Emergence of Technology Driven Promotional Strategies for Commercialised Indian Cinema

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A B S T R A C T

Cinema is the most prominent medium for entertainment purposes as well as a means of living for many people which in turn leads to achieving overall economic growth, job creation for any developing country. Indian film Industry has undergone through some major transformations, since the time it was setup especially in relation with scientific advancement in technologies resulting in achieving for its long-term sustainability. In the current scenario, digital technologies in Indian film industry are vital in improving content quality and overall box office performance of a film, especially in overseas market. Therefore, a well-planned marketing approach plays a crucial role in generating heavy revenue from worldwide. Although there are several studies which highlighted some marketing strategies for film promotion but none could provide an integrated marketing approach. Keeping this in mind, this research paper provides an effective integrated marketing approach in sync with digital technologies such as Internet of Things (IoT), Machine Learning (ML), Artificial Intelligence (AI), Virtual Reality (VR) and Big Data to Indian film industry by reviewing previous research studies. The findings of the current study are establishing Online Movie Recommendation System, Classified and Summarized Online Movie Review System and a Personalized Social Networking Marketing (SNM) System by using several ML algorithms such as classification and clustering, KM, SVM, RF, Colour Pair Clustering algorithms. Finally, this study has discussed challenges and suggested vital recommendations for future work with the assimilation of digital technologies.

1. Introduction

The United Nations in 2015 adopted 17 Sustainable Development goals (SDGs) setting a global agenda for development, peace and prosperity [1]. These SDGs underline sustainability by 2030. They envisage that construction of resilient infrastructure with innovation will attain sustainable consumption and production [2]. The SDG9 set a target to 'build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation'. Integration of digital technologies and innovation are the features of a resilient infrastructure [3]. In the conceptualization, production and distribution of film and television programmes also, digital technologies are innovatively and creatively used [4]. According to Ronny Behrens' (2021) analysis 'With the development in digital technologies, rising availabilities of granular big data, fast diffusion of analytic techniques and escalated competition from user generated content & original content generated through subscribed video on demanded platforms have created unmatched needs and opportunities for film producers to support analytics in content production' [5]. In the developing countries, animation industry as part of cultural and creative industry constitutes a key industry with a massive consumer market [6]. With the ongoing growth in science and technology, VR is also simultaneously growing which has taken inspiration from AI technology. It gives new production of animation creation and it also interacts quite well with audience and results in enhancing people's artistic life quality [7].

From last 10 years the deep influence of Hollywood blockbusters has lead to the sudden rise in the development of science fiction films due to the changes in societal concepts in relation with science, technology and rationality in the industrial and scientific sectors [8]. Iris Mohr (2007) observes 'in today's huge fun environment**,** movies are struggling to stay buoyed up and remained commercially successful. Challenges such as piracy, digital theft, competition, over lapping movie campaigns, media fragmentation and audience saturation are forcing marketers to enhance their film budget and focus on making every penny countable' [9]. The Indian film industry is the largest creator of films and seller of tickets in comparison with any other film

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industry with revenue following U.S. film industry [10]. However, domestic demand for movies in India appears to be diminishing as the number of film industries in other countries has also fully grown as well [11].

Previously mentioned research studies in relation with implementing effective marketing strategies of a film have been studied and compared. Ronny Behrens (2021) proposed a conceptual framework for producing profitable film content by following script analytics, talent analytics, and audience analytics throughout the production process. Iris Mohr (2007) explored 'steps for successfully implementing six movie differentiation strategies such as differentiation with cosmetic movie features, differentiation to reach market segments, growing a movie segment, positioning to support the movie image, positioning to extend the movie image, and differentiation via non- traditional channels' to deal with current challenges in the film industry. Marc Fetscherin (2010) identified the dominance sequence of four main factors brand, product, distribution & consumers over influencing box office sales both in Indian and U.S. film industries. Results indicated for Indian film industry the dominance sequence factors are (distribution, product, brand, consumer variables) whereas, for U.S. the dominance sequence factors are (consumer variables, distribution, product & brand). Sayantan Ghosh Dastidar (2020) used econometric analysis to identify factors which make film fascinating for Indian audiences as follows: obtaining financial backings both domestically and internationally for film projects, reducing over production of films, producing higher quality films and undertaking marketing activities that encourage positive online reviews.

The research studies mentioned above have made commendable contribution in offering effective marketing strategies for improving overall performance of the Indian film industry. However, none could provide an integrated marketing approach in sync with the recent digital technologies available like IoT, AI, ML, Big Data, and VR for ensuring film success globally. The current study is an attempt to highlight the integrated marketing strategies using these technologies by the film makers to achieve great success in the box office globally. This study reviews and analyses the use of various technologies in the field of entertainment world which results in achieving sustained growth for the film industry in a procedural manner in order to get desirable results.

The significant intends to contribute in the following respects:

- It addressed integrated strategies which are helpful in Film Promotion and willing towards Film industry being technologically sound in the global market

- Integrated technologies being used in pre- post production of a film such as IoT, AI, ML, Big Data and VR are detailed analysed with tabular form.

- Based upon analysis, this study also discussed challenges and future recommendations.

