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COMPARING COX PROPORTIONAL HAZARDS MODEL AND PARAMETRIC MODELS FOR ANALYZING THE SURVIVAL OF PATIENTS WITH HEART FAILURE

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ABSTRACT

Heart failure is still a major global cause of morbidity and death, so assessing patient survival requires strong statistical tools. To investigate how long patients with heart failure live, this study compares the Cox Proportional Hazards (PH) model with common parametric survival models, including Exponential, Weibull, Log-logistic, Log-normal, Gamma, Gompertz, and Rayleigh. We start by checking the proportional hazards assumption of the Cox model using clinical data that covers patient demographics, comorbidities, and survival outcomes. Then, we explore how flexible and efficient the parametric models are for calculating hazard rates and survival functions. We compare the models based on fit metrics such as the Akaike Information Criterion (AIC). While the Cox PH model assumes less about the baseline hazard, our findings show that some parametric models offer better interpretability and predictive accuracy when their assumptions hold true. This comparison highlights the importance of picking the right model for survival studies. Using parametric methods can result in more precise risk assessment for heart failure prognosis.

KEYWORDS: *Akaike Information Criterion (AIC), Cox Proportional Hazard Model, Heart Failure, Parametric Models.*

1. INTRODUCTION

The last stage of many heart diseases is heart failure, a complex condition. Significant mortality, poorer quality of life, and high hospitalization rates are the results. Making clinical decisions, evaluating risk, and creating focused treatments all depend on knowing and forecasting how long heart failure patients will live. Survival analysis requires statistical models. They offer information about the likelihood of significant events, such as hospital readmissions or deaths.

One of the most popular techniques in survival analysis is the Cox Proportional Hazards model, which was first presented by Sir David Cox in 1972. Without requiring the baseline hazard function to be specified, it provides estimates of hazard ratios associated with various factors. The Cox model is flexible and simple to understand because of its semi-parametric methodology. It is predicated on the idea that the risk ratios between groups don't change over time, though. Results could be skewed or deceptive if this presumption is broken.

On the other hand, parametric survival models assume specific distributions for survival times, such as the Exponential, Weibull, Log-logistic, Log-normal, Gamma, Gompertz, and Rayleigh

models are parametric models. When the assumed distribution fits the data well these parametric models can produce more accurate estimates and also allow direct estimation of hazard rates and survival functions. Parametric models can also manage developing hazards and forecast outcomes outside of the observed follow-up periods, both of which are frequently beneficial in clinical practice.

Given the advantages and disadvantages of each modeling technique, it is vital to understand how they work in various clinical situations. In this study, we use a dataset of heart failure patients to evaluate the Cox Proportional Hazards model with parametric survival models. We assess the models' fit, predictive power, and interpretability, and consider the implications for clinical research and practice.

2. LITERATURE REVIEW

Survival analysis is highly applied in clinical research to analyze time-to-event data, particularly for long-term diseases such as heart failure. Over the years, different modeling techniques have been developed and employed to further develop the knowledge of the factors influencing patient survival and facilitate improved clinical decision-making.

Cox Proportional Hazards (PH) model, introduced by Cox (1972), is used extensively due to its semi-parametric nature, without necessitating the specification of the baseline hazard function. The Cox model has been employed by several studies, including those by Levy et al. (2002), to identify clinical predictors of death in heart failure populations. While the model is powerful and interpretable, it will have a limitation in relying on the proportional hazards assumption, especially when covariate effects vary over time.

In contrast, parametric models assume a specific distribution for survival times and are especially useful when the data exhibit time-dependent hazard structures. The Weibull model, for example, allows for increasing or decreasing hazards over time and has been effectively used in several heart failure studies (e.g., D'Agostino et al., 2008). Similarly, Log-normal and Log-logistic models have been used to model more complex hazard shapes, especially when survival curves show non-monotonic behavior. Research by Klein and Moeschberger (2003) and Bradburn et al. (2003) emphasizes the advantages of parametric models in providing smooth and extrapolatable survival estimates.

Recent studies have explored model comparison frameworks to assess the relative performance of Cox and parametric models. A study by Royston and Parmar (2011) compared flexible parametric models with Cox models in clinical trials and found that parametric models often performed better in terms of predictive accuracy when their assumptions were met. Additionally, statistical tools such as the Akaike Information Criterion (AIC) and graphical methods have been used to guide model selection (Collett, 2015). Ravangard et al., (2011) compare the results of Cox proportional hazards model and parametric models in the study of length of stay in a Tertiary Teaching Hospital in Tehran, Iran. Pourhoseingholi et al., (2007) compare the Cox regression and parametric models for survival of patients with gastric carcinoma. Pourhoseingholi et al., (2009) used log-normal censored regression model to find out the prognostic factors in gastric cancer.

For heart failure, precise survival modeling is essential because of heterogeneity in the patient population. Research such as that presented by Pocock et al. (2006) has shown that considering time-dependent effects and flexible modeling strategies can very much improve prognostic

models. Yet few studies have directly compared parametric and semi-parametric survival models for heart failure cohorts systematically, and hence more research in this context is required. Ahmad et al. (2017) employed Cox regression model, Kaplan Meier plot and Martingale residuals to analysis of heart failure patients' survival. Chicco and Jurman (2020) utilized machine learning classifiers to analysis heart failure patients' survival. Ashine et al. (2021) utilized Cox proportional hazard model and Bayesian parametric survival models to analysis survival time of patients with heart failure.

3. DATASETS AND STATISTICAL TECHNIQUES

Dataset

We analyzed a dataset that included 299 heart failure patients' medical records that were gathered between April and December 2015 at the Allied Hospital and the Faisalabad Institute of Cardiology in Faisalabad, Punjab, Pakistan [Ahmad et al. (2017)]. The patients were in age from 40 to 95 years old, with 105 women and 194 males among them. Each of the 299 patients had a history of heart failure and left ventricular systolic dysfunction that classified them in heart failure stages III or IV according to the New York Heart Association's (NYHA) classification [Bredy et al. (2017)]. The dataset contains total 13 potential features which were described in Table 1. The features Age, CPK (Creatinine phosphokinase), Ejection Fraction (EF), Platelets, Serum creatinine, Serum sodium, Time (Follow-up period) are taken as continuous where the features Sex, Anemia, Blood pressure, Diabetes, Smoking, Event are taken as binary. The quantitative features of the dataset are presented in Table 2 and Table 3. Other additional details about this dataset can be found in [Ahmad et al. (2017)].

TABLE 1: DESCRIPTION OF EACH FEATURE OF THE DATASET

Categorical Variables		Continuous Variables	
Variables	Description (Numbers)	Variables	Description [Range]
Sex	0-Female (105); 1-Male (194)	Age	Age of the patient [40-95]
Anemia	0-Absence (170); 1-Presence (129)	CPK	Level of CPK enzyme in the blood [23-7861]
High Blood pressure (BP)	0-No (194); 1-Yes (105)	Ejection fraction (EF)	Percentage of blood leaving the heart at each contraction [14-80]
Diabetes	0-Absence (174); 1-Presence (125)	Platelets	Platelets in the blood in kiloplatelets/mL [25.01-850.00]
Smoking	0-No (203); 1-Yes (96)	Serum creatinine	Level of creatinine in the blood in mg/dL [0.50-9.40]
Event	0-Survived (203); 1-Deceased (96)	Serum sodium	Level of sodium in the blood in mEq/L [114-148]
		Time	Follow-up period in days [4-285]

TABLE 2: STATISTICAL QUANTITATIVE DESCRIPTION OF CATEGORY FEATURE OF THE DATASET

Variables	Full Sample (299)		Dead Patients (96)		Survived Patients (203)	
	Number	Percentage	Number	Percentage	Number	Percentage
Sex (0-Female)	105	35.12	34	35.42	71	34.98
Sex (1-Male)	194	64.88	62	64.58	132	65.02
Anemia (0-Absence)	170	56.86	50	52.08	120	59.11
Anemia (1-Presence)	129	43.14	46	47.92	83	40.89
High Blood pressure (0-No)	194	64.88	57	59.38	137	67.49
High Blood pressure (1-Yes)	105	35.12	39	40.62	66	32.51
Diabetes (0-Absence)	174	58.19	56	58.33	118	58.13
Diabetes (1-Presence)	125	41.81	40	41.67	85	41.87
Smoking (0-No)	203	67.89	66	68.75	137	67.49
Smoking (1-Yes)	96	32.11	30	31.25	66	32.51

TABLE 3: STATISTICAL QUANTITATIVE DESCRIPTION OF NUMERIC FEATURE OF THE DATASET

Variables	Full Sample (299)			Dead Patients (96)			Survived Patients (203)		
	Median	Mean	s.d.	Median	Mean	s.d.	Median	Mean	s.d.
Age	60.00	60.83	11.89	65.00	65.22	13.21	60.00	58.76	10.64
Ejection fraction	38.00	38.08	11.83	30.00	33.47	12.53	38.00	40.27	10.86
CPK	250.00	581.80	970.29	259.00	670.20	1316.58	245.00	540.10	753.80
Platelets	262.00	263.36	97.80	258.50	256.38	98.53	263.00	266.66	97.53
Serum sodium	137.00	136.60	4.41	135.50	135.40	5.00	137.00	137.20	3.98
Serum creatinine	1.10	1.39	1.03	1.30	1.84	1.47	1.00	1.19	0.65
Time	115.00	130.30	77.61	44.50	70.89	62.38	172.00	158.30	67.74

s.d.: standard deviation

Statistical Techniques

The Cox Proportional Hazards Model is a most widely used generalized and a powerful semi-parametric model used in survival analysis to investigate how different variables influence the probability of a certain event—like failure, relapse, or death—happening. The model displays the following hazard function

$$h(t|X) = h_0(t) \cdot \exp(\beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p)$$

where $h(t|X)$ is the hazard function for the covariate X at time t , $h_0(t)$ is the baseline hazard function which does not need to be specified, X_1, X_2, \dots, X_p are covariates and $\beta_1, \beta_2, \dots, \beta_p$ are the regression coefficients.

The model assumes that two single risk ratio is stable over a period of time:

$$\frac{h(t|X_1)}{h(t|X_2)} = \exp[\beta^T (X_1 - X_2)]$$

which is referred to as proportional hazard assumption. The regression coefficient β , positive indicates the hazard increases and thereby the probability of survive is reduced; negative indicates the hazard is reduced and thereby the probability of survive is improved. The hazard

ratio (HR) $\exp(\beta)$ shows by how much the risk increases or decreases if the covariate shifts by one unit.

An alternative to the Cox Proportional Hazards Model in survival analysis when proportional hazard assumption violated is the Aalen's Additive Hazard Model. Aalen's model implies that covariates have an additive effect on the hazard function, whereas Cox assumes that covariates have a multiplicative effect on the hazard. Also the Aalen's Additive Hazard Model is a non-parametric model which allows the effects of the covariates to change over time. The model is given by the following hazard function

$$h(t|X(t)) = \beta_0(t) + \beta_1(t)X_1(t) + \beta_2(t)X_2(t) + \dots + \beta_p(t)X_p(t)$$

where $h(t|X(t))$ is the hazard function for the covariate $X(t)$ at time t , $\beta_j(t)$ is the time-varying regression coefficient.

In addition, in case the proportional hazard assumption is bound to be in violation, the use of parametric survival models can prove better. Parametric models most commonly used are Exponential, Weibull, Log-logistic, Log-normal, Gamma, Gompertz and Rayleigh distributions.

Proportional hazards assumption was checked in this research by employing Schoenfeld residuals, Cox regression model and parametric models such as Exponential, Weibull, Log-logistic, Log-normal and Rayleigh. The p -value less than 0.05 are taken as statistical significant. Akaike Information Criterion (AIC) was used to compare the different model performance.

4. RESULTS AND DISCUSSION

The results for proportional hazards assumptions testing are shown in **Table 4** and a plot of Schoenfeld residuals for all the covariates is shown in **Figure 1**. From Table 4, the correlation between the Schoenfeld residuals for the variable 'Ejection.Fraction' and ranked survival time is -0.0277 with a p -value of 0.03. This significant p -values proof that the proportional hazards assumption is not satisfied for the variable 'Ejection.Fraction'. The p -values for the other variables are not significant suggest that there is not enough evidence to reject the proportional hazards assumptions for these variables. The global test for the entire model is not significant with $p = 0.39$. This global test offers evidence that the proportional hazards assumption is satisfied for that model.

TABLE 4: TEST FOR PROPORTIONAL HAZARD ASSUMPTIONS

Covariates	rho	chisq	p
Gender	-0.1054	0.0763	0.78
Smoking	0.0134	0.4790	0.49
Diabetes	0.0983	0.1920	0.66
BP	0.0074	0.0082	0.93
Anaemia	0.0840	0.0169	0.93
Age	0.2090	0.1030	0.75
Ejection.Fraction	-0.0277	4.6900	0.03*
Sodium	0.0728	0.1100	0.74
Creatinine	-0.0455	1.5200	0.22
Pletelets	0.1127	0.00006	1.00
CPK	-0.1140	1.02	0.31
GLOBAL		0.1170	0.39

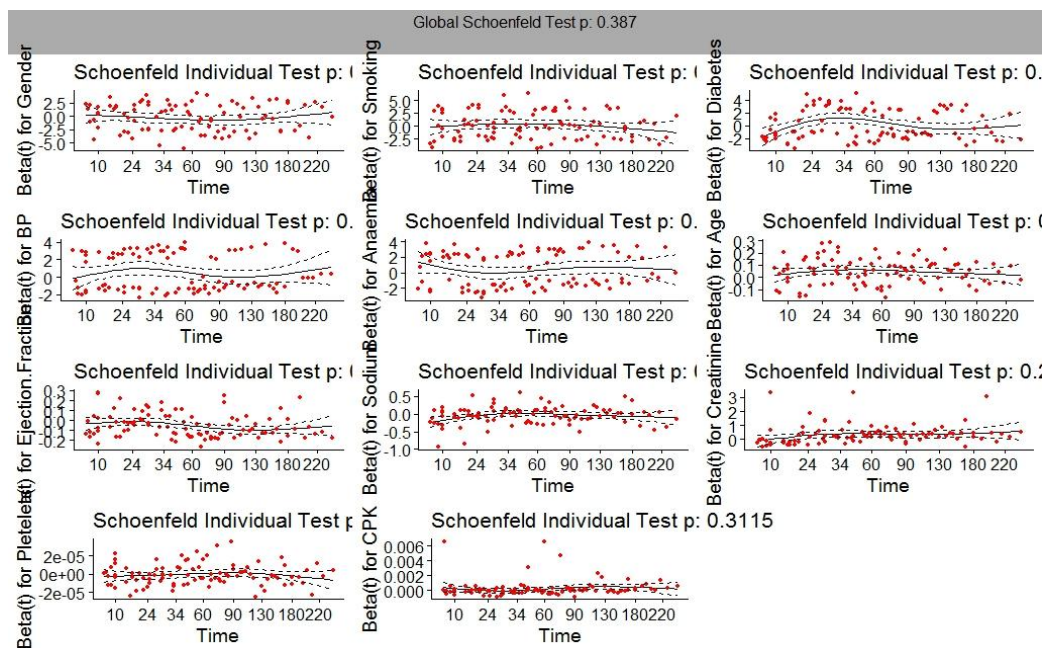


Figure 1. Schoenfeld residuals

The Cox proportional hazard model and the parametric models like, Exponential, Weibull, Log-logistic, Log-normal and Rayleigh was used separately to investigate the influence of several factors on the survival times.

