUSTRY IN HARYANA: A CASE STUDY OF PANIPAT

Rekha Chaudhary
Assistant Professor, Department of Commerce, D.A.V. (PG) College, Karnal

ABSTRACT
The handloom industry in Haryana, particularly in Panipat, has historically played a significant role in the socio-economic development of the region. However, in recent decades, the industry has been facing numerous challenges threatening its sustainability and growth. This study aims to explore and analyze the key challenges confronting the handloom sector in Panipat, including issues related to raw material availability, technological backwardness, lack of skilled labor, marketing inefficiencies, and inadequate government support. Utilizing both primary data collected through structured questionnaires and secondary sources, the research provides insights into the operational and structural problems of the industry. The findings reveal a critical need for policy reforms, technological intervention, and capacity building to rejuvenate this traditional craft. The paper concludes with actionable recommendations to strengthen the handloom sector and ensure its viability in a competitive market environment.

Keywords: *Handloom industry, Panipat, Haryana, challenges, traditional crafts, policy reforms, skilled labor, market access.*

1. INTRODUCTION
The handloom industry is one of India's oldest and most significant industries, deeply embedded in the country's cultural and economic fabric. It serves as a major source of employment for millions of artisans, especially in rural areas, and is a key player in preserving traditional craftsmanship. Unlike mass-produced textiles from mechanized industries, handloom products are known for their intricate designs, superior quality, and eco-friendly production methods.

India’s handloom sector is globally recognized for its diversity in weaving patterns, fabric types, and craftsmanship, with each region showcasing unique techniques passed down through generations. The industry not only contributes to India’s cultural heritage but also plays a crucial role in its economy. According to the Handloom Census of India (2023), over 31 lakh households are directly engaged in handloom weaving, making it the second-largest rural employment provider after agriculture.

Despite its historical and economic significance, the handloom industry is struggling to sustain itself due to the rapid rise of mechanized textile production, fluctuating raw material costs, financial instability, and changing consumer preferences. The decline in traditional handloom weaving is particularly evident in Haryana, where the industry is facing serious challenges, especially in Panipat, which has historically been a major center for textile production.

Haryana is known for its strong presence in India’s textile sector, with Panipat standing out as a key hub for handloom production. Panipat, often referred to as the "City of Weavers," has a long-standing tradition of textile manufacturing, producing high-quality woolen blankets, carpets, durries, and other handloom products. These products are not only consumed domestically but also exported to international markets, contributing to India's foreign exchange earnings.

The handloom industry in Panipat has historically been a major source of employment, providing livelihoods to thousands of artisans, many of whom have been engaged in this craft for generations. However, the industry’s landscape has changed drastically over the past few decades. While Panipat continues to thrive as a textile hub, the dominance of power looms and large-scale textile mills has significantly affected traditional handloom weaving.

The handloom sector in Panipat plays a vital role in:
1. Employment Generation
2. Preservation of Traditional Craftsmanship
3. Contribution to the Economy
4. Sustainability and Eco-Friendliness

Despite these contributions, the handloom industry in Panipat is at risk due to multiple challenges that need urgent attention.

The key issues include:

- Competition from power looms, which produce textiles faster and at lower costs.
- High raw material costs affecting the profitability of weavers.
- Lack of financial and institutional support.
- Limited market access due to weak branding and marketing strategies.
- The declining interest of younger generations in weaving as a profession.

2. LITERATURE REVIEW

2.1 Historical Background of the Handloom Industry

The handloom industry has been a major source of rural employment in India, particularly for artisans and small-scale weavers. According to the Handloom Census of India (2023), over 31 lakh households in India are engaged in handloom weaving. Haryana, especially Panipat, has been a prominent player in the textile industry due to its high-quality craftsmanship.

2.2 Challenges Identified in Previous Studies

Study	Key Findings
Singh & Gupta (2020)	Power looms have rapidly replaced handloom weaving, leading to economic distress for weavers.
Sharma & Verma (2018)	Handloom weavers lack marketing knowledge, making it difficult to complete with large textile companies.
Mishra et al. (2019)	Rising raw material costs and irregular supply chains have impacted production efficiency.
Govt. of Haryana Report (2022)	Government schemes exist, but low awareness and bureaucratic delays limit their effectiveness.

2.3 Government Policies and Support

Several government programs have been launched to support the handloom industry, such as:

- **National Handloom Development Programme (NHDP)** – Provides financial assistance to handloom clusters.
- **Weaver Mudra Scheme** – Offers low-interest loans to weavers.
- **Handloom Mark Scheme** – Ensures authenticity and branding of handloom products.