This research paper is structured as follows: Section 2 covers overview of marketing strategies for film promotion, Sections 3 - 6 cover the major components for film promotion along with the use of technologies like IoT, AI, ML, Big Data and VR, leading towards overall improvement and sustained growth of film industry and Section 7 consists of discussions and recommendations. Figure 1 illustrates the strategies and methods of enquiry incorporated in this study. In the initial part of this paper explores the challenges and limitations of earlier studies in this respect and in the latter part, these challenges are addressed and prescriptive solutions are offered.
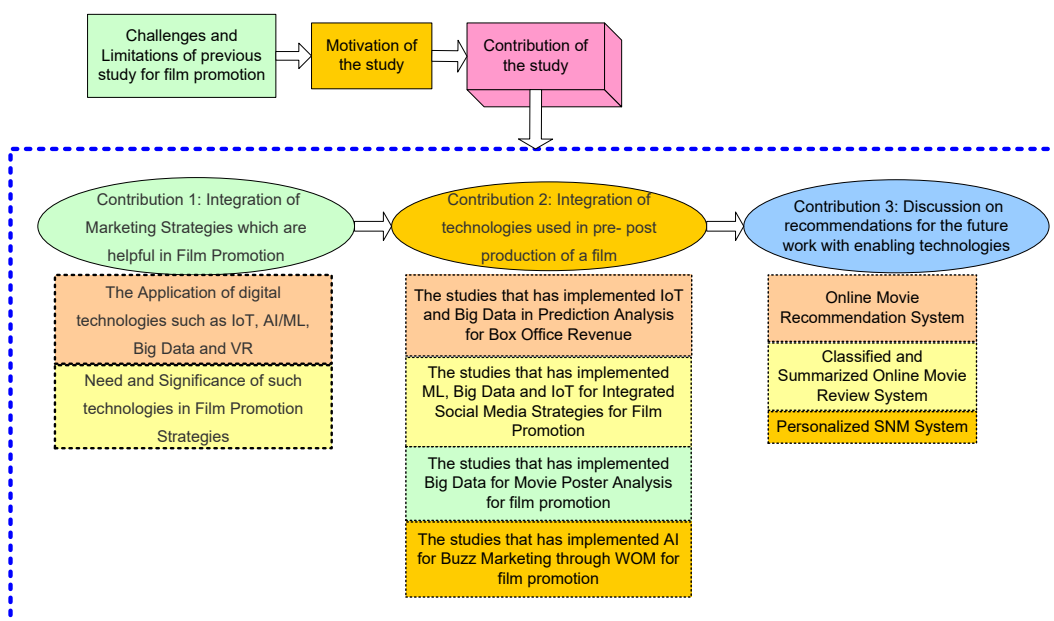

Figure 1 - Structure of the Study Diagram

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2. Overview of Marketing Strategies for Film Promotion

In this section, problems in relation with traditional marketing methods for films have been pointed out and several newly emerged marketing strategies and their effective methods have discussed and compared. The average cost of a feature motion picture has rapidly reached $100 million mark leading to applying greater promotional techniques by major production studios to ensure their film success [12]. Film promotion and cinema screening activities are undertaken by theatres. They include traditional methods such as movie posters, notices, advertisements as well as digital platforms like cell phones & social media for marketing purposes [13]. According to Christopher J. Westland (2012) 'Film marketing plays a huge role in movie release due to the high cost and financial risk involved in film production, as studios invests heavily in marketing campaigns to maximize their revenue during the early phase of the release cycle of a film' [14]. Film marketing strategies have gone through rapid transformation with the arrival of social media and growth in technological innovations over the years [15].

An analysis and comparison of the above mentioned previous studies throws valuable insights into the promotional strategies in the film industry. Charles A. Lubbers and William J. Adams (2001) used Pearson Correlation method to understand how critical scores and box office success of a film are related. It was concluded that film critic's holds power over things in film promotions other than box office performance. K. Sreekanth and T. Balasaravanan (2020) used conventional publicity spaces and methods to make realise the significance of digitalisation wave by suggesting updating film distribution & exhibition practices for ensuring long term sustainability of single screen theatres. Christopher J. Westland (2012) devised 'a novel application of event study methods to highlight the significance of Internet social networking in the success of a film and finally indicated that budgets and Internet search activity are crucial factors in generating revenue for a film and Internet social networking campaigns results in greater revenues'. Biplab Bhattacharjee *et al* (2017) used 'text mining method to collect data from social media to identify sentiments of users about a movie in both pre and post release scenarios to determine how different social media content on Bollywood movies affect box office revenues by building linear regression models'.

Survey method and studies have provided worth praising contributions in adopting effective strategies for ensuring film success at the box office. However, an integrated marketing approach still remains a matter of concern to match with the digitalisation wave. The current study identified some major components for film promotion in assimilation with latest digital technologies for achieving sustainability in film industry. Figure 2 illustrates major components of film promotion covered in this study. Further sections of the study contain the detailed analysis of all the components of film promotion which are being covered in the study.
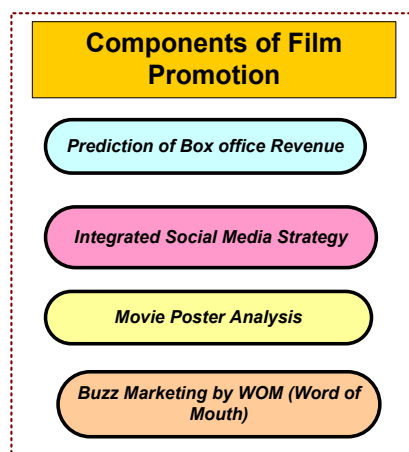

Figure 2 - Components of Film Promotion Diagram

3. Prediction of Box Office Revenue

Z. Wang et al (2020) argue that 'forecasting box office revenue of films prior to its release on silver screens has become an evolving need as it imparts investment decisions on the stock market, the layout of promotional strategies by advertisement companies and movie slots at cinema theatres' [16]. Prediction of any film's revenue at the box office is undertaken with the help of data collected from the social media, sentiment information which are mined from present movie tweets on twitter [17]. Yunian Ru (2018) views that 'it is the job of the daily box office prediction model to build a vast prediction model for conducting daily box office prediction' [18]. Therefore, it is clear that the promotional and marketing activities by distributors are crucial in prompting audience to the theatres prior to any film release.