The results of Cox regression model and the parametric models are presented in Table 5 – Table 10. The prognostic factors like Blood pressure (BP), Anaemia, Age, Ejection.Fraction, Creatinine and Creatinine phosphokinase (CPK) are the significant factors for survival of the heart failure patients as per all six models. Sodium is significant covariates as per log-normal and Rayleigh models. The performances of the models are compared through AIC values which are shown in Table 11. We see that Cox regression model has the lower AIC among all models and the parametric model exponential has the lowest AIC among all parametric models. Also comparisons of the results of the covariates between Cox and Exponential models are present in Table 12. Both models perform same to identify the effective risk factor for survival of the patient with heart failure.

TABLE 5: SIGNIFICANCE OF VARIABLES UNDER COX REGRESSION MODEL

Covariates	Coefficient	HR	Z-value	p-value
Gender	-0.2375	0.7886	-0.944	0.3452
Smoking	0.1289	1.1376	0.513	0.6078
Diabetes	0.1399	1.1501	0.627	0.5307
BP	0.4757	1.6092	2.201	0.0278*
Anaemia	0.4601	1.5843	2.122	0.0338*
Age	0.0464	1.0475	4.977	6.45e-07*
Ejection.Fraction	-0.0489	0.9522	-4.672	2.98e-06*
Sodium	-0.0442	0.9568	-1.899	0.0575
Creatinine	0.3210	1.3786	4.575	4.76e-06*
Pletelets	-4.635e-07	1.0000	-0.412	0.6806
CPK	2.207e-04	1.0002	2.225	0.0260*

TABLE 6: SIGNIFICANCE OF VARIABLES UNDER EXPONENTIAL MODEL

Covariates	Coefficient	SE	Z-value	p-value
Gender	0.234	0.252	0.93	0.352
Smoking	-0.118	0.251	-0.47	0.639
Diabetes	-0.142	0.223	-0.64	0.524
BP	-0.507	0.214	-2.38	0.017*
Anaemia	-0.492	0.214	-2.29	0.022*
Age	-0.0486	0.0093	-5.23	1.7e-07*
Ejection.Fraction	0.0509	0.0106	4.82	1.4e-06*
Sodium	0.0437	0.0231	1.90	0.058
Creatinine	-0.325	0.0681	-4.77	1.8e-06*
Pletelets	5.16e-07	1.13e-06	0.45	0.649
CPK	-2.38e-04	9.95e-05	-2.39	0.017*

TABLE 7: SIGNIFICANCE OF VARIABLES UNDER WEIBULL MODEL

Covariates	Coefficient	SE	Z-value	p-value
Gender	0.246	0.263	0.93	0.350
Smoking	-0.119	0.261	-0.45	0.649
Diabetes	-0.147	0.232	-0.63	0.528
BP	-0.514	0.222	-2.31	0.021*
Anaemia	-0.5	0.224	-2.24	0.025*
Age	-0.0498	0.01	-4.96	7.2e-07*
Ejection.Fraction	0.0525	0.0116	4.53	5.9e-06*
Sodium	0.0450	0.0241	1.87	0.062
Creatinine	-0.333	0.0731	-4.56	5.1e-06*
Pletelets	5.51e-07	1.18e-06	0.47	0.641
CPK	-2.43e-04	1.04e-04	-2.34	0.019*

TABLE 8: SIGNIFICANCE OF VARIABLES UNDER LOG-LOGISTIC MODEL

Covariates	Coefficient	SE	Z-value	p-value
Gender	0.256	0.285	0.90	0.369
Smoking	-0.123	0.283	-0.44	0.663
Diabetes	-0.136	0.248	-0.55	0.585
BP	-0.522	0.247	-2.12	0.034*
Anaemia	-0.489	0.245	-1.99	0.046*
Age	-0.0508	0.0105	-4.85	1.2e-06*
Ejection.Fraction	0.0506	0.0122	4.14	3.5e-05*
Sodium	0.0516	0.0270	1.91	0.056
Creatinine	-0.360	0.0979	-3.67	0.0002*
Pletelets	6.77e-07	1.28e-06	0.53	0.597
CPK	-2.36e-04	1.16e-04	-2.03	0.042*

TABLE 9: SIGNIFICANCE OF VARIABLES UNDER LOG-NORMAL MODEL

Covariates	Coefficient	SE	Z-value	p-value
Gender	0.176	0.296	0.59	0.5520
Smoking	-0.0862	0.292	-0.30	0.7675
Diabetes	-0.0864	0.255	-0.34	0.7343
BP	-0.503	0.256	-1.97	0.0489*
Anaemia	-0.524	0.253	-2.07	0.0384*
Age	-0.0482	0.0107	-4.51	6.5e-06*
Ejection.Fraction	0.0443	0.0115	3.84	0.0001*
Sodium	0.0608	0.0269	2.26	0.0239*
Creatinine	-0.359	0.0104	-3.44	0.0006*
Pletelets	7.16e-07	1.32e-06	0.54	0.5880
CPK	-2.55e-04	1.17e-04	-2.18	0.0291*

TABLE 10: SIGNIFICANCE OF VARIABLES UNDER RAYLEIGH MODEL

Covariates	Coefficient	SE	Z-value	p-value
Gender	0.0727	0.128	0.57	0.5686
Smoking	-0.0837	0.127	-0.66	0.5107
Diabetes	-0.0767	0.114	-0.67	0.5002
BP	-0.401	0.107	-3.74	0.0002*
Anaemia	-0.376	0.108	-3.49	0.0005*
Age	-0.0321	0.0049	-6.47	9.5e-11*
Ejection.Fraction	0.0306	0.0054	5.61	2.1e-08*
Sodium	0.0272	0.0116	2.34	0.0191*
Creatinine	-0.213	0.0361	-5.90	3.7e-09*
Pletelets	7.85e-08	5.87e-07	0.13	0.8935
CPK	-1.72e-04	5.26e-05	-3.27	0.0011*

TABLE 11: MODEL COMPARISON AS PER AIC

Models	Cox	Exponential	Weibull	Log-logistic	Log-normal	Rayleigh
AIC	958.46	1280.42	1282.24	1285.46	1287.37	1374.36

TABLE 12: COMPARISON OF THE RESULTS OF THE COVARIATES BETWEEN COX AND EXPONENTIAL MODELS

Covariates	Cox model			Exponential model		
	Coefficient	SE	p-value	Coefficient	SE	p-value
Gender	-0.2375	0.2516	0.3452	0.234	0.252	0.352
Smoking	0.1289	0.2512	0.6078	-0.118	0.251	0.639
Diabetes	0.1399	0.2231	0.5307	-0.142	0.223	0.524
BP	0.4757	0.2162	0.0278*	-0.507	0.214	0.017*
Anaemia	0.4601	0.2168	0.0338*	-0.492	0.214	0.022*
Age	0.0464	0.0093	6.45e-07*	-0.0486	0.0093	1.7e-07*
Ejection.Fraction	-0.0489	0.0105	2.98e-06*	0.0509	0.0106	1.4e-06*
Sodium	-0.0442	0.0233	0.0575	0.0437	0.0231	0.058
Creatinine	0.3210	0.0702	4.76e-06*	-0.325	0.0681	1.8e-06*
Pletelets	-4.635e-07	1.13e-06	0.6806	5.16e-07	1.13e-06	0.649
CPK	2.207e-04	9.92e-05	0.0260*	-2.38e-04	9.95e-05	0.017*

5. CONCLUSION

This research offers a comparative assessment of the Cox Proportional Hazards model and widely applied parametric survival models in the analysis of patient survival with heart failure. The Cox model, due to its semi-parametric flexibility and interpretability, is still an influential model, particularly when the proportional hazards assumption can be made. Nevertheless, parametric models like the Weibull and Log-normal provide useful alternatives, especially when survival times are known to follow established distributions or when extrapolation beyond the observed region is needed.

Our results show that the prognostic variables such as Blood pressure (BP), Anaemia, Age, Ejection.Fraction, Creatinine and Creatinine phosphokinase (CPK) are the important factors for survival of the heart failure patients according to all six models. Sodium is important covariates according to log-normal and Rayleigh models. Parametric models are capable of outperforming the Cox model in model fit and predictive accuracy when their assumptions are met.

Finally, the selection between Cox and parametric models ought to be determined by the nature of the data, the clinical question being investigated, and diagnostic tests like residual analysis and goodness-of-fit tests. The implementation of both modeling methods may give a better insight into the survival of patients and the strength of clinical conclusions obtained from survival analysis.

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GREEN MARKETING: - CURRENT SCENARIO, NEED, STRATEGIES FOR AWARENESS AND CHALLENGES IN INDIAN MARKET

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ABSTRACT

In this age of modernisation, liberalization and globalisation, it has become an even more difficult task to make the customers as well as consumers happy, contained and not forgetting making our natural environment safe and pollution free that is the need of time. Pollution to the environment is a major issue in the contemporary business world. There are also the environmental problems known by the consumers such as global warming and effect of environmental pollution. Green marketing is an aspect that has become particularly significant in the contemporary marketplace and has become the significant concept in India as in any other part of the world regardless of being a developing or a developed one. In this research work, a lot of attention has been focused on the concept, need, and significance of green marketing. All these sources of evidence such as books, journals, websites, and newspapers are important since data must be gathered concerning the significance of green marketing. The Paper seeks to determine what exactly green marketing is all about and how a business firm can be more competitive by employing the strategies of green marketing so as to come up with a competitive advantage over others. It discusses the key challenges in adoption of green marketing practice. Describing the existing Scenario of Indian market and requirements, the paper has elaborated Strategies that may be used to create awareness, the challenges and opportunities available to businesses regarding green marketing. Why companies are adopting it and future of green marketing and gives conclusion that green marketing is something that will always keep on increasing woman sex tape with regard not just to the practice but even in the demand too.

KEYWORDS: *Green Marketing, Liberalization, Globalization, Adoption.*

INTRODUCTION

India is a nation that has over 121 Cr. and off the book over 17 percent of the world population. It ranks the seventh biggest nation in the earth in terms of sum total of land area of 3,287,263 sq kilometres. The length of India spans north south direction at 3214 km and east west direction at 2993km. Its land porous international limit is 15,200km; 7,517km is the coastline. India boasts of 28 states and 7 union territories. Green marketing is a key research subject in the academic world that has been defined in numerous ways and has been around at least three decades. Green

Marketing or Environmental Marketing, 1 according to the AMA, is all the activities aimed at producing and mediating any exchanges to sustainably satisfy human needs and wants, such that satisfaction of human needs and wants will take place with minimal harmful effect on the natural environment. Accordingly we can state that Green Marketing deals with: - Producing and offering the consumers good quality of products that are also non-hazardous to them even in the long run. Utilize the developmental resources in a way that will make the development resource available to the future generation in a way that will be able to have access to the development resources to satisfy their needs thus resulting to Sustainable Development. To formulate and use policies that would no bad impact on the environment i.e. both in the present and the future time. So, with the increasing awareness of the consequences of global warming, non-biodegradable solid waste, harmful effects of the pollutants etc., the production, marketing consumption, and disposing of the products and services are occurring in a less way harmful to the environment leading to the development of a concept of such holistic marketing and this is also termed as Green Marketing. A keen realization that switch in to green products and services is necessary is on the rise among marketers, as well as, the consumers. Even though this transformation towards going green seems costly at first, it will most certainly be irreplaceable and beneficial, even in terms of costs, in the foreseeable future. There was the initial wave Known as the Green Marketing in the 1980s. The two physical checkpoints of the first wave of green marketing came in the form of published books the titles of which were (both) Green Marketing. In the United Kingdom they were by Ken Peattie (1992) and by Jacquelyn Ottoman in the United States.

Green marketing flourished in the late 80s and very early 90s; it was spoken about long before then also. The practice of green marketing is the in vogue term. Even the leaders of the companies are concentrating on the products that are eco-friendly. By default adoption of usage of organic product can create environment friendly products that have reduced or no mal-effects on the environment in the course of production.

Organic Goods:-The case of Asian country is unique, which cannot be replicated anywhere as here the farming methodologies are organic in most of the instances due to custom as well as several economic and societal determinants. The aim of green marketing is fulfilling two goals, which are enhanced quality of the environment and customer satisfaction. An inaccurate assessment of one of them or even sacrificing one in favor of the other can be called green marketing myopia. Subsequently, the concept of marketing myopia was popularized by a Harvard business professor called Theodore Levitt in an influential and popular article in The Harvard Business Review in 1960. There is the environmental marketing which was based on clean technology which entailed the designing of new ingenious products. The next and the current marketing phenomenon is the sustainable. Green marketing, therefore, is beneficial to firms in maintaining a steady long-term growth as well as profit and helps the firms to market products and services according to the environmental needs. The question is however, not that straight forward pinning down what green marketing is. In fact the terms in which this section has been utilised have been divergent and they comprise: Green Marketing, Environmental Marketing and Ecological Marketing. The American Marketing Association has defined green marketing as the activities of businesses and companies aimed at producing, marketing, releasing and reclaiming items in a way that is ecologically considerate or sensitive. Green marketing is a way of selling a product and/or service on its merits in terms of the environment. Such a product or service can be globally friendly in bits or is created and/or packaged in environmentally friendly manner. Concisely, it is similar to marketing but driven by the environment and with an

urge to seek favour of the environmental concerns of the consumers. It is also known as sustainability marketing or ecological marketing. The developed products can be of recycled type or of used merchandises that should be created on the basis of betting on the customer requirements.

The energy saving, the water saving and the money saving and moreover the minimization of the negative environmental impact are the keys by which efficient products are developed. Under product management, the marketers will offer market-driven trends and client needs to inexperienced product attributes to product designers. Some of these attributes include energy conservation, organic, untested chemicals and home grown supply among others. Some of the terms can be explained as follows:

Organic: In the present scenario the only products which can retain a legitimate claim of being organic are the products which can be termed as agricultural products. The United States Department of Agriculture (USDA) regulates this term and all organic products must meet the specifications in order to pursue the USDA Organic certification.

Ozone Friendly or Safe: This is one of the commonly used phrases depicting how a product or packaged item can affect the upper ozone layer in a negative, or in this case, positive manner, like an aerosol can that does not produce chlorofluorocarbons (CFCs).

Recyclable: The product or a package that can be recovered in or separately out of the solid waste stream by means of a comprehensive recycling program known as recyclable product.

Recycled: A product, or a package made with something that has been recycled in it. This recycled material is reclaimed or intercepted by the solid waste stream, which is either pre-consumer (duringmfg of product or post-consumer (after the consumer uses it).

Refillable: A product or package has a system established to allow collection and returns of the packaging to allow it to be refilled with the product by the consumers under what is called refillable.

Sustainable: What this means is that ways of farming, constructions, manufacturing and electricity generating are done in a way that cannot be used in delectable resources, such as coal or oil, also allowing them to be used repeatedly.

Carbon footprint: Refers to the impact that a process or act creates on the climate in relation to the greenhouse gases that it generates. Many people would tend to attribute global climate change directly to greenhouse gases i.e. methane, water vapour, nitrous oxide, carbon dioxide and fluorocarbons.

