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7th International Conference on Technology and Information Management (SICTIM 2021)

Digital Disruption and Knowledge Society

9th APRIL, 2021

Editors

Prof. (Dr) D.G. Jha

Prof. (Dr) Sindhu Singh

Prof. (Dr) Chandan Singhavi

Ms Rewa Pimpalkar

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Foreword

We, the Department of Data Science and Technology, take great pride and pleasure in hosting the 7th Somaiya International Conference on Technology and Information Management (SICTIM'21) at KJ Somaiya Institute of Management and in publishing its proceedings.

The theme "Digital Disruption and Knowledge Society" was chosen as digital technologies such as Big Data, Machine Learning, the Internet of Things, and Artificial Intelligence causing a paradigm shift in business and real life. These technologies have impacted the value proposition of existing goods and services, resulting consumerisation of IT. The adoption of digital innovation by organisations has increased the potential of reaching out to customers. Every interaction with customers provides a new opportunity for the business to understand and effectively forecast future market needs. Digital innovation has changed the way trades are done and started impacting the very existence of human society. The exchange of ideas within groups with similar interest has resulted in creating a Knowledge Society that aims to enhance the economics of information. While an organisation can use information as a Resource (IaBR) to initiate effective action, the knowledge society believes in sharing the raw data that can improve quality of life.

The conference aims to bring academia, researchers, and practitioners worldwide to share and disseminate their ideas. The conference seeks to generating, sharing, and making available all the ideas that will help bring out use cases in digital transformation for the business to learn and adapt and at the same time discuss the framework for the creation of knowledge societies for better human conditions. The conference received research papers addressing this theme. The conference has a pre-conference online workshop on "Digital disruption & Innovation—Unlocking digitally-enabled growth potentials" by Dr Klaus North, Professor of International Management Wiesbaden Business School, Germany. The conference also has a panel discussion of "Disruption in Education—The Academia - Corporate Role".

We wish to thank all those who helped us organise this conference a grand success in various ways. We are grateful for our Director, Dr Monica Khanna's, unwavering support in organising the international conference. We are fortunate this year to have two invited speakers—Prof. (Dr) Klaus North and Mr Arun Shekhar, CEO of Nucsoft. We are grateful to them for sparing their time to be a part of this conference. We are thankful for the help our reviewers and track Chairs put in; without that, this conference would not have been possible.

We are thankful to our publishing partner, Excel India Publishers and a special thanks to Archana Mathur for the overall coordination of the production of proceedings.

We hope you will enjoy the SICTIM'21 conference proceedings.

Prof. (Dr) D.G. Jha
Prof. (Dr) Sindhu Singh
Prof. (Dr) Chandan Singhavi
Ms. Rewa Pimpalkar
SICTIM'21 Organizing Committee

Preface

We are pleased to introduce the proceedings of 7th Somaiya International Conference on Technology and Information Management (SICTIM 2021) held on 8th and 9th April 2021. The theme of the conference was "*Digital Disruption and Knowledge Society*", organized by Data Science and Technology department.

The digital technologies such as Big Data, Machine Learning, Internet of Things, Intelligence of Things and Bring Your Own Device (BYOD) has impacted the value proposition of existing goods and services resulting consumerization of IT. The digital innovation has not just changed the way the businesses are done but also started impacting the very existence of human-society.

The conference aimed at generating, sharing and making available all the ideas to the participants that will help bring out use cases in digital transformation for the business to learn and adopt and at the same time discuss the framework for creation of knowledge societies for better human-conditions.

The preconference workshop conducted on "*Digital Innovation—Unlocking Digitally Enabled Growth Potentials*" by Dr Klaus North, Wiesbaden Business School, Alemania. The response received for the preconference workshop was overwhelming.

The conference received papers from industry and the academia. After the rigorous review 10 papers were selected for presentation. The papers presented were from varied areas of knowledge society and digital disruption.