Notably, audience strength in the opening weekend is crucially influenced by the promotional activities prior to any film release and this strength will evaluate number of screens which would be allotted to the movie to earn competitive advantage [19]. Montajula Suvattanadilok (2021) observes that 'social media activities of the film promoters greatly influence public decision making regarding watching movie in theatres.

References on Social media encourage the audience to feel that they are enjoying watching experience of the recommended movies' [20]. Junghoon Park and Lim Changwon (2021) further hold that 'the number of moviegoers is the prime factor for sales in movie industry and also a significant factor in influencing additional sales' [21]. The world wide film industry is one of the most emerging and an essential industry which attracts attention of all age group people. According to Sandipan Sahu (2022), 'moviemakers and researchers always feel the necessity to have some expert system predicting the movie success probability before its production with reasonable accuracy' [22].

IoT has achieved huge popularity in education as a result of its rapid development. Films has also turned out to be a great source of interdisciplinary education as held by Young-mee Hwang *et al* (2017), 'they represent creative forecasts and predictions on human society, helping the public realize about future happenings in human society' [23]. Yang Meng (2022) 'proposes three alternative strategies to improvise presentation of films and IoT application as follows: Data Stream Graph Optimization Framework, Energy-Efficient Self-Scheduling Strategy, and Real-Time Data Stream Computing with Memory DVFS [24]. From the growth of the film industry and ever-increasing consumption demand, the value of film content has become quite evident [25]. Zheng Xie (2020) observes that 'for enhancing film and television production and its betterment in order to satisfy film watching experience of audience, a film watching system is built which identifies the interaction with users on different devices through somatosensory interaction sensors based on VR and IoT technology with the help of S3 Studio Max and Photoshop software' [26]. Further, Qian Song and Sang Wook Yoo argue that 'to bring down few problems related to technological restructuring and inadequate expansion in the current film and television production mode, the application of evolving technologies such as AI, VR, and IoT, has been implemented in the film and television industry' [27].

According to Ruiying Kuang (2021), 'Film and television is an artefact of culture and innovation which amalgamates digital technology, creative thinking and artistic design. IoT is an essential development trend in the internet information age, and can be utilised in producing 3D film to reduce production complexity and cost' [28]. Figure 3 highlighted the significant components of IoT in predicting the box office revenues for films which are being pointed out from the above mentioned studies.
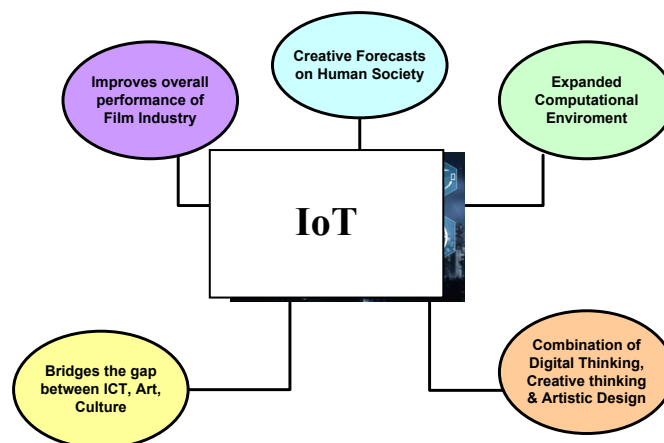
Figure 3 - Role of IoT in Film Industry Diagram

Nantheera Anantrasirichai and David Bull (2022) categorize 'the role of AI in creative industries in five groups: Content Creation, Information Analysis, Content Enhancement and Post Production Workflows, Information Extraction and Enhancement, and Data Compression' **[29]**. According to Yijie Wan and Ren Mengqi (2021) 'film industry has greatly evolved and the production of animated movies has also risen up each year by taking AI background with the help of computer vision and ML technology for promoting innovative development of film visual expression at strategic level' **[30]**. Yanrong Bayo (2022) observes 'with the implementation of AI technology in the film and television field has greatly changed the content and production method of television programs and promoted the development and production of a new generation of AI television. The hype of AI technology is promising to increase the television program content quality, innovative content categories, reducing television program cost and improving overall production efficiency' [31].

Audience while watching a film gives mixed signals which are conveyed through sentiments during feature length films [32]. Cheng Chen (2022) says that 'sentiment analysis is hold down with a job to investigate the user's opinion by recognizing their facial expression from user videos about movie reviews' [33]. Film and television education in higher institutions should be made stronger for developing a better understanding of viewer's psychology in this age of intelligent multimedia by designing such technology which is based on VRT, VR, and IoT [34].

Big Data is socially created to generate insights on the collective mental state of people and has become a new trend in the evolving field of computational social science [35]. Yan Liu and Tian Xie (2019) argue that 'Data collected from film industry and social media by using ML methods have a benefit in addressing short-run noise, on the other hand, traditional econometric methods are better at capturing long-run trend' [36]. According to Jia Xiao *et al* (2017) 'Big Data acts as a great source for data mining and analysis and provides more effective results. Through building big data collection and analysis system combined with IoT technology, watching counts of audience on website could be a major guide for forecasting marketing performance of a film' [37]. Figure 4 highlighted the significant functions of Big Data in predicting the box office revenues for films which are being pointed out from the above mentioned studies.
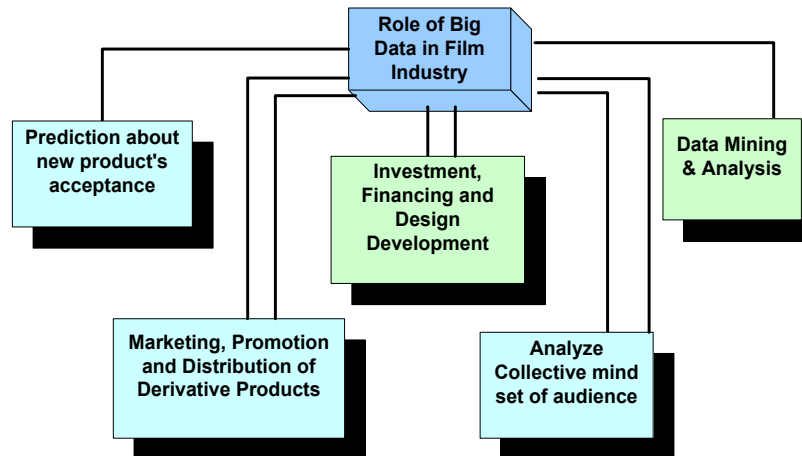