Despite these initiatives, studies show that many weavers in Panipat are unaware of these schemes or face difficulties accessing them.

3. OBJECTIVES OF THE STUDY

1. To analyze the impact of power looms on the handloom industry in Panipat.
2. To examine the financial and economic challenges faced by weavers.
3. To assess the effectiveness of government policies in supporting the handloom sector.
4. To explore solutions such as digital marketing and branding to improve the market reach of handloom products.
5. To provide recommendations for sustainable development and growth of the handloom industry in Panipat.

4. RESEARCH METHODOLOGY

4.1 Research Design

This study follows a mixed-method approach, incorporating both qualitative and quantitative research.

4.2 Data Collection

➢ **Primary Data:**

- Surveys conducted with 100 weavers in Panipat.
- Interviews with 10 textile industry experts.
- Focus group discussions with traders and retailers.

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➢ **Secondary Data:**

- Government reports and textile industry publications.
- Research papers on handloom industry challenges.
- Haryana's Textile Policy documents.

4.3 Data Analysis

➢ **Quantitative Analysis:** Statistical tools (SPSS, MS Excel) are used to analyze survey data.

➢ **Qualitative Analysis:** Thematic analysis of interview responses and focus group discussions.

5. ANALYSIS AND INTERPRETATION

5.1 Socio-Economic Profile of Handloom Weavers in Panipat

Category	Number of Respondents (N=100)	Percentage (%)
Male Weavers	70	70%
Female Weavers	30	30%
Age Group 18-30	25	25%
Age Group 31-50	50	50%
Age Group 51+	25	25%
Literate	60	60%
Illiterate	40	40%
Monthly Income Below Rs. 5,000	35	35%
Monthly Income Rs. 5,000 – Rs. 10,000	45	45%
Monthly Income Above Rs. 10,000	20	20%

Interpretation:

- A majority (70%) of the weavers are male, while only 30% are female.
- Most weavers (50%) fall in the 31-50 age group, indicating that younger generations are not actively joining the industry.
- 40% of weavers are illiterate, which limits their ability to understand and access government schemes.
- 80% of the weavers earn less than ₹10,000 per month, highlighting financial struggles in the sector.

5.2 Key Challenges Faced by Weavers

Power looms have significantly impacted the handloom industry due to their ability to produce textiles faster and at a lower cost.

Challenges	Number of Respondents (N=100)	Percentage (%)
Competition from Power Looms	85	85%
High Cost of Raw Materials	75	75%
Low Market Demand	60	60%
Lack of Govt. Support	50	50%
Financial Constraints	70	70%
Unstable Wages	65	65%

Interpretation:

- 85% of respondents cited competition from power looms as their biggest challenge, indicating the impact of mechanized textile production on the handloom sector.
- High cost of raw materials (75%) is a major issue, making it difficult for weavers to sustain their businesses.
- 60% of weavers reported low market demand, showing that handloom products are struggling to compete with cheaper, mass-produced textiles.
- Financial constraints (70%) and unstable wages (65%) highlight the economic vulnerability of weavers.

5.3 Awareness and Utilization of Government Schemes

Government Scheme	Aware of Scheme (%)	Benefited from Scheme (%)
National Handloom Development Programme (NHDP)	40%	20%
Weaver Mudra Scheme	35%	15%
Handloom Weaver's Co-operative Societies	50%	30%
Pradhan Mantri Mudra Yojana	60%	35%

Interpretation:

- Many weavers are unaware of key government schemes, with only 40% knowing about NHDP and 35% about the Weaver Mudra Scheme.
- Even among those aware, actual beneficiaries remain low (only 15-35%), indicating issues with implementation or accessibility.
- Cooperative societies have a relatively better reach (50%), but their support remains inadequate.

5.4 Market Access and Sales Trends

Sales Channel	No. of Weavers Using It (N=100)	Percentage (%)
Local Markets	80	80%
Direct Export	10	10%
Government Exhibitions	20	20%
Online Platforms	5	5%

Interpretation:

- 80% of weavers rely on local markets, making them vulnerable to fluctuating demand.
- Only 10% engage in direct exports, indicating a lack of access to international markets.
- Online selling remains extremely low (5%), highlighting the need for digital literacy and e-commerce integration.