We would like to extend our gratitude to Dr North Klaus (Wiesbaden Business School, Alemania), Mr Arun Shekhar (CEO, Neucsoft), Dr Monica Khanna (Director, KJ Somaiya Institute of Management), all faculty members of Data Science and Technology Department and Special Thanks to the reviewers for their valuable suggestions which helped the authors to improve their work.

The continuing success of this conference series means that planning can now proceed with confidence for the next year 25th and 26th Feb 2022.

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Contents

Extension and Integration of Information System Success Model with Customer Experience Model: Need and Significance in MOOCs

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K J Somaiya Institute of Management, Somaiya Vidyavihar University, Mumbai

Keywords: MOOC, Information System Success, Customer Experience, Learning Experience, Satisfaction

INTRODUCTION

Massive Open Online Courses or MOOCs, a form of distance education involving open-source technology, have democratised learning across a multitude of geographies. It has opened new learning avenues for anyone and everyone across the world to gainfully acquire knowledge, learn new skills or progress in their career through high-quality education delivered on a massive scale. Its openness accommodates a diverse range of students with no entry-exit criteria. Learners pursue MOOC on account of following motives like certifications and improving career profile (Lirsa & Charrière-Grillon, 2016), skill acquisition for a current job or future job (Radford, Coningham & Horn, 2015), the reputation of the affiliated university (Nemer and O'Neill, 2019) and access to high-quality content (Wu and Chen, 2017).

Although MOOCs have been around for almost a decade, their potential is not yet fully tapped. Despite the high number of enrolments, the drop-out rate for MOOCs is more than 90% across the globe (Wang & et al., 2019). Is it possible to reduce the drop-out rates if the learners experience high quality in terms of the system design and the overall learning experience is positive?

Customer experience or CX has gained significant attention in recent times as it has become a fundamental differentiator for customer-centric organisations across the world. The education sector has also started embracing this philosophy to enhance the success of academic programs and the *learning experience* of students. Extant literature in the area offers a plethora of studies to identify the dimensions and the factors that have improved our understanding and measurement of customer

experience. However, it has not covered the education sector, and especially the MOOCs offerings. Also, no concrete study exists that has applied the Information System Success in the context of MOOC. In this regards, the authors would like to study the learner satisfaction for MOOCs using Information System Success (ISS) and Customer Experience Model. Enthused by this research gap, the main goal of this study is to examine the factors affecting the learner satisfaction for MOOCs using quality dimensions from the Information Systems Success model and the experience dimensions from the Customer Experience Model.

LITERATURE REVIEW

Information System Success Model

Evaluating Information Systems through their success or effectiveness have been the popular themes in Information Systems studies. The DeLone & McLean Model (1992) is a highly cited, popular, and comprehensive theoretical framework for evaluating the success of Information Systems. Based on a review of 180 studies, DeLone & McLean identified 100 measures of IS success and created a causal explanatory framework by combining and subsuming various determinants. The multi-dimensional framework consists of quality measures such as information quality and system quality, system usage and user satisfaction as the actual behaviour and attitude structure, and individual and organisational impact as the performance measure. Although it was not empirically analysed, subsequent research by Seddon (1997) and Rai Lang, Welker (2002) empirically analysed the model and modified it.

Later in 2003, DeLone & McLean presented an updated version of the Information System Success Model based on the criticism from the previous empirical research and the challenges arising from technological advancements. The updated ISS Model (DeLone & McLean, 2003) consisted of an additional construct of service quality, subsuming of individual and organisational impact into net benefits. Thus, the new model involved system quality, information quality, and service quality as the success components of information systems, the system use (or intention to use as a user attitude) and user satisfaction as the net benefits. The original authors did not empirically analyse this model. Later studies have used the updated model in varying contexts like Hotel Information System (Jang, Kim & Hwang, 2006), Online Shopping (Chen & Cheng, 2009), E-Learning System, (Freeze, *et al.*, 2010), Employee Portal Success, (Urbach, Smolnik, Riempp, 2010), online public grievance redressal system (Rana, *et al.*, 2015), E-Learning, (Aparicio, Bacao, & Oliveira, 2017), E-Government Filing Service (Veeramootoo, Nunkoo, Dwivedi, 2018), etc. Different authors have considered varying measures for the constructs suitable to a specific technology, geography or context in all these studies.