Figure 4 The role of Big Data in Film Industry diagram

A major aspect of social media is forecasting future events using social media data in the same way, box office revenue is forecasted by mining audience's will to buy a movie ticket, which is also known as 'purchase intention', from trailer reviews on You Tube [38]. Qi He and Hu Bin (2019) observe 'the film industry is one of the central industries of the 'digital creative industry', which gives massive outcome to the 'digital creative economy'. Box office revenue of a movie is a significant instrument to measure the realization of the market value of a film which in turn confirms the sustained growth of the film industry' [39]. For enhancing the forecast accuracy of box office revenue, a theory driven feature was opted to maximise interpretability of the CEM (Cinema Ensemble Model) which serves a strong tool in improving decision making process for industrial experts [40]. Table 1 presents the comparative analysis of the previous studies related to prediction of box office. In the table 1 five parameters have been used which are as follows: Reference, Objective, Method, Algorithms and Model. Most studies emphasized the role of promotional strategies as significant as its making especially with the advent of internet. However, there are limited studies in which components of film promotion have been discussed altogether. The current study covers the review on the various marketing strategies for film promotion in assimilation with latest technologies which are being used in film industry such as IoT, AI/ML, Big Data and VR.

Table 1 Comparative analysis of major methods for accurate Prediction of Box Revenue

Prediction of Box Office Revenue				
Ref	Objective	Method	Algorithms	Model
[17]	To offer a different framework to forecast a film's BOR (box office revenue)	Embedding Method	LASSO, Ada R2, support vector regression (SVR), random forest (RF) , gradient boosting regression tree	(1) A novel dynamic heterogeneous network embedding model (2) A deep neural network-based model
[18]	To offer daily box office prediction model	LSTM	BPTT algorithm	Deep –DBP model
[19]	To offer a model that forecasts audience numbers on opening Saturday	Online and offline surveys.	Decision Tree, Gradient boosting, RF	Ensemble Prediction Model.
[21]	To forecast the cumulative number of audiences of movies	Ensemble Method	Stacked Generalization, Gradient Boosting , SVR, RF and Lasso regression	Stacking model
[22]	To introduce a content based movie recommendation system	Principal Component Analysis	SVM, and Linear and logistic regression algorithm	CNN deep learning (DL) model

Prediction of Box Office Revenue				
Ref	Objective	Method	Algorithms	Model
[24]	To plan & develop such strategies which improves overall performance of film industry	DVFS Method	Energy Efficient and Traffic Aware Algorithm.	Stream Processing System
[32]	To automatically capture audience sentiments while watching a film	Infrared illuminated test- bed	RF	Movie Rating Classifier
[37]	To propose suitability of relativity analysis over precise revenue prediction	Correlation Analysis	Multiple linear regression	Sina Weibo acquisition and analysis system
[38]	To forecast box office revenue by mining viewer's intention to buy a ticket	Regression Analysis	Multiple Linear Regression, SVM, polynomial regression andRF	Movie Review Purchase Intention (MRPI)
[39]	To focus on opening black box that analyse the value of film content consumption in the digital age	Stacking Method	Ensemble Algorithm, RF	Innovative model fusion training
[40]	To improve the performance of prediction model.	Ensemble Approach	Adaptive Tree Boosting, Gradient Tree boosting, Linear Discriminant, Logistic Regression, Neural Networks, RF and Support Vector Classifier	Cinema Ensemble Model

4. Integrated Social Media Strategy

Bombay has evolved over the passage of time and has managed to be called as national media capital in the global market. Apart from Bombay film industry no other media production has brought together 'national' as well as 'transnational's audience' in comparison with new media such as radio, television, internet and the cell phones[41]. With the emergence of internet, an innovative form of promotion has evolved namely 'The film website' through online investigation of archival record that has also proved to be a part of promotional campaign of a film due to their high budgets therefore, the promotional work of a film has became equally significant as its making [42]. Dramatizing an event through film by using destination image can be called as a successful marketing communication tool and a major element in the strategic planning of marketing activities [43]. The concept 'Nostalgia' is also used by various websites as their core theme for marketing which illustrates recent changes in nostalgia experiences and films are often used as a product at all levels of their production, marketing and consumption [44]. As online advertising increased, there are now various ways for reaching out customers using promotional strategies. However, an effective promotion of a movie would be on both an official website of a film and a social networking site [45].

Social Media Platforms plays a notable part in successfully accomplishing marketing campaigns for any film [46]. Kim Louise Walden (2023) observes that 'Social media has become an integral marketing media for engaging and keeping back consumers and its various activities and channels attain box office success through variant consumer's feedback' [47]. According to Line Mathisen and Nina K. Prebension (2013), 'Social Network Marketing is a layout of Internet Marketing in which the content is produced and shared on social media networks to obtain marketing and selling goals'. For building an efficient social network marketing mechanism, need for adequate amount of data and analysis is required for making accurate online recommendations [48]. Andrew Higson (2014), 'with the arrival of internet and social media, consumer behaviour and the method of performing operations by the companies are highly influenced. Social and digital marketing proposes major chances to organizations through reduced prices, better brand awareness and expanded sales' [49]. Social media interactions work together incorporation with social motivations to forecast theatrical attendance of audience. Two major factors which have the greatest influence on people's movie watching trends at the theatres were FOMO (fear of missing out) and social media sharing of a film after watching it among social capital [50].