5.5 Preferred Solution to Improve the Handloom Industry

Suggested Solutions	No. of Respondents (N=100)	Percentage (%)
Government Financial Aid	70	70%
Raw Material Subsidy	65	65%
Market Expansion Programs	60	60%
Training and Skill Development	50	50%
Digital Marketing Support	40	40%

Interpretation:

- 70% of weavers want direct government financial aid, showing the urgent need for economic support.
- 65% prefer raw material subsidies, which would help reduce production costs.
- 60% emphasize market expansion, highlighting the need for better marketing and export opportunities.
- Training in modern techniques (50%) and digital marketing (40%) can help bridge the gap between traditional weaving and modern commerce.

5.6 Overall Interpretation and Insights

- The handloom sector in Panipat is struggling due to competition from power looms, high production costs, and declining demand.
- Most weavers earn less than ₹10,000 per month, making the profession financially unsustainable.
- Government schemes are not effectively reaching the majority of weavers, leading to low financial support.

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- Market access is limited, with most weavers relying on local buyers instead of exploring digital or export opportunities.
- Training in modern techniques and digital marketing could help weavers expand their reach and increase profitability.

By addressing these challenges through policy interventions, financial assistance, and modernization efforts, the handloom industry in Panipat can be revived, ensuring sustainable growth and preserving India's rich textile heritage.

6. CONCLUSION AND SUGGESTIONS

6.1 Conclusion

The handloom industry in Haryana, particularly in Panipat, holds significant cultural, economic, and social importance. It has been a major source of employment and income generation for artisans and small-scale entrepreneurs. However, the industry is currently facing multiple challenges, including stiff competition from power looms, rising raw material costs, financial constraints, limited market access, and declining interest among the younger generation.

Despite government interventions such as the National Handloom Development Programme (NHDP) and various state-level schemes, the benefits have not reached all weavers due to bureaucratic hurdles, lack of awareness, and inefficient implementation. Additionally, the absence of modern marketing strategies and digital outreach has further marginalized traditional handloom products in the competitive textile market.

The research findings indicate that if proper measures are not taken, the handloom industry in Panipat may continue to decline, leading to job losses, loss of cultural heritage, and economic instability among weavers. However, with targeted interventions, policy improvements, financial support, and technology integration, the industry can be revitalized to compete with modern textile manufacturing while retaining its unique identity.

6.2 Suggestions for Revitalization of the Handloom Industry

To address the challenges and ensure sustainable growth of the handloom sector in Panipat, the following measures are suggested:

6.2.1 Strengthening Financial Support for Weavers

- Increase access to subsidized loans and easy credit facilities through banks and government schemes.
- Simplify the loan application process under schemes like the Weaver Mudra Scheme to ensure artisans can easily avail benefits.
- Implement direct financial assistance for small-scale weavers struggling with production costs.

6.2.2 Enhancing Market Access and Promotion

- Organize national and international trade fairs to showcase Panipat's handloom products.
- Develop an e-commerce platform exclusively for Haryana's handloom industry to enable global reach.
- Encourage collaborations between handloom clusters and leading fashion brands to increase demand.

6.2.3 Skill Development and Training

- Conduct training workshops to teach modern weaving techniques and design innovation.
- Provide digital marketing and business management training to help weavers market their products effectively.
- Establish vocational training centers in collaboration with educational institutions.

6.2.4 Encouraging Youth Participation

- Introduce government incentives for young entrepreneurs willing to invest in the handloom industry.
- Develop incubation centers to support startups focusing on handloom-based innovations.
- Promote handloom weaving as a prestigious and profitable career through awareness campaigns.

6.2.5 Policy Reforms and Better Implementation

- Ensure strict implementation of policies that safeguard the interests of handloom weavers.
- Improve the efficiency of government agencies handling subsidies and raw material distribution.
- Introduce measures to control the unregulated expansion of power looms, protecting traditional artisans.

6.2.6 Sustainable and Eco-Friendly Production

- Promote the use of natural dyes and organic fibers to attract environmentally conscious consumers.
- Develop policies that encourage sustainable production practices in the handloom sector.
- Provide incentives for weavers adopting eco-friendly techniques.

6.3 Final Thoughts

The handloom industry in Panipat has the potential to thrive despite the challenges it faces. While modernization and technological advancements are crucial, preserving traditional craftsmanship is equally important. A balanced approach that integrates tradition with innovation provides financial and policy support, and promotes effective marketing strategies can revive this sector.

By implementing the suggested measures, policymakers, industry stakeholders, and artisans can work together to ensure that the rich heritage of Panipat’s handloom industry not only survives but flourishes in the future. If properly nurtured, this sector can continue to provide sustainable livelihoods, contribute to Haryana’s economy, and keep the legacy of Indian handloom weaving alive for generations to come.

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