Carbon Neutral: This is lowering its energy consumption and compensating to make its energy consumption near the amount of carbon dioxide produced by it by acquiring energy using renewable source or by offsetting by planting trees or by investing in windmills.

Compostable: Any compostable product or packaging material being promoted must be able to decompose into usable compost in a secure and affordable way into a compost site as well as in a domestic compost heap or unit.

Degradable: A product or a package which fully decomposes and it goes back to nature, in a fairly short time, after the consumer disposes of the product also called as degradable product.

Natural: Probably the most vague of all the green terminologies, the term natural products does not have any definitive environment impact but is presumed to be produced of natural materials or ingredients as compared to manmade. Although a product that is touted as natural might sound good to the consumer, in most of the instances it is mere rhetoric. Consider it, poison ivy, anthrax and gasoline can be considered technically natural as well, that does not make it healthier or even friendlier to the environment. Words such as Phosphate Free, Recyclable, Refillable, Ozone Friendly, and Environment Friendly are some of the things that are most likely to be associated with green marketing by the consumer and these are words that would be described as green marketing claims.

Aims of the Study:-

To research on the significance of green marketing in the current situation.

To study application of green marketing to Indian corporate sector.

To analyze the necessity of the Green marketing in India in various points of view.

To investigate and comprehend the strategy that should be used in order to conduct an effective Green marketing.

To research into the current situation and possibilities of Green marketing in India.

Current Scenario-India:-

There is a lot of talk among many analysts that 2025 will be the year that will determine the fate of many of the green businesses because, with the growing competition in the green arena, some businesses will reach new heights in terms of innovation and services whereas others will start drifting behind. The trends can be here and there, and naturally, no green business can follow all of them, and there is no sense in trying. Nevertheless, monitoring the trends of green business is an excellent equivalent measure that guarantees that your business can be successful, versatile, and imaginative when new challenges and opportunities claim their way in, as there was no better way to have green business prosperity in 2025 and beyond.

Consumers:-

According to the research done, deforestation and air pollution have got the largest number of respondents as the most significant green issue in India. More consumers in India believe it should instead be developing countries that should work on green innovation compared to the developed countries than in any other nation. The findings of the just-released 2014 edition of the Global Image Power green Brands Survey reveal that the environment worry is being expressed by the consumers in terms of a willingness to pay a premium on going green products. 64 per cent of Indian consumers show that they would spend more on green products next year. Moreover in line with the rest of the emerging nations, Indians are ready to pay pricing on a green premium with 48 % of the Indians ready to lay additional 10 per cent of the product just because the product is green. Indians response to green advertising is relatively high considering that 86 percent of the consumers in India have indicated that they trust green advertising more in making choices unlike in other countries. There is a 28 percent extended period of consumer purchase plan of auto in India in the recent one year as compared to purchase of 16 percent last year.

Producers:-

AMUL has been judged as the Top Indian Green Brand under Global Green Brands survey. AMUL Green movement has also been adjudged as the Best Environment Initiative in the Sustainability Category by the International Dairy federation in the year 2014. Srishtis good green Governance award has also been given to it four years in succession since 2014. The 2014,

Best 10 Green brands in India are:

1. AMUL
2. Dabur India ltd.
3. Infosys
4. Taj Hotels
5. Britannia Industries ltd.
6. Suzlon India
7. Hindustan Unilever Ltd.
8. Wipro technologies ltd.
9. MarutiUdyog ltd.
10. Godrej Consumer Products

The results indicate that going both green and consumer friendly is the only mantra of long term success today.

Government:-

One of the promoters of green marketing and eco friendliness by the Indian government has been to ban or stop using of plastic bags in their daily usage and has assisted its automotive industry to develop greener vehicles by helping using of hybrid and electric vehicles (EVs) by investing in greener vehicles. The government put itself on the forefront of environmental building construction, use of alternate sources of energy by the companies. The governmental Bodies are Making Firms more Responsible. In most instances, the government compels the company to resort to policy that safeguards the interests of the consumers by cutting down production of substandard products or by products, Change consumer and industry softer-and/or consumption of substandard goods; or, Enable all forms of consumers to consider the environmental makeup of goods.

Green Marketing Need:-

In the given context, the issue revolves around ensuring that the customers stay within the fold as well as ensuring that even our natural environment stays safe and this is the major requirement of the hour. Green management is essential to companies because they will lose a lot of their loyal and profiting customers and consumers. In the modern innovative business world of high technology caused by ever growing community and consumer interest in green and socially responsible product, more community pressure on company to internalize externality like health concerns, neighbourhood amenity, global warming; environmental and governmental regulations and initiatives, innovative technologies and methods of dealing with pollution, use of resources

and energy and to maintain old (loyal and profitable) customers and consumers, implementation of green marketing is very much in need.

Additional green management generates new eco-friendly customers and this results in rise of sales and profits of the organization thus growth and development of the business; it also results in favorable image of the organization among the people. The current times are a phase where the government policies around the globe are very rigid and everyone around the world is talking about global warming and climate change and protection of environment, the companies would not have the option but to go green in terms of marketing their products because otherwise it would be late and then no one knows whether they would be able to survive in the greener world or not. The world economy in general and India in particular is turning towards energy efficient products on the part of the consumer. One way or another, most of the companies are treading into green marketing due to the following reasons:

In India, 25 per cent of the consumers seek products that are environmentally friendly and about 28 per cent can be regarded as health conscious. Thus, green marketers can have a rather large number of segments to target. It has also started dawning on many companies that they need to conduct themselves in an environment friendly manner and believe in the fulfilment of environmental goals in pilot as well profit related goals. Green marketing was adopted as a form of compulsion rather than choice due to a number of regulations that have recently been adopted by the government to protect the consumers and the society in general. Such as the prohibition of plastic bags in most of the country, denying of smoking in the very places, etc. Green marketing is adopted by many companies so that they can remain competitive.

Successive Green Marketing Strategy:-

- 1. Knowing the Customer:** Knowing the customer consists of the consumer being aware and concerned about the issues that your product is trying to help, without this knowledge it will be difficult to attain success in green marketing.
- 2. Educating the customer:** This would mean educating the people as to why whatever they are doing is not only to conserve on the environment, but also informing them why it is important. Otherwise, a major part of your target market will be thinking, so what? Does it make any difference to me and you sales pitch on green is lost.
- 3. Authenticity, openness to the customer:** This portrays that a) In practice, you are actually doing what you have been preaching on your green marketing and also the b) the policies that you have as a business are in good terms with whatever deeds that you might be doing which is environmentally positive. Both these criteria must be achieved so that you can make a business with this level of environmental credentials to enable your green marketing campaign to succeed.
- 4. Convincing thy Buyer:** This implies that, the customers must be given knowledge that the product on offer shall serve the purpose or vision as to why it is bought i.e. no compromise in the quality of the goods in the name of the environment.
- 5. Charging thy customer:** Which is offering a premium and ensuring that the consumer can afford it and that they perceive it to be worth it and charging them accordingly, because many of the environmentally preferable products are more expensive as there are economies of scale involved and they are made of higher quality of materials.

6. Providing your customers with the chance to take part: Involves personalizing the value of your environmentally controlled behaviours which is usually achieved in letting the consumer participate in some positive environmental activity, nor to overlook the altered expectations on the side of the customers.

Four Ps of Green Marketing:-

Green Product:

The products will need to be developed on basis of the needs of the customers who like environment friendly products. The products manufactured can be of used goods or by recycling. Efficient products do not only save water, energy and money, but also minimize hazardous impact on the environment.

Impacts, on the environment. Green chemistry constitutes the increasingly popular dimension of product development. The marketer in the process of product management would have a role to play by providing the product designer with the market driven fashions and customer requests of green product properties like energy saving, organic, green chemicals, local sourcing, etc. That is the case in point of example Nike being the pioneer among the shoe companies to sell itself as green. It is branding its Air Jordan shoes as having environmental friendly aspect as it has vastly minimized usage of corrosive glue adhesives. All the pictures in this range of shoes have been chosen to underline the message that, they have decreased the wastage levels and utilize environmental friendly materials.

Green Price

Green pricing considers factors that are relevant to people, planet and profit, and factors that take care of the well-being while being productive to the employees as well as the communities. It can be made to have a Value added by altering its looks and functionality as well as being customized etc. Wal- Mart came out with a recyclable cloth shopping bag. At IKEA, customers started paying when using bags made of plastic, and people were also persuaded to penny shop using what was termed by IKEA as the big blue bag.

Green Place

Green place is all about management of logistics in order to minimize transportation emissions hence in effect attempting to minimize the carbon footprint. As an example, it can license a local producer of a mango juice manufactured in India rather than selling an imported mango juice. This prevents transportation of the product by long distance which is cost consuming when it comes to transportation costs and carbon emission as a result of ship and other means of travel.

Green promotion

Green promotion deals with the set-up of the instruments of promotion, which include advertising and marketing materials, signage, white papers, web sites and videos, and presentations without failing to consider people, planet and profits in mind. British petroleum (BP) has a gas station with their sunflower logo, and it prides itself in investing in solar energy. Indian Tobacco Company has made environment- friendly papers and boards that are elemental chlorine free. Toyota has been attempting to introduce gas/electric hybrid technology to most of its products. It is also in the process of carrying out the largest research and development into the much-hyped hydrogen car, and in marketing itself as the global first of eco-friendly cars companies. International business machines Corporation (IBM) has unveiled a series of green

retail store technologies and services that will enable retailers to drive better energy efficiency in retailing through their IT operations. The main attraction of this portfolio consists of the IBM SurePOS 700, a point-of-sale product that saves nearly 36 percent of power or more, according to IBM. We even find the name of retail outlets like Reliance Fresh, Fresh@Namdhari Fresh and Desi that though dealing with selling fresh vegetables and fruits, conveys a subliminal message of green marketing. Green Marketer will have ability to attract customers based on various concepts performance, money savings, health and convenience, or simply the environment friendly aspect so that green marketer can target a wide range of customers. Consciousness among the people can be achieved by sensitizing the consumers about the advantage of using products which are environmental friendly. Placing profiles that deal with green marketing on social networks informs other peer groups in the online world. It can also directly be marketed to the consumers and they can be marketed through the advertisement of a product like energy saving compact fluorescent lamps, the battery powered Reva car etc.

Green Marketing in Indian Corporate Sector:

The companies in India are slowly discovering that they belong to the greater community and hence will have to act in a responsible manner in terms of environment. This goes to mean that companies are faced with the view that they should meet environmental goals along with profit related goals. This makes the environment problems become part of the firm corporate culture.

A company should consider the adoption of green marketing basically because of five reasons.

- i. The companies feel that they owe it a moral duty to be more socially responsible.
- ii. Organizations see the environmental marketing as an opportunity that can be harnessed in order to accomplish the goals of the organization.
- iii. Expenses linked to disposal of waste compel the companies to change their ways of actions.
- iv. The environmental activities of the competitors compel the firms to transform their environmental marketing activities.
- v. Responsible firms are being enacted by the government.

Best Companies who Green the India

The green business trend is a perfect manner to be sure that your business remains fresh, adaptable, and innovative to new confrontations and possibilities.

1. Suzlon Energy

One of the greenest and best Indian companies in India is the wind-turbine maker as the fourth largest in the world. Tulsi Tanti; founder of Suzlon, has made the whole world believe that the future of energy is wind and this is why he has constructed his factory in the city of Pondicherry to operate completely on wind energy. Corporate building of Suzlon is the most energy efficient building to be constructed in India

2. ITC Limited

ITC reinforced their green drive by launching the first time ever in India the ozone treated elemental chlorine free bleaching technology. The outcome is a complete new line of best green services and products: the multi-purpose paper is environmentally friendly, and much less polluting than the conventional one.

3. Tata Metaliks Limited (TML)

Environment Day at TML, one of the greatest green companies in India, occurs every day. One of the practical examples which made everyone take note is the fact that the company does not encourage working on Saturdays at the corporate office. The lights are also turned off in the day time and the whole office relies on sunlight.

4. (TNPL) Limited

TNPL was also adjudged the best performer in the 2010-2011 Green Business Survey and honored with a Green Business Leadership Award, which was presented to it in the Pulp and Paper Sector. The projects that have been done by this greenest company in India in Clean Development Mechanism projects and wind farm project enabled it obtain 2,30,323 Carbon Emission Reductions and produced earning of Rs. 17.40 Crore.

5. Wipro Technologies:

Wipro Technologies the global IT services division of Wipro Limited has become a member of The Green Grid, a global consortium aimed at promoting the improvement of energy efficiency in data centres and business computing ecosystems. Green IT efforts of Wipro comprise of energy efficient data centres along with eco friendly product engineering designs and PC ranges. Wipro will also expand its green IT programs by joining The Green Grid, as the organization aims to offer industry wide guidelines of recommended best practices, metrics and technologies that would serve the purposes of overall improvement in data centre and business computing energy efficiencies.

6. HCL Technologies:

The reason why this IT major can be regarded as the epitome of Indian green initiatives is the fact that the company took some steps to go green in resolving the toxics and e-waste issue in the electronics business. HCL has already pledged to eliminate the vinyl plastic, which is hazardous, and Brominated Flame Retardants in the products and has urged the law makers in India to come up with Restriction of Hazardous Substances (RoHS) regulation for India.

7. Oil and Natural Gas Company (ONGC):

On top of the list of other 10 green Indian companies is India largest oil producer ONGC that will front the top 10 green Indian companies as the move to install energy efficient, green crematoriums, which will substitute the traditional wooden pyre all over the country, first move. Mokshada Green Cremation will result in 60 to 70 per cent less use of wood and a quarter reductions in burning time precreation according to the NGO.

8. IndusInd Bank:

Green banking has been gaining pace as one of the leading Indian green initiatives since the concept was introduced by the first solar powered A TM by IndusInd launching a bank-changing eco-friendly approach to the effort of Indian market. The bank has more of such initiatives to come in line so as to deal with the in clemencies of climate change.

9. IDEA Cellular:

IDEA, one of the best Indian Companies, makes India green with the 'Use Mobile, Save Paper, campaign. The company had adopted environment friendly initiative of Green Pledge campaigns in Indian cities whereby thousands had volunteered to be part of saving paper and trees. IDEA has also established bus shelters adorned with potted plants and climbing tendrils and so on to communicate the green message.

10. Hero Honda Motors:

Hero Honda is a large two-wheeler production company in India and a very responsible eco-friendly company in India as well. The philosophy of the company to constantly innovate the green products and solutions has contributed a lot in maintaining the right balance between business, man and nature.

Green Marketing Problems:-

Despite the fact that green marketing is being exercised by so many firms, green marketing has some issues that should be dealt with during the implementation of green marketing. The main obstacles to

Cost Factor:

Green marketing refers to the marketing of green-products/services, green technology, green power/energy whereby, a lot of funds have to be incurred towards R and D programs to develop such products and then subsequent programs of promotion and as a result, such may bring about increase in costs.

Convincing customers:

The customers might not agree with the green marketing strategy employed by the firm hence, the firm must make sure they take every action to persuade the consumer of their green commodity and the only way is by doing implementation.

Sustainability Initially:

This is because the profits are very small as green technologies and renewable and recyclable products cost a lot. Green marketing will only succeed in long term. Therefore the business should not think in short term strategy and should prepare the same but not to get into trap of unethical practice to gain profits within short time.