Big data and business analytics both have positive influence on the business world by adopting good management practices with the help of big data's tools and techniques which will create legitimate perception that builds business value [51]. Ganesh Putri Cintia *et al* (2020) observe 'Users quite often face difficulty in finding appropriate movies reason being excessive amount of movie information. The recommender system is very convenient in acting as a helping hand for customers in choosing their favourable movie with the existing features' [52]. Atif Khan *et al* (2020) are of the opinion that 'Web is fulminating with information at an

aggressive rate and online movie review system is a solid reference of information for online users' [53]. Figure 4 summarizes the significance of Big Data in achieving successful marketing campaign for film industries which are being pointed out from the above mentioned studies.
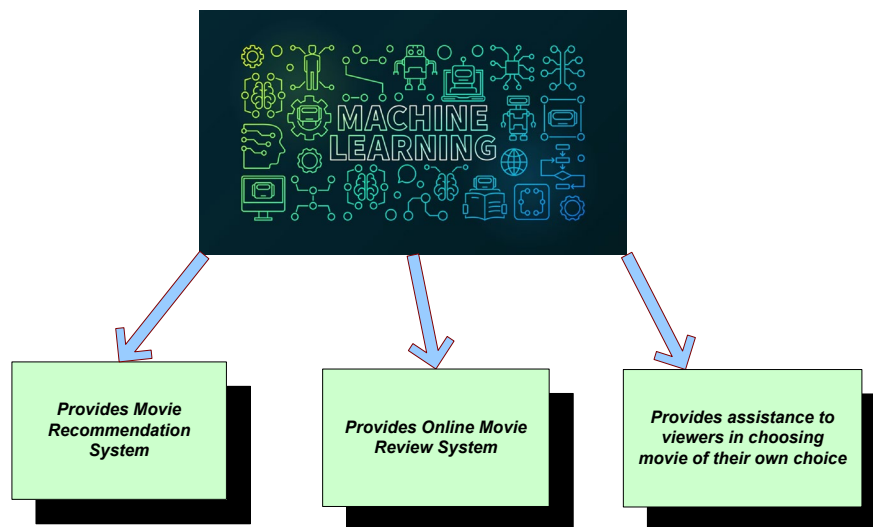

Figure4 Role of ML in Film Promotion diagram

With the recent advancement, there are several new technologies which fall under promotional tactics; According to Hak-Hyun Choi (2016), 'the IoT is an intelligent information technology which allows the connection among things through the internet and services between human beings and all sorts of objects, of objects themselves' [54]. Facial recognition video analysis depicts the way sentiment analysis can aid in improving business growth and decision making process for success of any movie [55]. Table2presents the comparative analysis of several significant approaches for building major recommendation systems such as, SNM personalized Recommendation System, The Film Recommendation System which are needed to be adopted by the Indian film industry for an effective integrated marketing approach for a successful promotion of a film.

Table2 Comparative analysis ofmajor Personalized SNM marketing system for film promotion.

Ref	Objective	Method/ Analysis	Algorithms	Model
Integrated Social Media Strategy				
[48]	To provide solution to the problems of the big data analytical model for building SNM (social networking mechanism)	Big Data analytical approach	Apriori Algorithm	SNM Personalized Recommendation System
[52]	To examine the similarities in groups of people to construct a film recommendation system for users	Mean square error, Dunn matrix, Cluster validity indices, Degree Centrality, Closeness Centrality, and Betweenness Centrality	K-Means Algorithm, birch algorithm, mini-batch algorithm mean-shift algorithm, affinity propagation algorithm, agglomerative clustering algorithm, spectral clustering algorithm and apriori algorithm	The Film Recommender System
[54]	To give clarity on promotional techniques and offered editing technique for public relations video.	Experimental video was produced using three expressive techniques	Matrix and typographic algorithm, Sweep and rotation algorithm and Mouse click interaction algorithm	PVICA Model
[53]	To introduce more classified and brief method for movie reviews	Semantic Clustering technique	KM algorithm,	Word2vec model
[55]	To provide aid in aspect – oriented emotion classification for movie reviews	Computer based emotion detection system	Naïve Bayes, SVM, RF & CNN	Light Weight machine learning algorithm

5. Movie Poster Analysis: The movie tagline is a highly diverse tool and plays a subordinate role to movie posters in terms for advertising of any film prior to its release. [56]. Film Poster plays an essential role

along with other publicity tools such as hoarding, cut outs, stickers, banner, etc in different decades [57]. For reducing financial risk before any film's release at theatres, features from film posters can be extracted for controlling both film poster features and other film related data for forecasting box office revenue [58].

With the advent of technology advancement, the old publicity ways of cinema needs to be developed more especially, movie posters in order to maximise market efficiency of them and overall development of film and television industry [59].Movie posters usually have graphic-rich texts which contains movie titles, taglines, name of the actors, production house and director. It portrays not only sentiments but also the genre of the film [60].Big data analysis provides huge value to all occupations especially to Chinese animated film by providing them with their marketing and development design [61].