In service quality studies, customers are considered passive participants in the service delivery, who process the information and subsequently assess the service interactions as service outcomes (Garg, *et al.*, 2014). However, in MOOC, active participation and the student's interactions with the resource person and other participants also need to be considered from a learning experience perspective.

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Customer Experience (CX) Concept

Consumer behaviour and the needs-wants-demands arising from it continuously evolve. Marketers have also evolved their practices and progressed from just' selling products to providing experiences to their customers, which requires 'customer focus' and a 'customer empathy' approach. The customer empathy approach helps in creating emotional bonds and memorable interactions with the customers. As all goods and services get commoditised, the customer experiences in delivering those products and services matter most (Pine II & Gilmore, 1998). Delivering excellent customer experiences create value in the most critical moments, not just for the customers but also for the business.

As per Meyer & Schwager (2007), customer experience is the internal and subjective response customers have to any direct or indirect contact with an organisation or a brand. The experiential aspects of consumption, a concept first introduced by Holbrook and Hirschman (1982), play a central role in delivering remarkable experiences. Many organisations systematically apply customer-experience management principles and tools to strengthen customer loyalty (Berry, Carbone, & Haeckel, 2002).

Customer experience is a multi-dimensional construct (Pine II & Gilmore, 1998) (Schmitt, 1999) (Gentile, Spiller, & Noci, 2007) (Verhoef, *et al.*, 2009) (Klaus & Maklan, 2013). Klaus & Maklan (2011) conceptualised and validated the concept of customer/service experience by identifying four dimensions of the experience quality scale, which are product experience, outcome focus, moments-of-truth and peace-of-mind. Also, the customer experience acts as an antecedent to customer satisfaction and loyalty (Fatma, 2014; Yoon, 2010).

In the existing literature, there are numerous industry-specific models developed for measuring customer experience. Garg *et al.* (2014) established a customer experience measurement scale for measuring the retail banking experience in India, comprising of 14 factors, namely convenience, servicescape, employees, online functional elements, presence of other customers, online aesthetics, customisation, value addition, speed, core service, marketing-mix, service process, online hedonic elements and customer interaction. Using the concept of 'flow', Novak *et al.* (2000) proposed a model of the customer experience in the online environment in the context of human-computer interactions. The model consists of 13 variables: web usage, arousal, challenge, control, exploratory behaviour, flow, focused attention, speed, involvement, playfulness, positive effect, skill, telepresence and time distortion.

Chawla & Joshi (2019) conducted an exploratory study and identified 7-factors for measuring the mobile banking experience of customers in India, namely ease of use, attitude, lifestyle, convenience, efficiency, trust and behavioural intention. To measure the relationships between customer experience quality and demographics, Deshwal (2016) applied the EXQ model and developed a 23-item instrument for retail customers in India. Alafa *et al.* (2021) recently investigated the impact of customer experience on loyalty and satisfaction in Ghana's oil marketing companies.

Much research has been done in determining the factors of information systems quality and customer experience, along with the impact on usage and satisfaction. However, there is a dearth of knowledge in the education sector, specifically for MOOCs. Therefore there is a need to develop a comprehensive framework to measure the learner satisfaction for MOOCs using Information System Success and the Customer Experience Model.

CONCEPTUAL FRAMEWORK

With the growing importance of online education, MOOCs will significantly improve the accessibility of world-class education. Since MOOCs are a recent phenomenon, limited research exists that studies the success and effectiveness of MOOCs. Extant literature highlights some studies on MOOCs' adoption and acceptance, but no study exists on determining MOOCs' success.