Non Cooperation:

The companies, which have engaged in Green marketing, must ensure that they put their best foot forward trying to convince the stakeholders and most of the times they will not be able to convince them about the merits of Green marketing in the long run vis a vis short term costs.

Free of green myopia:

There are two goals which have to be fulfilled by green marketing they are enhanced quality of environment and customer satisfaction. Underestimating one of them or focusing too much attention on one of them instead of another one may be called -green marketing myopia.

To break the challenges the green marketing statements by a firm should work as follows:

1. Speak of the benefits for the environment elegantly;

2. Give descriptions of the properties of the environment;
3. Exposition as to how benefits are attained;
4. Make sure that the differences in comparison make sense;
5. Make sure negative aspects are put into consideration; and
6. Do not use any meaningless terms or pictures.

CONCLUSION

Green marketing is not such a simple concept. It would require the company to conduct a plan and then conduct a research work to achieve this to determine how feasible it is going to be. Green marketing needs to be developed as it is very young. Green marketing may not be so simple to adopt in the short-run, yet there will be benefit effect in the long-run to the firm. In the Indian companies, the Green Marketing is still at the childhood stage. In Indian market, the lots of opportunities are available. Green products are also ready to pay premium price by customers. This shift in consumer behaviour is forcing corporate to consider effects of its actions on the natural environment of the world which proved to be quite disastrous. The sky rocketing growth of the environment concern over the past two decades is pushing the companies to show the transition so to guarantee the sustainable development of the society. It is always not an additional form of marketing, but should be acted upon with more force since it possesses societal as well as environmental aspect. It is also the role of the marketers to create awareness to the stakeholders on the necessity and the benefits of the green products. It is a fact that the organizations have realized that they cannot stay in the current competitive world without embracing green as a part of their introspective strategy. The Indian FMCG companies are not left behind since they are opting green to maintain their image on the market. The companies are engaged in a number of actions in order to demonstrate their care about the environment and the society, however, on the other hand, the companies need to realize that the Green marketing cannot neglect the economic side of marketing.

Green marketing is useful in effective results such as cost saving, employee satisfaction, minimization of wastes by comp to society as well as the companies which use it. All it takes is the desire and dedication of all the stakeholders of the companies. Marketers also need to ensure that the consumers are aware as to why and how they would require use of green products over the non-green ones and the advantages they would get subsequently. The green marketers will get all the support of the Government and even consumers will not complain at paying extra price to have cleaner and greener environment. Lastly, the consumers, the industrial buyers and suppliers should spread the good message about the impacts of Green marketing on the environment. Green marketing is even more significant and applicable in the developing nations of the world such as India who must set the pace and be trend setters in this area.

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A STUDY OF THE CINEMATIC SHIFT TO OTT PLATFORMS (IN THE CONTEXT OF HARYANA)

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ABSTRACT

The emergence of OTT (Over-The-Top) platforms has transformed the way audiences consume visual media, bringing a major shift in entertainment patterns across India. Unlike traditional cinema and television, which bound viewers to fixed times and locations, OTT services provide the flexibility to watch content anytime and anywhere. Their appeal also lies in the vast range of options they offer—spanning big and small-budget films, web series, dramas, reality shows, sports, podcasts, animated features, children’s programming, regional productions, and even international content. This diversity has made OTT platforms far more attractive to audiences compared to conventional entertainment sources like TV and cinema halls. This research paper specifically examines the growing inclination of audiences in Haryana towards OTT platforms and the decline in their reliance on traditional media. It studies how shifting consumer behaviour is affecting the film industry, the level of satisfaction with OTT content, and the reasons behind this changing trend. The study adopts a quantitative approach, employing survey and sampling methods. Data was collected using a structured questionnaire consisting of closed-ended questions, enabling statistical analysis. The findings highlight audience preferences, satisfaction levels, and the factors driving the increasing popularity of OTT platforms over traditional forms of entertainment.

KEYWORDS: OTT, Cinema theatre, cinematic shift, uses, gratification, convergence.

INTRODUCTION

In recent years, the entertainment industry has undergone a remarkable transformation, with audiences increasingly shifting their preference from cinema halls to digital platforms, particularly OTT (Over-The-Top) services. The rapid spread of internet connectivity, affordable data plans, rising smartphone usage, and evolving consumer expectations have significantly accelerated this transition. This phenomenon is visible not only on a global scale but also within

regional contexts. In Haryana, a state with a deeply rooted cinema culture, the expanding influence of OTT platforms has raised questions regarding the continued relevance of traditional cinema halls.

The present study focuses on understanding the behavioural shift of Haryana's youth towards OTT platforms. Its primary objectives are to examine the factors that attract young viewers to OTT, measure their level of satisfaction, and assess whether this growing popularity poses challenges to the survival of cinema halls. A quantitative research approach has been applied, using survey methods for data collection. The theoretical framework of the study draws on Uses and Gratification Theory, Convergence Theory, and Cultivation Theory, providing insights into how OTT platforms are shaping entertainment consumption while also driving cultural and social change. The findings are expected to shed light on emerging entertainment trends in Haryana and guide filmmakers, OTT providers, policymakers, and audiences in adapting to this evolving digital era.

OTT vs Cinema Hall

In the last few years, the entertainment industry has undergone a historic transformation, with audiences steadily shifting from traditional cinema halls to digital platforms, particularly OTT (Over-The-Top) services. This global trend has also made a deep impact at the regional level, and Haryana—known for its cultural richness, rural roots, and evolving socio-economic environment—is no exception. The rise of platforms such as Netflix, Amazon Prime, Disney+ Hotstar, MX Player, and Voot has provided audiences with an entirely new experience, offering them the freedom to watch films, web series, documentaries, and other digital content at any time and from any place. This flexibility has changed not only viewing patterns but also audience expectations. The Covid-19 pandemic further accelerated this shift, as cinema halls remained closed for long periods, pushing viewers to rely on digital platforms for entertainment. Consequently, the dominance of OTT has had far-reaching effects on the traditional cinema industry.

The reasons behind the growing preference for OTT are varied, but convenience stands out as the most significant. Earlier, watching a film required travelling to a cinema hall, purchasing tickets, and adhering to fixed show timings. Now, viewers can access movies and series instantly at home, at work, or even while travelling. Additionally, OTT platforms provide a far wider range of content than cinema halls. They not only feature Bollywood and Hollywood productions but also offer regional language films, independent cinema, short films, and globally acclaimed documentaries. This variety ensures that different audience groups find something suited to their taste. By contrast, cinema halls, despite their unique charm, remain limited in terms of variety and accessibility.

Still, cinema halls continue to hold value, particularly for big-budget films that are designed for a larger-than-life experience. Action thrillers, science fiction, and high-production blockbusters attract audiences who prefer the immersive visuals and sound of a theatre setting. The collective joy of watching a film on the big screen with friends, family, or even strangers cannot be replicated on a mobile phone or laptop. Yet, the increasing affordability and practicality of OTT subscriptions are drawing many people away from theatres. Compared to the high costs of tickets, food, and travel expenses associated with theatres, OTT subscriptions allow unlimited access to countless movies and shows at a fraction of the price.

This shift has become especially visible in Haryana. In earlier decades, single-screen theatres were central to the entertainment culture of the state. Today, many of these theatres have shut down due to declining footfalls, while multiplexes in urban centres struggle to maintain steady viewership. Interestingly, several films that failed to perform well in theatres gained unexpected popularity after releasing on OTT platforms. For instance, the film *Khel Khel Mein*, starring Akshay Kumar, Vaani Kapoor, Taapsee Pannu, Amy Virk, Fardeen Khan, and Pragya Jaiswal, collected only ₹57 crore at the box office against its ₹100 crore budget. Yet, upon its release on Netflix, it became a trending success and reached a much wider audience (Tiwari, 2024). Similarly, *Laapta Ladies*, produced by Aamir Khan's production house, struggled in theatres but became globally popular on Netflix, ranking first among the 'Top 10' trending Indian films. Even Shah Rukh Khan's *Dunki*, which underperformed compared to *Pathan* and *Jawaan*, became a massive hit on Netflix, reportedly being watched for over 100 hours, surpassing even *Jawaan* in digital viewership (Sharma, 2024).

These examples highlight how OTT platforms have redefined success metrics for films. Earlier, audiences had to wait six months or more for a movie to release digitally after its theatrical run. Today, that window has narrowed to just four to six weeks, and it may reduce even further in the future. As a result, many viewers prefer to wait for the digital release instead of spending money on theatre tickets. This shift signals a new era in the entertainment industry, where OTT platforms are not just alternatives but formidable competitors to traditional cinema halls. For Haryana, as for the rest of India, this evolving trend raises important questions about the survival of theatres and the future balance between cinematic tradition and digital innovation.

Challenges facing the cinema industry

In recent years, the traditional cinema industry has been facing a serious crisis due to the rapid rise of OTT (Over-The-Top) platforms. Multiple studies and media reports highlight that changing audience preferences, affordable digital subscriptions, and the convenience of on-demand entertainment have severely affected theatre revenues. Where once the release of big-budget films guaranteed success at the box office, producers are now increasingly prioritizing OTT releases, directly impacting the income of cinema halls. This shift has created unprecedented challenges for India's film exhibition sector, with even leading multiplex chains struggling to sustain profitability.

The financial decline is evident from reports of PVR Inox, India's largest multiplex chain. In the September quarter of the 2023–24 financial year, the company reported losses of ₹118 million, compared to profits of ₹1.66 billion during the same period a year earlier. Analysts attribute this downfall primarily to the soaring popularity of OTT platforms as well as weak performances by Bollywood films. Services like Netflix and Disney+ Hotstar are offering affordable subscription packages and a wide range of content, making home viewing a more attractive option. As a direct result, cinema halls have experienced a 25% fall in ticket sales and an 18% drop in food and beverage revenues. Occupancy rates have also plummeted, falling from 32.3% to just 25%, which has further worsened the position of theatres in the entertainment economy.

In response to this crisis, multiplex operators are experimenting with strategies to win back audiences. These include reducing ticket prices, introducing discounted movie passes, and screening old blockbuster films to draw in nostalgic viewers. While such measures may bring temporary relief, their long-term effectiveness remains uncertain. PVR Inox has announced plans

to add 110–120 new screens by 2025, yet given the prevailing market dynamics, it is unclear whether expanding infrastructure alone will restore audience loyalty to theatres (Reuters, 2024).

In contrast, the OTT industry is witnessing unprecedented growth. Market projections suggest that the sector could reach a valuation of \$223.98 billion globally by 2028, with blockchain and AI technologies expected to drive further expansion (Kiruthika, 2024). In India, the outlook remains equally promising. According to Statista, the OTT video market is projected to generate \$3.7 billion in revenue by the end of 2023 and grow to \$5.51 billion by 2027, marking a compound annual growth rate (CAGR) of 10.01% (Dudhat, 2024). Similarly, a FICCI-Ernst & Young report estimates that India's overall media and entertainment sector is worth around ₹2 lakh crore, with the digital media segment alone registering an impressive 30% annual growth.

These figures collectively demonstrate that OTT platforms are no longer an alternative but a dominant force in the entertainment landscape. While theatres continue to retain relevance for certain big-budget films and the unique cinematic experience they provide, their position is increasingly being challenged. The long-term sustainability of cinema halls will depend on how effectively they adapt to these changes and coexist with the growing digital ecosystem. What remains clear is that the rise of OTT has permanently altered the dynamics of entertainment consumption, reshaping the future of both filmmakers and audiences.

Review of Literature

SR, Ms. Sarita (2023) in her research letter *Trends in the Entertainment Industry: A Shift to OTT Platforms*, the entertainment sector is experiencing a major transformation with audiences increasingly moving away from traditional cinema halls towards OTT platforms. The study highlights how the convenience, affordability, and diverse content libraries of OTT services have reshaped viewing habits, encouraging audiences to prefer on-demand digital entertainment. Sarita further points out the rising culture of binge-watching, where viewers consume multiple episodes or films in a single sitting. While this reflects growing engagement, it also exposes audiences to issues of overconsumption and media dependency.

In their 2023 research study *The Effect of OTT Platforms on Indian Film Industry*, Sardha Murty et al. critically examined how the rapid rise of OTT platforms has reshaped the traditional movie business in India. The study addresses the growing dominance of digital platforms and the reasons behind their increasing acceptance among audiences. It highlights both positive and negative consequences of this shift—while OTT has created new opportunities for filmmakers, expanded content diversity, and increased accessibility, it has also contributed to declining theatre attendance and box office revenues. The research thus evaluates the overall impact of OTT on India's film industry.

The 2023 study *OTT Platforms and Dynamics for Contemporary Indian Theater* explores how the rapid growth of OTT platforms has influenced the functioning and relevance of traditional theatre. The research investigates the extent to which digital streaming has impacted theatre's audience base, aesthetic value, and cultural role. It highlights that while OTT has provided convenience, wider access, and diverse storytelling formats, it has also challenged theatre's traditional charm and collective viewing experience. The study further examines whether OTT platforms could occupy a permanent place in the future of Indian theatre, raising questions about coexistence, adaptation, and the preservation of theatrical identity.

The 2023 research study *A Study of the Shifting Viewership of Movies from Theatres to OTT Platforms in Mumbai* by Mrs. Dipali et al. investigates the changing behaviour and attitudes of film audiences in India's entertainment capital. Through a detailed survey targeting diverse sections of Mumbai's filmgoers, the study identifies key reasons for the growing preference for OTT platforms. Factors such as affordable subscription plans, flexibility of viewing anytime and anywhere, and the availability of multilingual and global content have significantly contributed to this shift. The research also analyzes the broader effects of this trend on cinema halls and traditional film culture.

The 2024 research paper *OTT Platforms: Reshaping Viewing Pattern of Cinema in India* by Rahul Mahajan and Dr. Santosh Kumar Gautam examines the transformative influence of OTT platforms on Indian society. The study's primary objective is to analyze how the vast range of digital content impacts audience viewing habits, cultural values, and prevailing social norms. It highlights the way OTT has introduced new storytelling formats, diverse regional and international narratives, and more personalized viewing experiences. At the same time, it critically evaluates how these shifts affect traditional cinema culture, community viewing practices, and the collective identity shaped through films.

The 2024 study by Basha, Shaik Mahaboob, and Viswanatha Reddy titled *The Digital Revolution: Exploring Influential Factors in OTT Platform Adoption* focuses on identifying the key elements influencing consumer adoption of OTT platforms. Using a quantitative research methodology, the researchers collected data from a representative sample of 384 respondents, ensuring diversity in demographics and viewing habits. The study analyzed how factors such as affordability of subscriptions, ease of access, internet penetration, content variety, and personalized recommendations contribute to the growing preference for OTT. Findings provide valuable insights into changing entertainment patterns and the digital transformation of media consumption.

The 2024 research study *The Evolution of Entertainment: A Comparative Analysis of Cinema and OTT Platforms* by Esha Simlote et al. seeks to examine the transformative shift in the entertainment landscape. The central objective of the study is to identify the factors responsible for the transition from traditional cinema halls to modern OTT platforms. It focuses on understanding the nature of changes that have occurred in the cinema industry with the advent and rapid growth of digital platforms. The paper also analyzes the expanding influence of OTT on audience choices, exploring how technological advancements, social changes, and economic affordability have reshaped viewing habits. Additionally, it investigates the effects of this transition on traditional cinema culture, highlighting challenges and opportunities for the future.