During recent years VR has turned out to be technology of absorption specifically to documentary makers, activists and journalists in several form [62]. Virtually generated three dimensional (3D) animations is an inspirational media to precisely envisage crime or accident scenes to the audiences in the courtroom. A virtual animation technique has substituted the old demonstrations, pictures and oral descriptions and has become quite common in today's forensic [63]. Plotting and generating complicated and communicative animation still serve as a difficult task in the branch of VR which has to tackle several areas of basic requirements [64]. Figure 5 highlights some significant components of VR which are being pointed out from the above mentioned studies.
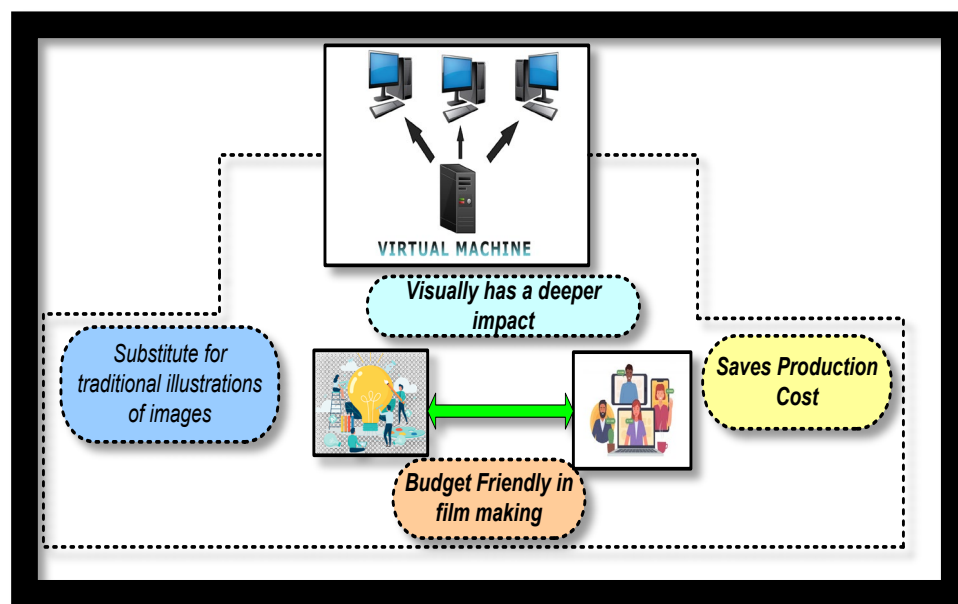

Figure 5 The role of VR in Film Industry diagram

The current wireless virtual reality interactive system is too static and can't be operated in several environments. The original system needs a huge number of sensor equipment, quite expensive, and the old assumption technology is too confined and cannot register human-computer interaction normally [65]. Digital media art film is a new media art form which has several visual impacts on film and television animation. Digital media art film and television special effect due to its diverse application has attained the goal of saving production time and quite reasonable for the making of film and television dramas [66].

Table3 presents the comparative analysis of various models for enhancing the design of movie poster for the promotion of the movie in assimilation with technologies.

Table3 Comparative analysis of various network applied for improvised movie poster design

Movie Poster Analysis				
Ref	Objective	Method	Algorithms	Model/ System
[58]	To predict impact of movie poster features on box office revenue	Principal Component Analysis	RF, SVM	Convolutional Neural Network
[59]	To improve the publicity effect of movie posters and maximise the marketing efficiency of movie posters.	Title extraction method	Color pair clustering algorithm	Convolutional Neural Network based model.
[60]	Examination of movie posters which consists of graphic-rich texts for	Principal Component Analysis.	SVM, RF	Multimodal Deep Neural Network

Movie Poster Analysis				
Ref	Objective	Method	Algorithms	Model/ System
	developing a better understanding			
[62]	To deal with the corresponding problems related with Big Data, a model and its processing strategies were presented.	Data mining method	DFP algorithm, BFGS algorithm.	The model based filtering algorithm
[65]	To provide the application of digital media art film and television special effects' technology.	Qualitative and Quantitative method	MF-GVM algorithm, MSSN Algorithm (Multimodal fusion algorithm)	Two Multimodal fusion models

6. Buzz Marketing through Word of Mouth (WOM)

Buzz Marketing is a speedily emerging marketing technique. It depends upon WOM communication that still categorise largely even in present's technological era. Buzz Marketing have a buzz agent whose role is to send "persuasive messages" through WOM to other individuals or "buzz targets" [67]. Buzz Marketing while using electronic communications activates brand messages throughout a network of buyers worldwide. A successful buzz marketing campaign consists of a captivating message which involves imagination, fun and curiosity, motivates proficiency and visibility, targets reliable sources, and maximise the utilisation of integration of technologies [68].

Film companies usually opt for buzz marketing to attract audience attention ultimately, leading to success of any film. However, it is necessary to constantly examine audience opinions, responses generated online and finally develop such promotional strategies which leads to box office success [69].Movie Buzz plays an influential role in uplifting box office revenue throughout the film release. Star buzz can also help in boosting box office revenue especially in opening weeks and can result in the public assumption of watching the movie prior to pre release [70]. Nowadays, economy has witnessed drastic changes which are highly affected by rising competition and opportunities of new technologies. The central goal of modern companies is determining the most effective way of marketing communication with customers for achieving their marketing objectives to ensure success of their business [71].