Our study proposes an extension of the Information System Success Model (DeLone & McLean, 1992 & 2003) from the Information System Research domain with the Customer Experience Model Garg et al. (2014) from the marketing domain to create a duel model for MOOC Satisfaction. According to the authors, there is no study in the past research that has combined the above two models to understand the satisfaction for Information systems from the experience point of view. Figure 1 provides a graphical representation of our conceptual model.

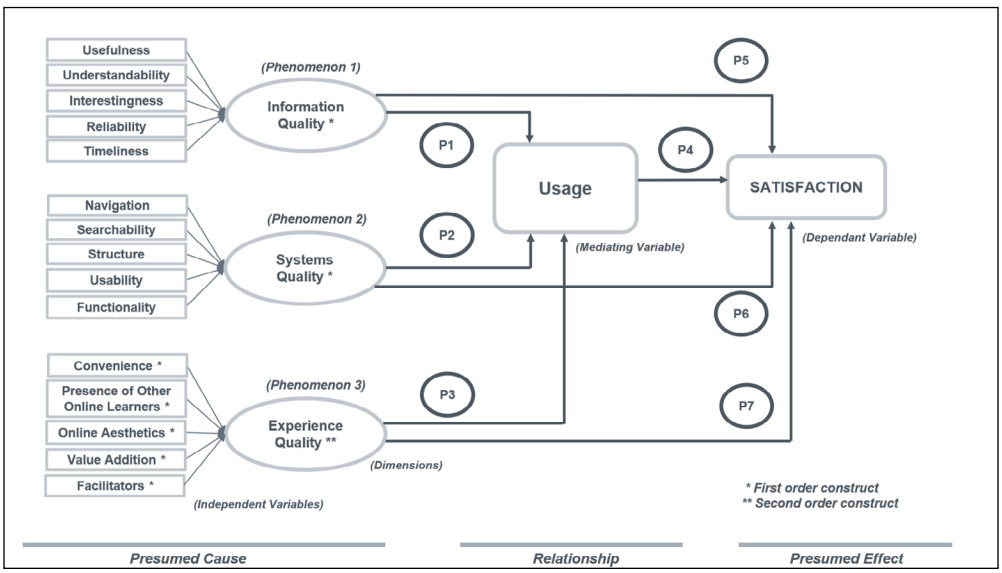

Fig. 1: A Conceptual Framework to Study the Learner Satisfaction for MOOCs

To address the above research gaps, we have combined the information systems success model with the customer experience model to elucidate how learners assess the success of MOOCs using quality and experience dimensions. The proposed conceptual model consists of five constructs explained in the below table.

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Table 1: Constructs for Measuring MOOC Satisfaction

S. No.	Construct Name	Definition	Reference
1	User Satisfaction	An individual examination of the different outcomes measured on a pleasant-unpleasant range.	Seddon, (1997)
2	Usage	The user interface with the system	DeLone & McLean, (1992)
3	Information Quality	The expected information output characteristics that influence the information system success	DeLone & McLean, (1992)
4	System Quality	The expected system design characteristics that influence the information system success	DeLone & McLean, (1992)
5	Experience Quality	The perceptual belief of holistic customer interaction with a business.	Garg *et al.* (2014)

Proposition 1

MOOC Information Quality positively influences usage

Proposition 2

MOOC Information Quality positively influences User/Learner Satisfaction

The definition of information in the present study is the extent to which users perceive the characteristics of the information output produced by the MOOCs in terms of usefulness, understandability, interestingness, reliability, completeness & timeliness (DeLone & McLean, 1992 & 2003; Urbach, Smolnik & Riempp, (2010). It is reasonable to expect that when learners find the information generated by MOOC platforms useful, easy to understand, interesting, reliable, complete, and timely, it will lead to higher usage and user satisfaction.

Proposition 3

MOOC System Quality positively influences usage

Proposition 4

MOOC System Quality positively influences User/Learner Satisfaction

The definition of a system quality in the present study is the extent to which users perceive the MOOC system that is responsible for producing information. The study will evaluate the MOOC system by the learner in terms of navigation, searchability, structure, usability, functionality, and accessibility (DeLone & McLean, 1992 & 2003; Urbach, Smolnik & Riempp, (2010). If the MOOC learner finds a functional system that eases content access, it can lead to high use and satisfaction.