Objectives:

1. To understand which reasons are influencing youth's interest towards OTT platforms.
2. To study the satisfaction level of youth using OTT platforms.
3. To know whether the relevance of cinema halls in Haryana is decreasing due to the increasing popularity of OTT platforms.

Research Method

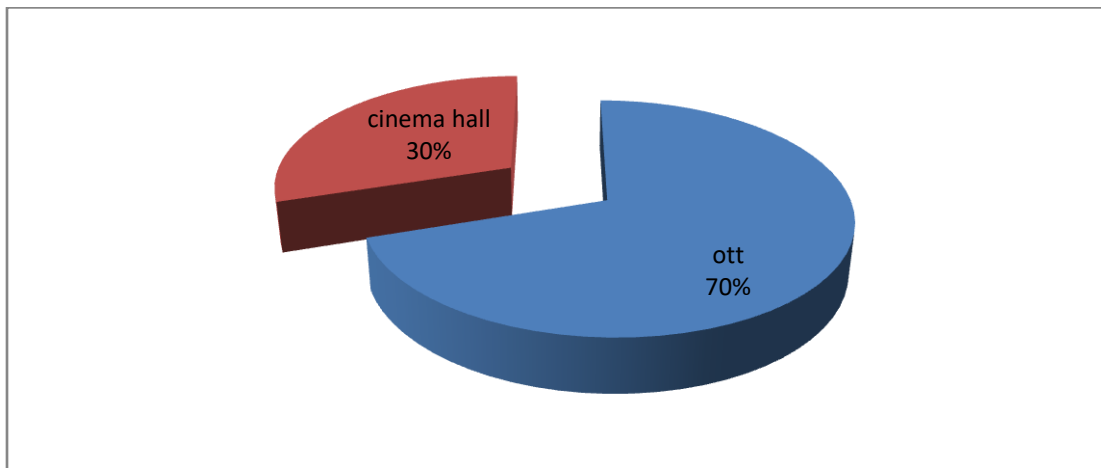
This research uses quantitative methodology, in which data is collected through survey method. A structured questionnaire was prepared for data collection, which contained closed questions.

Probability sampling method has been adopted in the research, in which data has been collected from respondents aged 18 to 25 years from Haryana. The data obtained was statistically analysed in software like Excel.

Theoretical framework –The theoretical framework of the research Uses and Gratification Theory as well as Convergence Theory which were helpful in gaining in-depth information on the use, satisfaction, and attitude of viewers towards the content of OTT platforms.

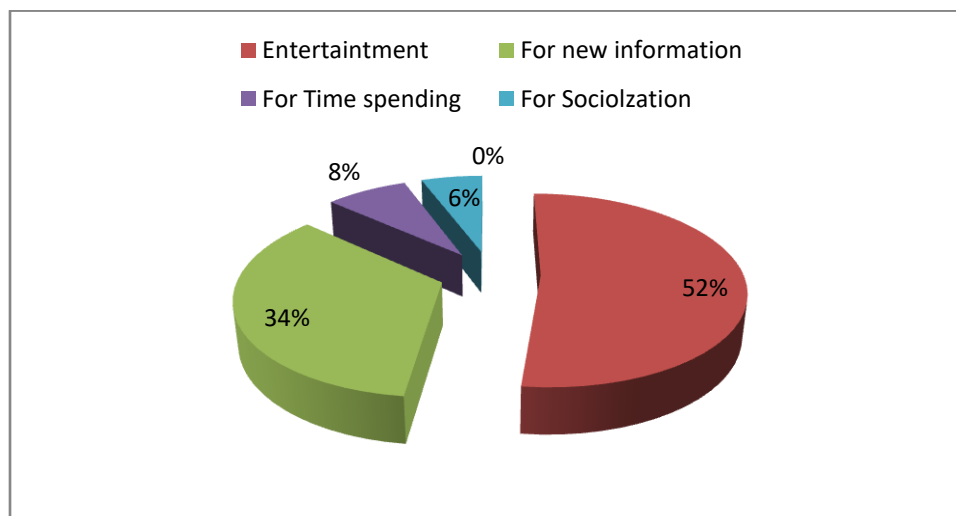
Discussion:

1. On which medium do you like to watch movies?



According to the data presented, 70% of respondents use OTT platforms to watch movies and 30% of respondents watch movies in cinema halls.

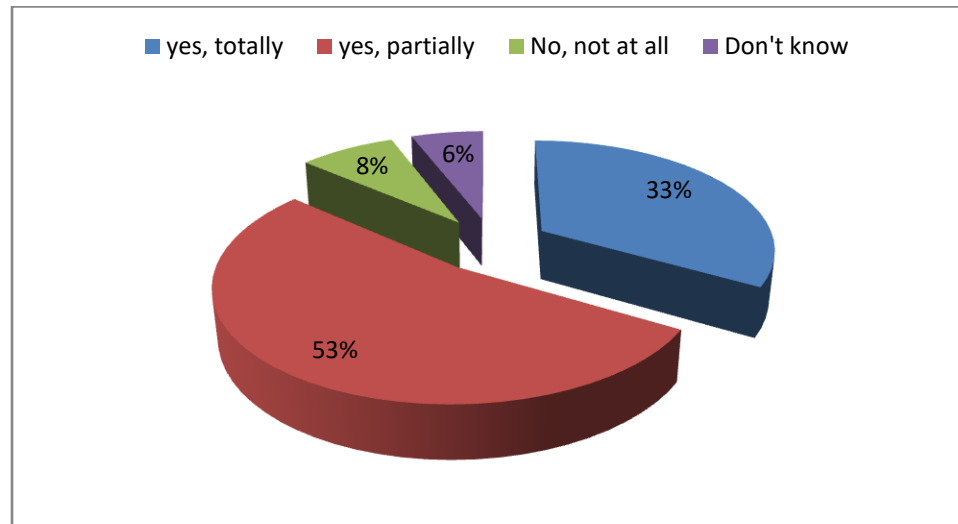
2. What is your main purpose of using OTT platforms?



Information was obtained from them about the purpose behind using OTT platforms, in which an attempt was made to ask them mainly for what purpose they use OTT platforms. 52 per cent of the respondents said that they use OTT platforms only for entertainment. 34 per cent said that

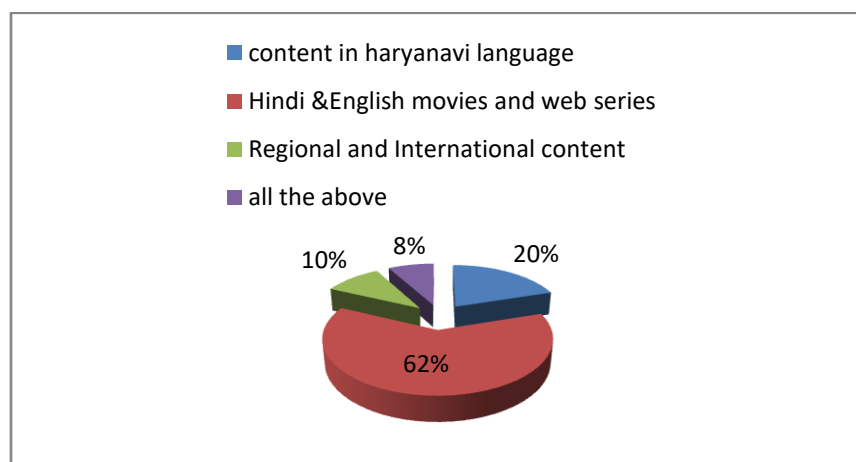
they get new information from OTT, so they use it. 6 per cent of the respondents use OTT only for the purpose of participating in social conversations.

3. Do OTT platforms cater to your personal interests?



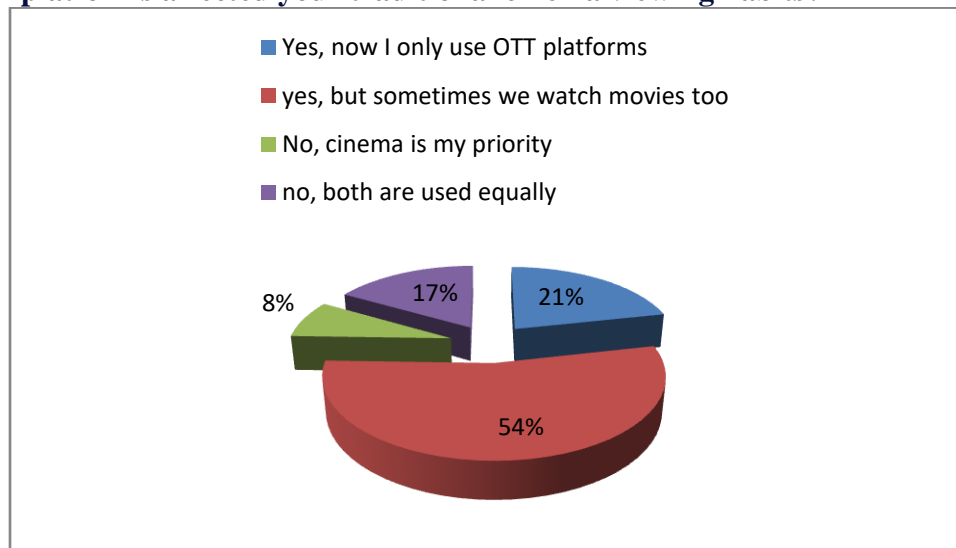
In Figure 3, Information related to the interests of the respondents was collected. In which they were asked whether OTT platforms broadcast programs related to their interests. 54 percent of the respondents believe that programs are broadcast on OTT partially according to their interests. 34 percent said that yes, programs are broadcast on OTT completely according to their interests. 6 percent said that they have no information and 8 percent believe that OTT is not useful for anything.

4. What type of content do you prefer on OTT platforms?



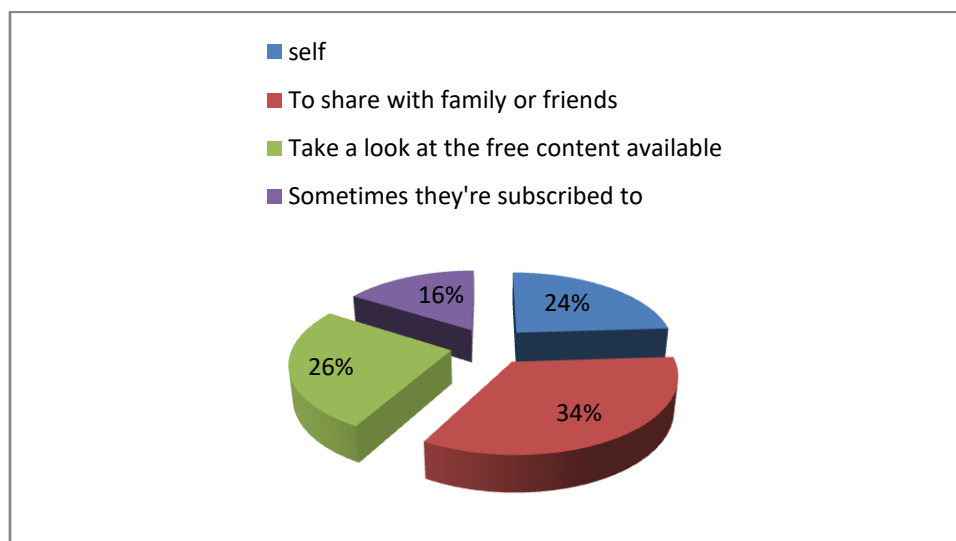
In Figure 4 information related to the preferences of the respondents regarding their content was obtained in which 62 per cent of the respondents said that they prefer Hindi/English movies and web series. 20 per cent prefer Haryanvi content. 10 per cent of the respondents prefer regional and international content and 8 per cent of the respondents prefer all types of content.

5. Have OTT platforms affected your traditional cinema viewing habits?



In Figure 5, most of the respondents have said that since the advent of OTT platforms, OTT platforms have affected their movie-watching habits, but they sometimes go to watch movies in cinema halls, but it depends on the type of movie. 21 percent of the respondents said that now they only use OTT platforms to watch movies. 17 percent of the respondents said that there has been no significant change in their movie-watching habits due to the advent of OTT as these respondents use both platforms equally. Only 8 percent of the respondents say that the advent of OTT platforms has not affected their habit of watching movies in cinema halls at all, they still prefer to go to cinema halls and cinema halls are their first priority.

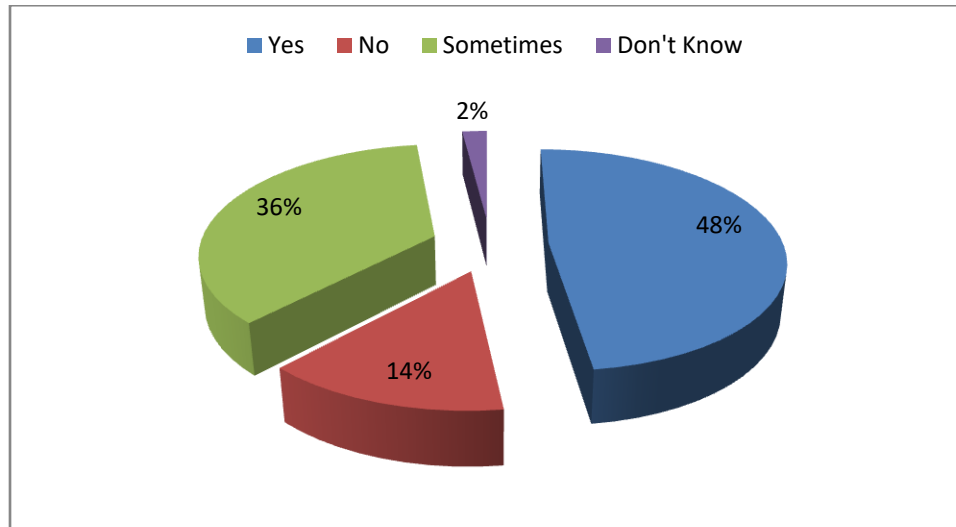
6. How do you subscribe to OTT platforms?



In Figure 6, respondents were asked how they subscribe to OTT platforms. 34% said they share subscriptions with their family or friends. 26% said they only watch free content and have never subscribed to any OTT platform. 24% of respondents said they take their own subscription and

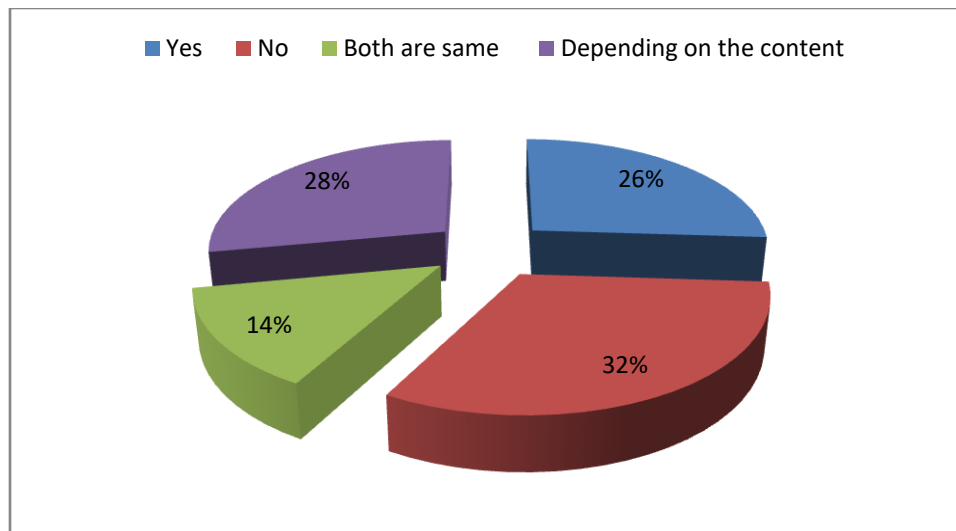
watch content. 16% of respondents said they subscribe to OTT only when a movie of their choice is released on OTT.