In time to come, AI probably will greatly change both marketing strategies and customer behaviours [72]. AI act as a tool for personalized engagement marketing which provides never- ending options and information to customers in a more contracted and organised manner [73].For a strategic marketing planning a three stage framework was developed for amalgamating multiple AI which benefited mechanical AI for automating repetitive marketing functions and activities, thinking AI for processing data to arrive at decisions, and feeling AI for analysing interactions and human emotions [74]. Figure 6 illustrates thesignificance of AI in the film industry which are being pointed out from the above mentioned research studies.
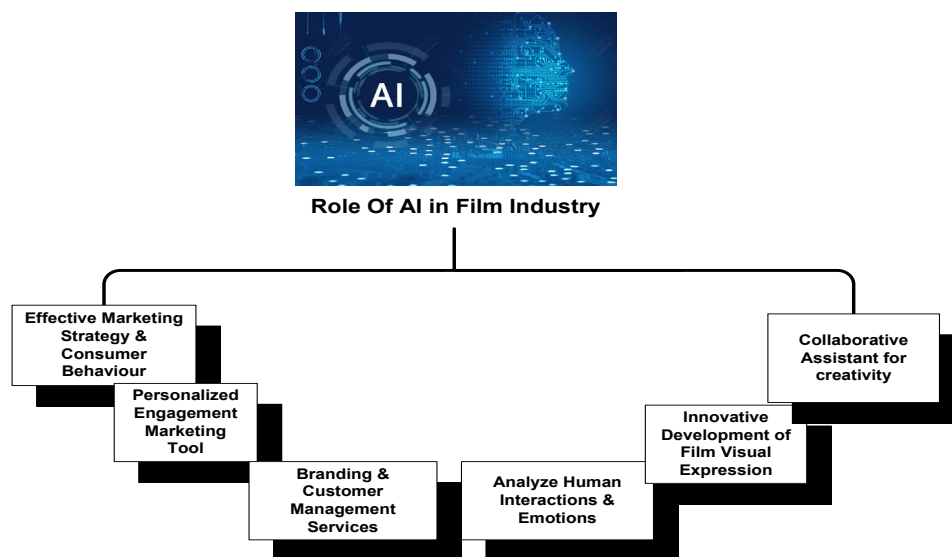

Figure 6 Role of AI in film industry diagram

WOM act as a mechanism which highly contributes in box office sales. It is usually starts during pre release period of a film and all the potential users talk about it on the basis of speculations which ultimately affect its sales especially in opening weeks of a film when majority of the revenue is created [75]. WOM can be an effective marketing vehicle in comparison with traditional marketing strategies if it is linked with social

networking sites reason being easily traceable number of signups and departed WOM on such sites [76]. Communication generated through WOM act as an active force which directs the success of motion pictures. Evaluation made by critics and production cost of a film are predictors of WOM volume at the end of the first week [77].

Online WOM and expert reviews on movie' have a major influence on not only domestic market but international market as well [78]. The impression and edge of WOM can badly change the audience's decision to watch a movie especially in theatres by analysing the quality of movie at the evaluation stage [79]. Social media and reviews are an influential ways to target audience especially those who are confused about which movie they want to watch. At this time WOM act as a great social media tool in reaching the target audience. It is the major requirement to create a professional social media strategy for managing the flow of information, creating awareness about a film and to keep this flow of information updated [80].

Online WOM generated on Social broadcasting networks especially through Twitter highly influence movie sales as the number of its users is notably more than the number of its non users. However, positive WOM generated on twitter signifies greater movie sales whereas; negative WOM signifies lesser movie sales [81]. Online WOM significantly influence the product sales after the street release due to ups and downs experienced by home movie platforms as the consumers are choosing streaming services such as, Netflix, Amazon Prime etc., which ultimately affecting movie purchase patterns [82].The popularity of TV movies has resulted in free participation in film reviews. Films bring freedom of time and space for comments to publish comments without any restrictions on several websites, blogs, forums, film companies or online film review activities [83].

Table4 presents comparative analysis of the above mentioned studies in relation with some major models which plays a significant role in effective Buzz Marketing through WOM such as Customer Relationship Model (CRM), Segmentation Targeting Positioning (SRM) Framework.

Table4 Comparative analysis of various essential methods for effective Buzz Marketing through WOM

Buzz Marketing through WOM (Word of Mouth)				
Ref	Objective	Method	Algorithms	Model
[73]	To provide Customer Management System in more AI (Artificial Intelligence) driven environment	Personalized Engagement marketing Approach	Collaborative filtering, DL, unsupervised clustering & k-nearest neighbours	Customer Relationship Management Model
[78]	To provide an automatic method to summarize movie reviews and fastly differentiate between positive and negative traits of a film.	Data Driven Approach	Classification Algorithm, Clustering Algorithm	STP (Segmentation, targeting, positioning) Framework
[81]	To investigate the factors those are affecting movie sales by Twitter WOM	Intention Lexicon Method	SVM Algorithm	Dynamic Panel Data model
[83]	To study the application of VR technology on the basis of AI background	Model based reasoning method	Average based Algorithm, CLSVSM IBCF algorithm.	Film Scoring and Communication Efficiency System

7. Discussion and Recommendations

Film Marketing plays a significant role for improving overall performance of the film industry. With the recent advancement of digital technologies in film industry, an effective integrated marketing approach in assimilation with them is the need of the hour. Keeping this in mind, following are some limitations and recommendations in this study for achieving sustained growth in film industry:

1)The integration of ML with Big Data technologies in Prediction Analysis

It enables accurate box office predictions as collecting adequate amount of computing resources are crucial for crawling the data on social media. There are several factors which are needed to be available but holds no accuracy such as availability of ticket price information, total number of seats allotted per screen and total number of shows per day on all screens [16]. The prediction of box office revenue for movies has become an emanated need as it imparts investment decisions on stock market, advertisement companies about the design of the promotional strategies, cinema theatres regarding movie scheduling. Although, the task is quite difficult as it is based on several complex factors but by modelling these factors by using Big Data provides a novel framework with two stage ML method [17].

In the age of Internet and social media where information is over flowing all over, it's quite a difficult task to predict factors such as the number of screens, WOM, and expert reviews which results in making predictions on box office more uncertain [78]. The prominent structural diversity in the social media data, traditional econometric methods and ML methods performs terribly in improving the box office prediction

accuracy. However, adopting new hybrid method by combining ML method and using Big Data collected from film industry and social media proves to be an effective measure[36].