Proposition 5

MOOC Experience Quality positively influences usage

Proposition 6

MOOC Experience Quality positively influences User/Learner Satisfaction

The definition of experience quality in the present study is a multi-dimensional construct consisting of six factors: convenience, online aesthetics, value addition, presence of other learners and facilitators. Through propositions 5 and 6, we intend to measure the impact of the experience quality on the learner's usage and satisfaction. If the MOOC learner has a positive experience with MOOC systems, it will enhance usage and satisfaction.

Proposition 7

MOOC usage positively influences User/Learner Satisfaction

System use and User satisfaction are employed as dependent variables for several studies on the Information System Success Model (Jeyaraj, 2020). System use is studied in mandatory or volitional contexts. The system use construct has been studied from varying perspectives. It ranges from the website visit, the navigation for information retrieval, the number of transactions, or the interactions for system use (DeLone & McLean, 2003). Past studies have measured system use with respect to frequency, time, pattern, dependency, amount of use, nature of use, purpose, and appropriateness. (DeLone & McLean, 2003; Petter, DeLone & McLean, 2008, 2012 & 2013). It also found in the past studies that system use mediates the quality dimensions and user satisfaction. In the current study, we consider the voluntary Usage of MOOC and measure it in terms of duration, frequency & intensity of MOOC usage. Satisfaction is an affective response that is very critical in determining the system's success. A user is satisfied with a MOOC system when their needs are fulfilled by using it. Use precedes satisfaction in a process sense. In the variance sense, pleasant use with the system will lead to further satisfaction. We propose that higher usage will lead to higher satisfaction.

IMPLICATIONS AND CONTRIBUTION TO THEORY

With the growing importance of online education, MOOCs will significantly improve the accessibility of world-class education. Since MOOCs are a recent phenomenon, limited research exists that studies the success and effectiveness of MOOCs. Extant literature highlights some studies on MOOCs' adoption and acceptance, but no study exists on determining MOOC success. So on these lines, our study proposes an extension of the Information System Success Model (DeLone & McLean, 1992 & 2003) from the Information System Research domain with the Customer Experience Model (Garg, Rahman & Qureshi, 2014) from the Marketing domain to create a duel model for MOOC Satisfaction.

Building on the Information System Success Model and Customer Experience, we propose a multi-dimensional taxonomy for MOOC Quality and Satisfaction. We intend to contribute to the theory by extending and integrating the above two models from the Information System and Marketing domain. Extant literature shows that there is no such study to combine these two models. The second contribution is that these models, individually or collectively, are not yet applied in the context of MOOC. This study's third contribution is that no such studies with these amalgamated models exist in an Indian context.

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RESEARCH AGENDA & FUTURE DIRECTIONS

The authors will design a survey instrument with the help of established and validated scales from past research. The instrument will adopt the scales for System quality and Information quality from Urbach, Smolnik & Riempp, (2010). The second-order construct experience quality is expressed in terms of Convenience, Online Functional Elements, Online aesthetics, Value addition, Employees and POOC, adapted from Garg, Rahman & Qureshi, (2013). The construct of system use that mediates the quality dimensions with satisfaction is measured in terms of Period, Occurrence & Intensity of use, adapted from Lee, Kim & Gupta, (2009).

This model's ultimate dependent variable is user satisfaction measured in terms of adequacy, efficiency, effectiveness, and overall satisfaction adapted from Urbach, Smolnik & Riempp, (2010). All these scales were adapted to suit the context of MOOC. The survey instrument will be pre-tested to check the content validity of the adapted scale. After that, pilot testing will be done for assessing the convergent and discriminant validity and reliability. The researchers plan to collect the primary data using a survey via google forms. Data analysis will be conducted by applying Structural Equation Modelling. SMART PLS 3 shall be used to determine the psychometric properties of the proposed model.