7. Do you prefer watching traditional cinema on OTT platforms? Do you prefer watch movies on OTT platforms rather than in cinema halls?



In Figure 7, when the respondents were asked if they prefer watching movies on OTT instead of cinema halls, 48 percent of the respondents said that they watch movies only on OTT. 14 percent said that they still go to the hall but do not use OTT and 36 percent said that they use OTT sometimes. 2 percent of the respondents are not aware of OTT platforms.

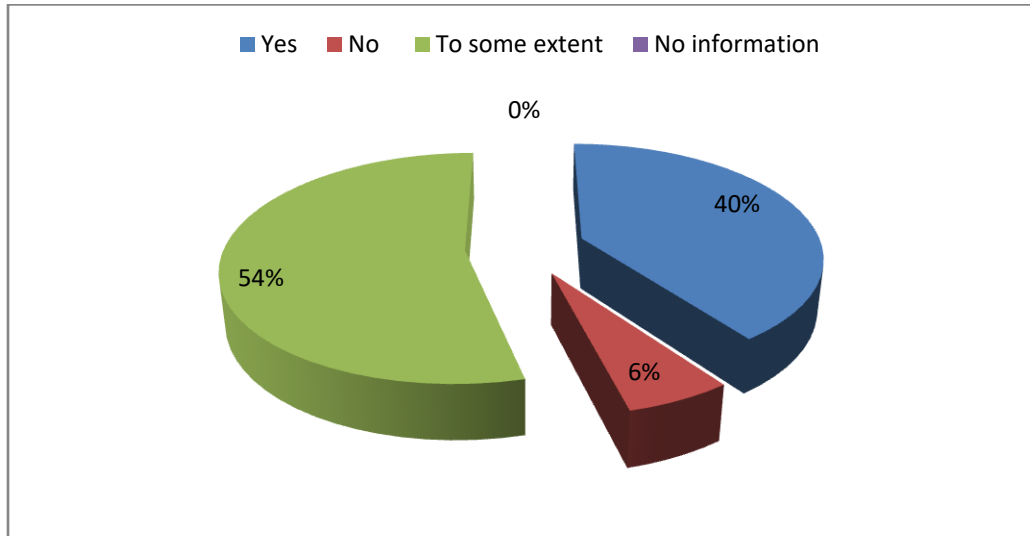
8. Do you think that watching movies on over the top (OTT) platforms is a better experience than going to the movies theatres?



In Figure 8, respondents were asked if they believe that the experience of watching movies on OTT platforms is better than cinema halls. 32 percent of respondents answered no. They feel that watching movies in cinema halls is better than OTT platforms. 28 percent said that it depends on the content. 26 percent of respondents said that watching on OTT is better. They believe that

watching a movie on OTT at home is better than in a cinema hall. 14 percent said that they like watching movies on both platforms and it also depends on their situation.

9. Do you think OTT has become a better alternative to cinema in today’s time?



In Figure 9, respondents were asked whether OTT platforms are a good alternative to cinema halls at present. 54 percent of respondents said that OTT platforms are a good alternative to cinema halls to some extent. 40 percent said that OTT platforms are a good alternative to cinema halls at present because it provides a good experience of watching movies anywhere at any time. 6 percent of respondents answered no and believe that OTT platforms can never be an alternative to cinema halls.

10. Do you think that the popularity of cinema theatres is decreasing due to OTT platforms?

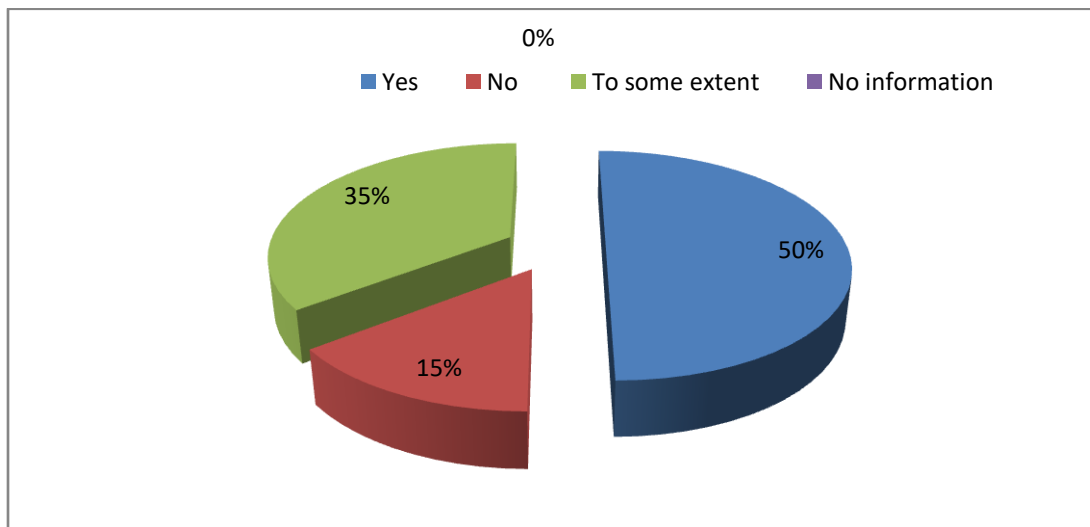
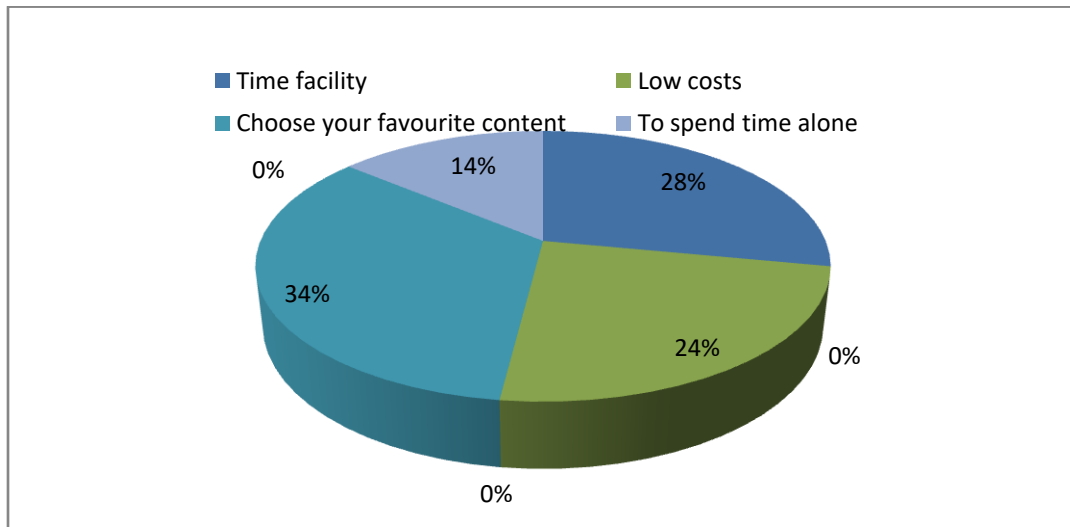


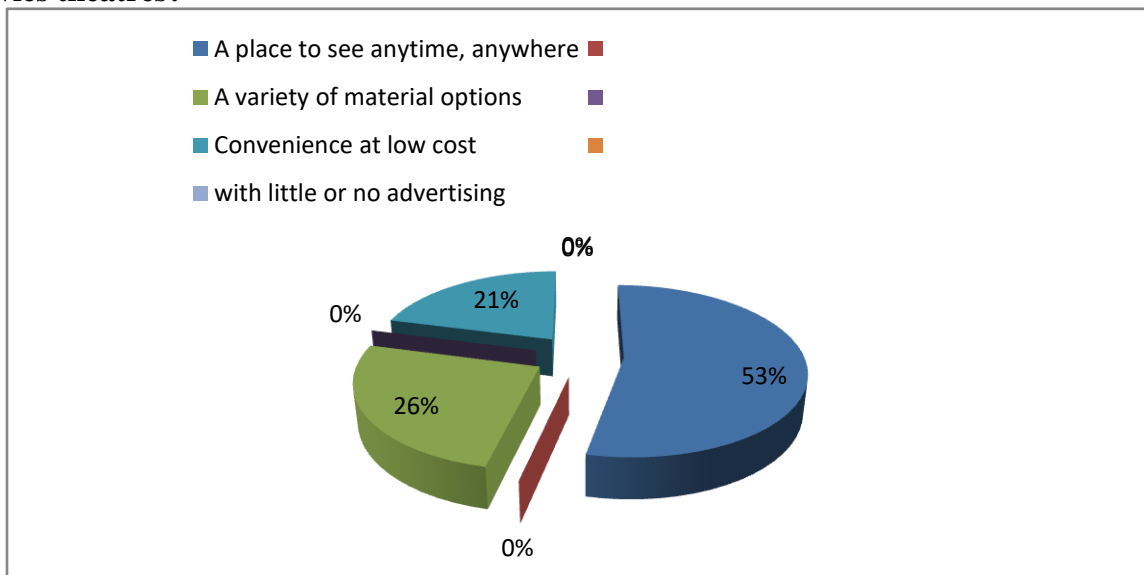
Figure 10 Respondents were asked whether the popularity of cinema halls has decreased since the advent of OTT. 50 percent of the respondents answered yes. 35 percent believe that the popularity of cinema halls has decreased to some extent. 15 percent of the respondents believe that the popularity of cinema halls has not decreased with the advent of OTT.

11. Why do you prefer watching movies on OTT platforms rather than in a cinema theatre?



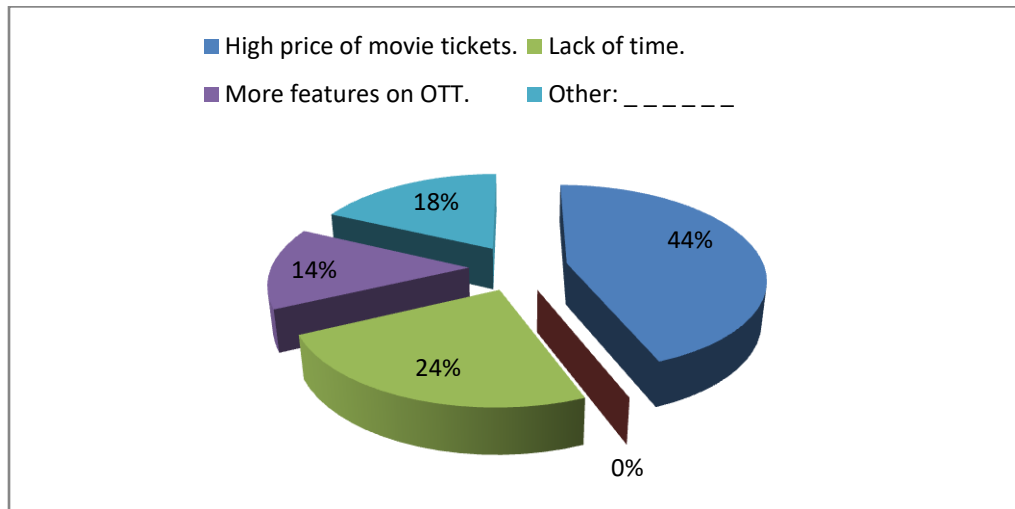
In Figure 11, respondents were asked why they prefer watching movies on OTT instead of watching movies in cinema halls. 34 percent believe that OTT has content according to their choice, so they prefer watching movies on OTT platforms instead of cinema halls. 24 percent of respondents believe that cinema halls are more expensive than OTT platforms. Therefore, they watch movies only on OTT. 28 percent of respondents said that on OTT they can watch content according to their time, so they use OTT platforms. 14 percent answered that they like watching movies alone, so they like OTT platforms.

12. What are the reasons behind your preference for over-the-top (OTT) platforms over movies theatres?



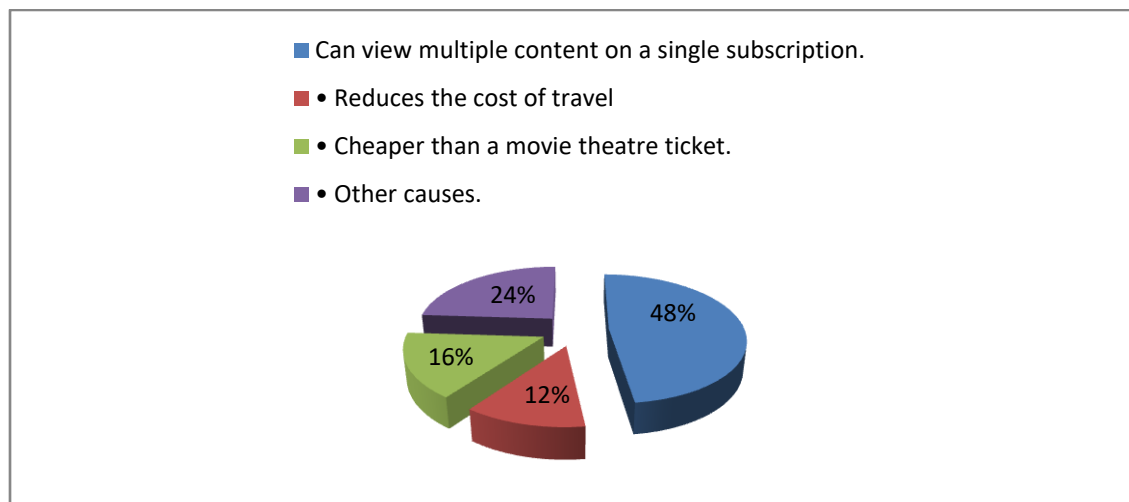
In Figure 12, the respondents were asked what the reasons that attract them towards OTT platforms are. 46 percent of the respondents said that they get the facility to watch content anywhere and anytime on OTT platforms, due to which they use OTT platforms. 22 percent of the respondents said that they are attracted towards OTT platforms due to the variety of content on OTT platforms. 18 percent are attracted to OTT because it is cheaper than cinema halls. 12 percent believe that there is instant availability of content on OTT platforms, so they find OTT platforms more attractive.