2) Integration of ML with Big Data in Summarising Online Movie Reviews

Onlineusers always face difficulty in finding movie of their choice due to the excessive amount of movie information. The movie recommender system is quite suitable for helping users in selecting a movie with the currently available features [52]. Although online users write million of reviews on daily basis still it is not possible for the users to summarize the reviews. Classification and Summarization of reviews is a complex task in computational linguistics. Therefore, an automatic method is required for summarizing online movie reviews [53]. Online users can virtually express themselves through a video's editing, music, and subtitles. But automatically finding out about someone's feeling is a difficult task that will only get more complex with time. Therefore, facial recognition video analysis can be utilized to show the significance of sentiment analysis in business growth and crucial decision making [55].

3) Integration of ML with Big Data in marketing of movie poster design for film success

Online Movie Data Bases are excessive in volume and the complex relationship between movie related data and movie box office revenues carries difficulties in effective analysis of movie posters but the visualized features revealed latent relationship between the design of the text on movie posters and box office revenues [58]. With the ongoing changes in social environment, the development vision of traditional cinema is a matter of concern. Hence, publicity effect of movie posters needs to be improvised by improving the design method of movie posters resulting in the growth of the film industry [59].

4) Integration of AI with Big Data for Personalized Engagement Marketing System

For a developing economy there are three crucial areas of concern- acquisition (regional brand value), retention (adaptive and excessive human –machine interface), and growth (profitable customer loyalty), with AI applications serves offerings and communications suitable for immediate audience but it cannot be also denied that excessive and adaptive usage of human interface would relace human jobs [73]. Despite the fact thatAI has the greatest ability of collecting and integrating several sources of data independently but quite frequently the context of data is lost which gave rise to problems in modelling, especially emotional data as we still not poses true emotional machines that can recognize, act and react to human emotions accurately resulting biased recommendations [74]. In recent time, due to the sudden rise of online social networking working platforms have become new area for marketing and selling which includes brand management, fan management, or product marketing and increased exposure, the social network will be the new e-commerce market [48].
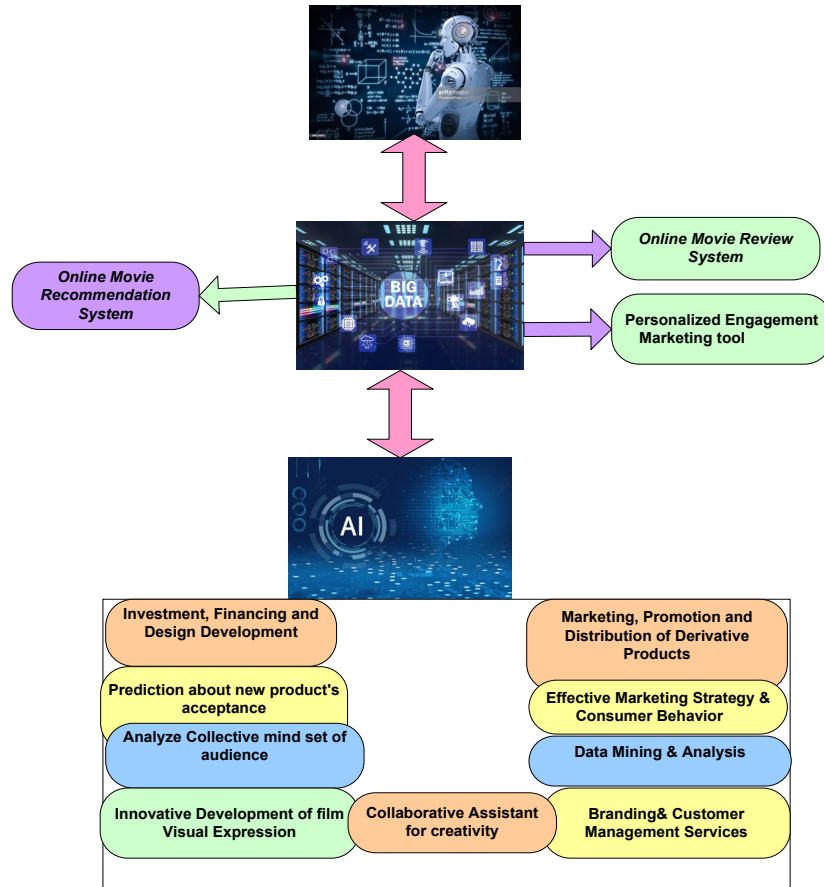

Figure 7 Conceptual Frame work for Film Industry

Figure 7 illustrates the conceptual framework to be adopted by the Indian Film Industry on the basis of the recommendations suggested by this study and it also highlights some major functions which are needed to be performed by the digital technologies which were being analysed in the process of reviewing the prior research studies for the current study.

8. Conclusions

Film Marketing is the crucial aspect for any film industry that requires systematic strategic planning process for maintaining long term sustainability in various competitive markets. In the current scenario, there are several areas in which film marketing can be strengthened in assimilation with latest digital technologies. Therefore, this study provided an integrated marketing approach to be adopted by the film industry in assimilation with latest digital technologies such as IoT, AI/ML, Big Data and VR.

Additionally, this study suggested different integration of digital technologies implementation in marketing sector of films such as establishing a Movie Recommendation System to provide accurate box office prediction through integrating Two Stage ML and hybrid methods with the help of Big Data by applying classification and clustering algorithms, establishing a Classified and Summarized online movie review system by applying ML algorithms such as KM, Clustering, SVM and using mainly Semantic Clustering Method, for improving marketing of movie poster design through Principal Component Analysis method by applying several ML algorithm such as RF, SVM, Color Pair Clustering algorithms by establishing a CNN model for ensuring film success, establishing a Personalized SNM System using Big Data Analytical Approach by applying several ML algorithms such as Classification algorithm, Clustering algorithm and Apriori algorithm for the new e- commerce marketing for films. The limitation of this study is that it only integrated four technologies were analysed in assimilation with film promotional strategies. However, there are several other digital technologies such s Cloud Computing, Block chain, Robotics, Digital Twin and Meta verse which are needed to be analysed as well providing space for future research areas.

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