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Impact of COVID-19 on Usage of Digital Payment Systems by using Technology

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ABSTRACT

Indian Economy is projected to reach USD 5 trillion economy by the Government of India with this it become the world's third largest economy. RBI opened upto private players to setup financial inclusion which leads to competitive advantage and introduction of wallet payments along with other Digital payment systems. Digital payment boosting happened when government introduced demonetisation in November 2016 to push online payment and bring transparency in the systems and curbs tax evasion by moving towards cash-less economy. The second boost happened during the Covid-19 which pushed the customers to the use of digital payments. The Task Technology Fit-TTF model study adopted to determine the factors impacting the technology on usage of digital payment i.e. Internet banking, Mobile banking. Technology characters found to be more significant in explaining the usage of digital payment systems

Keywords: Technology, Covid19, Mobile Payment, Contactless, Task-Technology-Fit(TTF)

INTRODUCTION

Indian Economy is projected to reach USD 5 trillion economy by the Government of India with this it becomes the world's third largest economy (Govt. sticks to $5 trillion economy target; emphasis on infra aimed at achieving goal: DEA Secretary, 2021). Government of India transforming all the citizen services to digital driven technology. "Digital India is a flagship programme with the vision to transform India into a digitally empowered society and knowledge economy (http://cashlessindia.gov.in/digital_payment_methods.html)". In India, Banks are regulated under Reserve Bank of India (RBI). RBI has constituted various committees to enhance the Banking and financial sector in par with International standards. RBI opened upto private players to setup financial inclusion which leads to competitive advantage and introduction of wallet payments along with other Digital payment systems.

Digital Payment Systems (DPS)

In the initial digitalisation of payment was through debit card and credit card, slowly introduction of technology in banking sector made feasible of transfer of funds with ease using NEFT - National Electronic Fund Transfer and Real-Time Gross Settlement (RTGS) using Internet banking, due to mobile penetration and

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advancement of internet technology mobile banking became feasible. Digital Payment comprises

- Internet Banking
- Debit Card
- Credit Card
- USSD
- M-Wallets
- Mobile Banking
- Unified Payment Interface (UPI)
- AEPS - Aadhaar Enabled Payment Systems
- BHIM – Bharat Interface for Money

Digital payment boosting happened when government introduced demonetisation in November 2016 to push online payment and bring transparency in the systems and curbs tax evasion by moving towards cash-less economy. The second boost happened during the Covid19 which pushed the customers to the use of digital payments. In the Financial Year 2019 the market valued with INR 1.638.49 trillion for the digital payments and by Financial year 2024 going to raise by INR 4,323.63 trillion with compound annual growth rate of percent during the FY 2020- FY 2024 (Impact of Covid-19 on digital payments in India, 2020).

COVID-19

"COVID-19 is the disease caused by a new coronavirus called SARS-CoV-2. WHO—World Health Organisation first learned of this new virus on 31 December 2019, following a report of a cluster of cases of 'viral pneumonia' in Wuhan, People's Republic of China." (Coronavirus disease-Answers, 2021). World Health Organisation announced COVID-19 as a pandemic disease based on the receipt of the reports. Due to this pandemic entire world came to a standstill.

In India, the government announced complete lockdown for 21 days from 25th March 2020 to 14th April 2020. Phase wise lockdown was imposed till 31st May 2020. The unlock phase started from 1st June with proper guidelines. Further to break the transmission of disease the protocol of social distancing and wearing masks made compulsory by the government.

During this period, the fear of transmission of disease by touching the objects or coming in contact of any things getting infected created fears among the people in using the currency to purchase or sale of goods. Contactless payments methods like mobile payment, contactless cards, M-wallets were being used as an alternate source of payments to purchase goods. Customers found to be comfortable in using the digital payments even to meet the small needs.