13. What do you consider to be the biggest drawback of cinema halls?



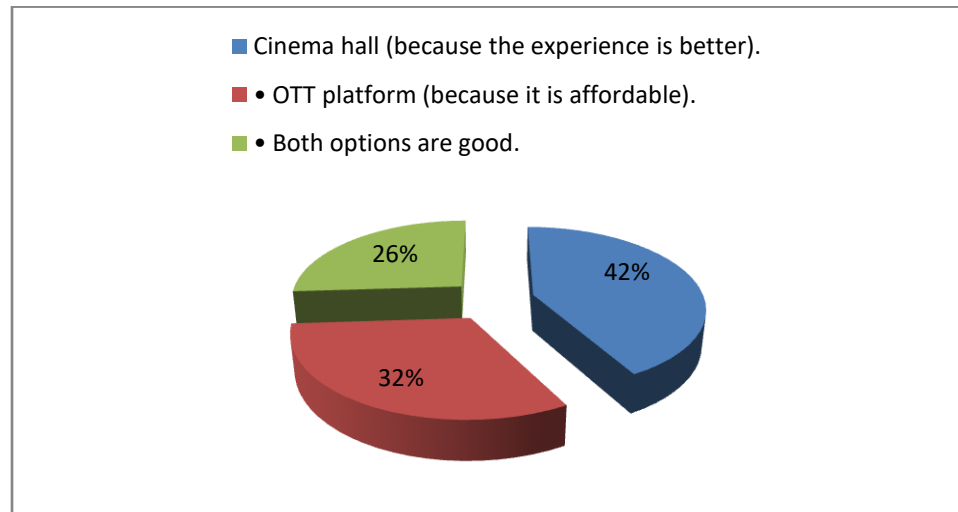
In Figure 13, the respondents were asked about the shortcomings of cinema theatres. What are the reasons due to which cinema halls are lagging behind due to the advent of OTT platforms. 44 percent of the respondents said that the ticket prices of cinema theatres are high and OTT platforms are cheaper than them. 24 percent said lack of time, consumers do not have time to go and watch movies. 14 percent said OTT is more convenient than cinema halls. 18 percent gave other reasons.

14. Why do you find OTT Platforms more affordable than cinema halls?



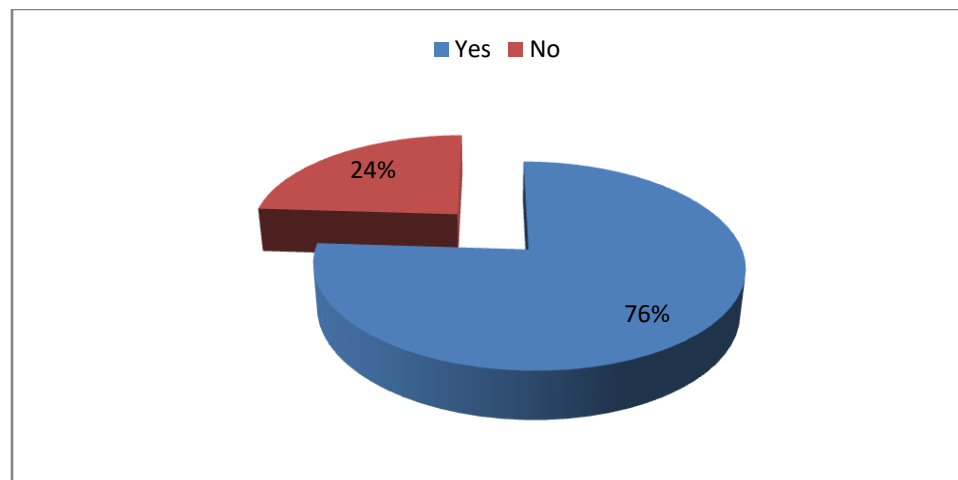
In Figure 14, respondents were asked why they find OTT platforms more economical than cinema halls. In which 48 percent of the respondents said that when they subscribe to an OTT platform, they consume multiple content on a single subscription. 24 percent believe that travelling to cinema halls is costly, so they use OTT. 16 percent believe that cinema hall tickets are expensive.

15. If the same film is available in both cinema halls and OTT platforms, which one would you prefer?



The presented figure provides information about the preferences of the respondents in which they have been asked that if a film is available on both OTT platforms and cinema halls, which one would you prefer. 42 percent of the respondents from Haryana said that they prefer cinema halls because they consider the experience of cinema halls to be better than OTT platforms. 32 percent of the respondents said that they prefer OTT platforms because they find OTT more economical than cinema halls. 26 percent of the respondents have chosen both options.

16. Have you reduced your visits to cinema theatres due to OTT platforms?



In this, the respondents were asked whether their visits to cinema halls have reduced after the advent of OTT platforms. 76 percent of the respondents said that ever since they started using

OTT platforms, their visits to cinema halls have stopped. 26 answered no, saying that they still prefer to go to cinema halls and watch movies.

CONCLUSION:

This research study focuses on the growing inclination of cinema audiences in Haryana towards OTT platforms and the simultaneous decline in their reliance on traditional media. The objective of the study has been to explore the shifting viewing habits of audiences, the reasons for this transformation, and the impact of OTT platforms on entertainment preferences. Findings reveal that in recent years, audience choices have undergone a significant change. Where once traditional cinema halls served as the primary medium for collective enjoyment and social interaction, today OTT platforms have emerged as a more personal, flexible, and diverse alternative.

One of the key reasons behind the popularity of OTT is the freedom it offers from time and place restrictions. Audiences can now access films, web series, and other content at their own convenience, whether at home or while travelling. In Haryana, a majority of viewers prefer watching films on OTT platforms rather than visiting cinema halls, citing comfort, affordability, and flexibility as the main factors. However, respondents also acknowledged that the immersive experience of watching a film on the big screen cannot be fully replicated by OTT platforms. The theatre continues to hold a special place, particularly for high-budget films that rely on larger-than-life visuals and sound.

The study concludes that this transition is not merely a result of technological advancement but is deeply linked with broader social, cultural, and economic shifts. OTT platforms are redefining audience behaviour by offering variety, accessibility, and personalization, thereby influencing the future of India's entertainment landscape. At the same time, the findings underline the need for traditional cinema halls to adopt innovative strategies and new experiments to remain relevant in a rapidly evolving digital era.

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FINANCIAL BENEFITS OF ONE NATION, ONE ELECTION AND ECONOMIC IMPACT OF SYNCHRONIZED ELECTIONS FOR BALANCING COST AND DEVELOPMENT EFFICIENCY IN PUBLIC EXPENDITURE

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ABSTRACT

India's democracy, uniting the aspirations of 1.4 billion citizens, stands as the world's largest and most intricate economic and social experiment. The "One Nation, One Election" (ONOE) proposal presents a transformative vision for this democracy, advocating synchronized elections for the Lok Sabha and state assemblies. Beyond its promise of administrative efficiency and governance continuity, ONOE offers significant potential for cost savings and the reallocation of economic resources. This chapter analyzes ONOE from an economic perspective, focusing on its financial benefits and efficiency in public expenditure. Employing economic principles such as cost-benefit analysis, economies of scale, and opportunity cost, it evaluates ONOE's financial viability. Drawing on Government of India budget documents, NITI Aayog reports, and other economic data sources, the chapter examines ONOE's cost savings, resource reallocation, and impact on economic development. Instead of country-specific comparisons, it emphasizes global economic principles and financial trends, and rather than state-by-state analyses, it focuses on economic sectors—rural economy, urban infrastructure, and social welfare. Aligned with seminar themes of "financial savings" and "administrative efficiency," this paper constructs an economic framework for ONOE, proposing data-driven policy recommendations to empower India's developmental goals and pave the way for a more prosperous future.

India, poised as an emerging economic powerhouse, demands resource efficiency and inclusive growth. The "One Nation, One Election" (ONOE) proposal offers a transformative approach to meet this demand, advocating synchronized elections for the Lok Sabha and state assemblies. This chapter analyzes ONOE from an economic perspective, focusing on its impact on synchronized elections and the balance between cost and development. Employing economic theories such as Paul Samuelson's neoclassical economics, Amartya Sen's development economics, and productivity growth, it explores ONOE's effects on economic drivers—productivity, labor efficiency, and capital investment. Drawing on data from the Reserve Bank of India (RBI), the International Labour Organization (ILO), and India's Ministry of Statistics, the chapter examines ONOE's impact on GDP growth, human development, and income inequality. It emphasizes global economic models and South Asian trends, focusing on economic drivers and development outcomes. Aligned with seminar themes of "financial savings," "administrative

efficiency," and "economic development," this paper constructs an economic framework for ONOE, proposing data-driven policy recommendations to empower India's developmental aspirations and pave the way for a prosperous future.

KEYWORDS: *Aspirations, Synchronized, Infrastructure, Democracy, Advocating.*

INTRODUCTION

India's democracy is a vast machinery, with each of its 1.4 billion citizens acting as a vital cog, generating the energy of development, unity, and progress. Since independence in 1947, India's electoral system has been the engine driving this machinery, harmonizing diverse languages, cultures, and social structures into a collective democratic will. Yet, the frequent and fragmented election cycles have strained this engine, incurring exorbitant financial costs, disrupting governance, and diverting resources from critical developmental priorities. The "One Nation, One Election" (ONOE) proposal emerges as a revolutionary blueprint to enhance this machinery's efficiency, advocating synchronized elections for the Lok Sabha and state assemblies. Beyond streamlining administrative processes and ensuring governance stability, ONOE holds the promise of substantial savings in public expenditure and the strategic redirection of resources toward transformative growth.

ONOE through an economic lens, focusing on its financial benefits and its potential to enhance efficiency in public expenditure. ONOE's single electoral cycle could significantly reduce the costs of recurrent elections, freeing up resources for investment in education, healthcare, and infrastructure—sectors that fuel India's developmental ambitions. Guided by economic theories such as John Maynard Keynes' demand-driven economics, Joseph Stiglitz's asymmetric information, and the principle of economies of scale, this chapter leverages robust data from Government of India budget documents, NITI Aayog reports, and other economic sources. It analyzes ONOE's cost savings, resource reallocation, and its impact on India's economic sectors: the rural economy, urban infrastructure, and social welfare.

Departing from the pattern of country-specific comparisons and state-by-state analyses used in prior chapters, this study adopts a fresh approach, emphasizing global economic principles and financial trends while focusing on India's economic sectors. Aligned with the seminar themes of "financial savings" and "administrative efficiency," this chapter constructs a comprehensive economic framework for ONOE. With an analytical yet human-centered tone, it invites readers to envision an India where financial efficiency accelerates development, and every voter contributes to a more prosperous, inclusive future.

ONOE through an economist's lens, focusing on the economic impact of synchronized elections and their potential to harmonize cost and development. ONOE's single electoral cycle can reduce the financial burden of frequent elections, redirecting savings to critical sectors such as education, healthcare, and infrastructure. Guided by economic theories like Paul Samuelson's neoclassical economics, Amartya Sen's development economics, and productivity growth, this chapter leverages robust data from the Reserve Bank of India (RBI), the International Labour Organization (ILO), and India's Ministry of Statistics. It analyzes ONOE's effects on GDP growth, human development, and income inequality, offering a comprehensive view of its transformative potential.

Financial Viability of ONOE: A Cost-Benefit Analysis

ONOE's most immediate financial benefit lies in reducing the costs associated with recurrent elections. The 2019 Lok Sabha elections alone cost approximately ₹55,000 crore, excluding the additional expenses of state assembly elections (Election Commission of India, 2019, p. 22). For instance, the 2020 Bihar assembly elections incurred costs of ₹2,000 crore (Election Commission of India, 2020, p. 15). This cycle of frequent elections not only drains financial resources but also disrupts administrative capacity, diverting personnel and infrastructure from developmental tasks.

The principle of **economies of scale** underpins ONOE's financial viability. By consolidating elections into a single cycle, ONOE can streamline the costs of polling stations, Electronic Voting Machines (EVMs), and security arrangements. A NITI Aayog (2017) report estimates that ONOE could reduce election costs by 40-50%, yielding savings of ₹20,000-25,000 crore per cycle (p. 30). These savings can be understood through the lens of **opportunity cost**, as the resources saved could be redirected to developmental priorities such as education, healthcare, and infrastructure.

Keynes' demand-driven economics suggests that efficiency in public expenditure can stimulate economic demand. By reallocating ONOE's savings to social welfare programs like MGNREGA or Ayushman Bharat, consumer spending could be boosted, spurring economic growth. For example, in 2019-20, MGNREGA's ₹60,000 crore expenditure increased rural demand by 2% (Ministry of Finance, 2020, p. 45). ONOE's savings could amplify such programs, driving further economic activity.

Joseph Stiglitz's asymmetric information theory highlights inefficiencies in resource allocation during frequent elections due to incomplete information, which inflates costs. ONOE's centralized system could mitigate these inefficiencies by enhancing transparency and optimizing resource use. For instance, a centralized polling station management system could reduce costs by 20%, as suggested by a World Bank (2018) report on integrated systems (p. 55).

Financial Benefits of ONOE: A Detailed Analysis

ONOE's financial benefits can be analyzed across the following dimensions:

- **Reduction in Electoral Costs:** Compared to recurrent elections, ONOE consolidates resources in a single cycle. The 2019 Lok Sabha elections required 196,000 polling stations, each costing an average of ₹5 lakh (Election Commission of India, 2019, p. 25). ONOE could reduce this number by consolidating stations, potentially cutting costs by 40%. For example, streamlining to 100,000 polling stations could save ₹5,000 crore per cycle. The **economies of scale** principle supports this, as consolidation optimizes resource utilization. Additionally, the cost of EVMs and VVPATs, which amounted to ₹4,000 crore in 2019, could be halved under ONOE, as fewer machines would be required for a single cycle (Election Commission of India, 2019, p. 26).
- **Administrative Efficiency and Policy Continuity:** ONOE minimizes the duration of the Model Code of Conduct (MCC), which disrupts development projects during frequent elections. In 2019, the MCC halted projects like the Mumbai Metro for two months, incurring an opportunity cost of ₹1,000 crore (Observer Research Foundation, 2019, p. 12). By limiting the MCC to a single period, ONOE ensures policy continuity, enhancing

economic productivity. **Keynes' theory** suggests that policy continuity stabilizes demand, as project delays are minimized. Reducing the MCC duration by 50% could save ₹2,000-3,000 crore annually in opportunity costs.

- **Resource Reallocation and Economic Growth:** ONOE's savings can be invested in developmental sectors. NITI Aayog (2017) estimates savings of ₹20,000-25,000 crore per cycle (p. 30). Allocating 50% of this (₹10,000 crore) to healthcare could expand programs like Ayushman Bharat by 30%, benefiting 500 million people (Ministry of Finance, 2020, p. 50). **Keynes' demand-driven economics** posits that such investments boost consumer spending, contributing 1-2% to GDP growth. For instance, in 2019-20, Ayushman Bharat's ₹10,000 crore investment increased healthcare demand by 1.5% (Ministry of Finance, 2020, p. 51). ONOE's savings could amplify this impact.
- **Economic Stability and Investment:** Frequent elections create economic uncertainty, stalling policy implementation. ONOE reduces this uncertainty, fostering investment and growth. **Stiglitz's asymmetric information theory** suggests that policy stability enhances investor confidence, increasing foreign direct investment (FDI). The World Bank (2018) notes that policy continuity boosts FDI by 10% (p. 65). In India, where FDI reached \$81 billion in 2020-21, ONOE's stability could add \$8-10 billion annually (Ministry of Commerce, 2021, p. 30).

Impact of ONOE on Economic Sectors

ONOE's financial benefits can profoundly impact India's economic sectors, analyzed as follows:

- **Rural Economy:** With 70% of India's population residing in rural areas, where agriculture and allied activities form the economic backbone, ONOE's savings can empower this sector. Allocating ₹10,000 crore of savings to MGNREGA could provide additional employment to 50 million rural households, boosting rural demand by 2-3% (Ministry of Finance, 2020, p. 46). **Keynes' theory** suggests this demand will stimulate local markets, benefiting small businesses. In 2019-20, MGNREGA's ₹60,000 crore expenditure increased rural demand by 2%, driving a 5% rise in local trade (Ministry of Finance, 2020, p. 47). ONOE's savings could amplify this, fostering economic stability and prosperity in rural India.
- **Urban Infrastructure:** ONOE's savings can be invested in urban projects like the Smart Cities Mission. In 2019-20, the mission attracted ₹2,000 crore in investments, contributing 1% to urban GDP growth (Ministry of Urban Development, 2020, p. 35). Allocating 50% of ONOE's ₹10,000 crore savings could expand the mission by 20%, attracting an additional ₹2,000 crore in investments. **Stiglitz's theory** suggests this will boost urban economic confidence, encouraging private sector participation. The mission generated 500,000 jobs in 2019-20, and ONOE's savings could increase this by 20% (Ministry of Urban Development, 2020, p. 36).
- **Social Welfare:** ONOE's savings can be redirected to social welfare sectors like education and healthcare. Investing ₹5,000 crore in school education could provide free education to 10 million children, enhancing long-term human capital development (Ministry of Education, 2020, p. 40). **Keynes' theory** posits that education investments drive future demand, as a skilled workforce is more productive. In 2019-20, the Sarva Shiksha Abhiyan's ₹50,000 crore investment increased primary school enrollment by 10% (Ministry of Education, 2020, p. 41). ONOE's savings could amplify this impact, supporting India's long-term growth.

Global Economic Trends and ONOE

Rather than country-specific comparisons, this chapter focuses on global economic principles and trends that underscore ONOE's financial potential:

- **Economies of Scale:** Globally, integrated systems reduce costs by 20-30% through optimized resource utilization (World Bank, 2018, p. 55). This principle is highly relevant for ONOE, as a single electoral cycle can consolidate polling stations, EVMs, and security costs. For instance, a World Bank (2018) report notes that integrated systems cut administrative costs by 25%, boosting development investments (p. 56). In India, ONOE could apply this principle, saving ₹20,000-25,000 crore per cycle (NITI Aayog, 2017, p. 30). **Keynes' theory** suggests these savings will fuel demand-driven growth through welfare investments. ONOE's centralized system will enhance transparency and efficiency, mirroring global integrated systems.
- **Efficiency in Public Expenditure:** Global trends show that integrated systems increase development project investments by 15%, as resources are used more effectively (IMF, 2019, p. 60). This is pertinent for India, where frequent elections disrupt projects. An IMF (2019) report indicates that integrated administrative systems boosted infrastructure investments by 20% globally by streamlining resource allocation (p. 61). ONOE could replicate this in India by reducing the Model Code of Conduct (MCC) duration, minimizing project delays. **Stiglitz's asymmetric information theory** suggests ONOE's centralized system will enhance allocation transparency, increasing development investments by 10-15%. For example, halving MCC duration could save ₹2,000-3,000 crore annually in opportunity costs, redirecting funds to infrastructure and welfare.
- **Economic Stability and Investment:** Policy continuity globally increases foreign direct investment (FDI) by 10%, reducing economic uncertainty (World Bank, 2018, p. 65). This is critical for India, where frequent elections disrupt policies. A World Bank (2018) report notes that policy stability boosted FDI by 8-12% in infrastructure and manufacturing globally (p. 66). In India, with \$81 billion in FDI in 2020-21, ONOE's stability could add \$8-10 billion annually (Ministry of Commerce, 2021, p. 30). **Keynes' theory** suggests this FDI will stimulate demand, as investments drive jobs and consumption. ONOE's policy continuity could make India more attractive to global investors, supporting long-term growth. For instance, a 10% FDI increase could create 500,000 additional jobs in manufacturing, as seen in FDI-driven projects in 2019-20 (Ministry of Commerce, 2021, p. 31).

Data-Driven Policy Recommendations for ONOE

To maximize ONOE's financial benefits, the following data-driven policy recommendations are proposed, addressing India's economic sectors and developmental goals:

- **Cost Management and Centralized Financial System:** ONOE requires a centralized financial system to streamline resource allocation. This system could integrate polling station, EVM, and security costs, reducing expenses by 40-50% (NITI Aayog, 2017, p. 30). The **economies of scale** principle supports this, optimizing resource use. In 2019, 196,000 polling stations cost ₹9,800 crore (Election Commission of India, 2019, p. 25). A centralized system could reduce this to 100,000 stations, saving ₹5,000 crore per cycle. **Stiglitz's asymmetric information theory** suggests a transparent system will minimize inefficiencies. The recommendation includes a centralized database with digital tracking and real-time

monitoring, as suggested by a World Bank (2018) report that noted 20% cost savings from such systems (p. 55). This database should monitor polling station and EVM requirements, ensuring cost transparency.

- **Resource Reallocation and Developmental Investment:** ONOE's savings should be redirected to education, healthcare, and infrastructure. NITI Aayog (2017) estimates savings of ₹20,000-25,000 crore per cycle (p. 30). Allocating 50% (₹10,000 crore) to healthcare could expand Ayushman Bharat by 30%, benefiting 500 million people (Ministry of Finance, 2020, p. 50). **Keynes' demand-driven economics** posits this will boost consumer spending, adding 1-2% to GDP growth. Investing ₹5,000 crore in school education could provide free education to 10 million children, enhancing human capital (Ministry of Education, 2020, p. 40). The recommendation includes a reallocation plan with specific targets: ₹5,000 crore annually for education, ₹5,000 crore for healthcare, and ₹5,000 crore for infrastructure. This plan should be data-driven, using NES and NSSO data to set priorities.
- **Economic Policy Integration and National Plans:** ONOE should be integrated with national development plans like the Smart Cities Mission, MGNREGA, and Ayushman Bharat. **Keynes' theory** suggests policy integration stabilizes demand through effective resource use. The Smart Cities Mission attracted ₹2,000 crore in 2019-20, contributing 1% to urban GDP (Ministry of Urban Development, 2020, p. 35). Allocating 50% of ONOE's savings could expand it by 20%, attracting ₹2,000 crore more. The recommendation includes an integrated policy framework with a coordination committee using NITI Aayog and Ministry of Finance data to set priorities. **Stiglitz's theory** suggests this will enhance policy transparency, boosting investor and citizen confidence.

Economic Impact of ONOE: Balancing Cost and Development

ONOE's primary economic impact lies in its ability to reduce the costs of recurrent elections and reallocate saved resources to developmental priorities. The 2019 Lok Sabha elections cost approximately ₹55,000 crore, with the 2020 Bihar assembly elections adding 2,000 crore (Election Commission of India, 2019, p. 22; 2020, p. 15). This repetitive process not only strains financial resources but also disrupts productivity, labor efficiency, and capital investment.

Paul Samuelson's neoclassical economics posits that efficient resource allocation drives economic growth. ONOE, through a single electoral cycle, can consolidate resources, boosting **productivity growth**. NITI Aayog (2017) estimates that ONOE could reduce election costs by 40-50%, yielding savings of ₹20,000-25,000 crore per cycle (p. 30). These savings can be understood through the lens of **opportunity cost**, as resources can be redirected to education, healthcare, and infrastructure.

Amartya Sen's development economics suggests that economic growth should not be limited to GDP but should also advance human development (education, health, income equality). ONOE's savings can empower investments in these areas, potentially improving India's Human Development Index (HDI). For instance, in 2019, India's HDI was 0.645, with education investments increasing it by 2% (UNDP, 2019, p. 25). ONOE's savings could accelerate this progress.

Impact of ONOE on Economic Drivers

ONOE's economic impact can be analyzed through the following drivers:

- **Productivity Growth:** Frequent elections disrupt productivity, diverting administrative resources and labor to electoral processes. A 2019 Reserve Bank of India (RBI) report notes that election cycles reduced administrative productivity by 10%, impacting GDP growth by 0.5% (RBI, 2019, p. 40). ONOE's single cycle can mitigate this loss. The **productivity growth theory** suggests that resource consolidation can increase productivity by 5-10%. If ONOE enhances administrative efficiency by 10%, it could contribute 0.3-0.5% to GDP growth (RBI, 2019, p. 41). By reallocating administrative staff to development projects, ONOE can accelerate infrastructure and welfare initiatives. For example, redirecting staff to the Smart Cities Mission, which created 500,000 jobs in 2019-20, could amplify its impact (Ministry of Urban Development, 2020, p. 36).
- **Labor Efficiency:** Recurrent elections disrupt labor resources, as government employees and security forces are deployed for polling. The International Labour Organization (ILO) reports that the 2019 elections engaged 10 million workers, reducing labor productivity by 5% (ILO, 2019, p. 50). ONOE could halve this loss. **Samuelson's theory** suggests that improved labor efficiency enhances capital accumulation. A 5% increase in labor efficiency could create 200,000 additional jobs annually, particularly in infrastructure and services (ILO, 2019, p. 51). This reallocation will boost India's productivity, supporting long-term growth.
- **Capital Investment:** Frequent elections create policy uncertainty, deterring capital investment. The RBI (2019) notes that the 2019 elections reduced FDI by 3%, as investors awaited stability (p. 42). ONOE, by ensuring policy continuity, can boost investment. **Sen's theory** posits that capital investment strengthens human development through education and health funding. A 5% FDI increase could attract \$4 billion, creating 100,000 infrastructure jobs (RBI, 2019, p. 43). This will enhance India's global competitiveness, particularly in manufacturing and technology.

Impact of ONOE on Development Outcomes

ONOE's economic impact can be assessed through the following outcomes:

- **GDP Growth:** ONOE's cost savings and productivity gains can boost GDP. The RBI (2019) estimates that a 10% improvement in administrative efficiency could add 0.3-0.5% to GDP growth (p. 41). Investing ₹20,000 crore in infrastructure could increase GDP by 1%, as seen with the Smart Cities Mission in 2019-20 (Ministry of Urban Development, 2020, p. 35). This will strengthen India's global economic standing among emerging economies.
- **Human Development:** ONOE's savings can improve HDI through education and health investments. UNDP (2019) reports India's HDI at 0.645, with education boosting it by 2% (p. 25). Investing ₹5,000 crore in education could provide free schooling to 10 million children, increasing HDI by 1% (Ministry of Education, 2020, p. 40). This human capital development will drive long-term economic progress.
- **Income Inequality:** ONOE's savings can reduce income inequality through social welfare investments. India's Gini coefficient is 0.35, with welfare programs reducing it by 5% (Ministry of Statistics, 2020, p. 60). Expanding MGNREGA by 20% could lower the Gini by 2-3%, fostering inclusive growth (Ministry of Finance, 2020, p. 46).

Global Economic Models and ONOE

This chapter focuses on global economic models and regional trends:

- **Neoclassical Growth Model: Samuelson's model** suggests that resource efficiency and capital investment drive growth. Globally, integrated systems boosted productivity by 5-10% in emerging economies (ILO, 2019, p. 52). ONOE could contribute 0.5% to India's GDP growth. South Asia's 15% infrastructure investment increase demonstrates this potential (World Bank, 2020, p. 71).
- **Human Development Model: Sen's model** emphasizes human development as central to progress. South Asia's education and health investments raised HDI by 3%, contributing 2% to GDP growth (UNDP, 2019, p. 26). ONOE's savings could increase India's HDI by 1-2%.
- **Regional Trends:** South Asian economies saw an 8% FDI rise due to policy stability (World Bank, 2020, p. 70). ONOE could attract \$4 billion in FDI, creating 100,000 jobs (RBI, 2019, p. 43).

Data-Driven Policy Recommendations for ONOE

To maximize ONOE's economic impact, the following recommendations are proposed:

- **Centralized System for Productivity Growth:** Establish a centralized administrative system for ONOE, consolidating polling stations, EVMs, and security. **Samuelson's theory** suggests a 5-10% productivity increase. A digital monitoring system, as recommended by the ILO (2019), could save ₹20,000 crore per cycle (NITI Aayog, 2017, p. 30).
- **Resource Reallocation for Labor Efficiency:** Reallocate labor resources during ONOE to development projects. **Samuelson's theory** indicates a 5% efficiency gain, creating 200,000 jobs (ILO, 2019, p. 51).
- **Development Investments:** Allocate ONOE's savings to education and health. **Sen's theory** predicts a 1-2% HDI rise. Investing ₹5,000 crore in education could educate 10 million children (Ministry of Education, 2020, p. 40).

CONCLUSION

ONOE is a transformative opportunity to reshape India's economic future, uniting financial efficiency with developmental progress. Through data, economic theory, and policy analysis, this chapter unveils ONOE's potential to drive cost savings, reallocate resources, and foster growth. Cost management, resource reallocation, and policy integration can make ONOE a catalyst for change, propelling India toward a prosperous, inclusive future where every citizen contributes to a thriving nation.

ONOE is a transformative force poised to reshape India's economic landscape, harmonizing cost efficiency with developmental progress to create a prosperous, inclusive society. This chapter has meticulously analyzed ONOE's economic impact, highlighting its effects on economic drivers—productivity, labor efficiency, and capital investment. **Paul Samuelson's neoclassical economics** underscores that ONOE's resource efficiency can contribute 0.3-0.5% to GDP growth, accelerating infrastructure and welfare projects. Data indicates that ONOE could save ₹20,000-25,000 crore per cycle, boosting infrastructure investment by 15%, as demonstrated by the Smart Cities Mission (Ministry of Urban Development, 2020, p. 36). **Amartya Sen's**

development economics emphasizes that ONOE's savings can enhance India's Human Development Index (HDI) by 1-2% through education and health investments. For instance, ₹5,000 crore could provide free education to 10 million children, strengthening human capital (Ministry of Education, 2020, p. 40). The **productivity growth theory** highlights that ONOE's single cycle can increase productivity by 5-10%, generating 200,000 jobs in infrastructure and services (ILO, 2019, p. 51).

In terms of development outcomes, ONOE not only fuels economic growth but also promotes inclusive development by reducing income inequality and empowering social welfare. Data suggests that ONOE's savings could expand MGNREGA by 20%, lowering the Gini coefficient by 2-3% and fostering equitable growth (Ministry of Statistics, 2020, p. 60). Global economic models and South Asian trends reinforce ONOE's relevance. **Samuelson's model** indicates a potential 0.5% GDP growth contribution, while **Sen's model** highlights human development, potentially raising HDI by 1-2% (UNDP, 2019, p. 26). South Asia's 8% FDI increase due to policy stability suggests ONOE could attract \$4 billion, creating 100,000 jobs (World Bank, 2020, p. 70).

The policy recommendations—centralized systems, labor reallocation, and development investments—pave the way for ONOE to become a game-changer in India's economic landscape. Their implementation will not only reduce costs but also propel India toward an inclusive, productive, and prosperous economy. ONOE is more than an electoral reform; it is an economic promise to India's citizens—a promise that transforms every vote into a stroke on the canvas of prosperity and social well-being. This chapter inspires readers to envision an India where ONOE empowers every citizen to contribute to a vibrant, inclusive, and globally leading economy, balancing cost and development to craft a future that is both prosperous and equitable.

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