LITERATURE REVIEW

Rahi *et al.*, (2020) integrated two theories of Information system (IS) to study the use of Internet banking services. These IS theories are well known theories namely TTF and TCT i.e. TTF - Task Technology Fit and TCT - Technology Continuance Theory. It discussed about the use of internet banking service based on the constructs motivating the users to continue the use of technology. The study findings on the user continuance intention to use internet banking is explained by the model with 53.9% variance.

A study on m-Pesa in Kenya was conducted by Osah, O., & Kyobe, M. (2017) using Information System theories (IS) Task Technology Tit (TTF) and Post-Acceptance Model (PAM). The empirical study conducted by measurement model and structural model using partial lease square-PLS structural equation modelling-SEM-(PLS-SEM). The data collected from 618 respondents revealed the following results by TTF showing a path coefficient stronger than PAM's.

The authors (Tam, C., & Oliveira, T. 2016) focused on the usage of mobile banking using technology characteristic by probing the distinct customer performance. The main purpose of the study is to inspect the factors impact on mobile banking for individual performance and is there any gender or age differences also. To investigate the study 256 individual contributed to the study by filling the online questionnaire survey. The study is conducted by referring task technology fit theory by integrating technology and tasks characteristics with technology usage. The authors concluded the study with the findings that technology and usage are the significant patterns in mobile banking for the individual performance.

RESEARCH OBJECTIVES

Based on the above literature review, and relevant to the study found task technology fit model suits to conduct the research study, task technology fit model is applied to derive the technology fit to measure the performance of the individual. The Task Technology Fit-TTF model study adopted to determine the factors impacting the technology on usage of digital payment i.e. Internet banking, Mobile banking, contact less payment methods like debit card, credit card, wallets like Google Pay, PayTM, BHIM and PhonePe.

RESEARCH QUESTIONS

- Whether task characteristic impact the task technology fit?
- Whether technology characteristic impact the task technology fit?
- Whether task technology fit impact the usage of digital payment system during COVID-19?

RESEARCH METHODOLOGY

As per the need of the study based on the research questions to be answered, a questionnaire form created and did the online survey by sending the google form link to the respondent's email id after their consent. Convenient sampling method

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adopted to conduct the online survey. The google form link shared among 220 respondents', we received complete filled form from 170 respondents.

Collected data were analysed using SPSS statistical application tool to test the model. statistical tests performed Descriptive statistics, Reliability Test and Regression Analysis. The items in the questionnaire's are measured using Cronbach's alpha and found meeting the threshold (Hair, *et al.* 2005) and (Nunnally, 1978) so that the constructs can be further analysed to test the significance of the model.

FINDINGS

The Mobile banking or Digital payment use is encouraged by characteristic of task and technology i.e. TTF Theory (Tam, C., & Oliveira, T. 2016). The users will have specific task to be carried out through the technology to perform certain IT applications. Task characteristic of availing the facilities in the digital payment to check balance, transfer of money with easy access of connectivity. Technology characteristics assisting or supporting the IT applications i.e. digital payment systems in performing the task characteristics.

This study identified that the TTF model significantly influenced the usage of digital payment systems. The technology characteristics and task characteristics impacts user's decision on digital payment systems.

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Knowledge Management in Franchise Outlet and Customer Frequenting Performance with Reference to Coimbatore City, Tamilnadu

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ABSTRACT

This study looks into the application of Knowledge management in the field of franchise business particularly locally grown franchise food outlets. Knowledge management has found an application in the businesses every experience and every technical knowhow gives an edge to one business to another to be successful. In the franchise business the franchisor is the one who is imparting the knowledge management on the franchisee as the franchisor has a proven model. In spite of the success of the franchise brand name continuous changes and innovations are necessary to sustain in the market, Knowledge is available at all levels with franchisor, franchisee and together it is put into work for the increase in the performance of the business. This study looks into the fast food franchise outlets that uses certain knowledge management factors to get the customers frequent the outlet in turn that increases the business performance. The methodology adapted is primary data collection of the factors like combo offers, New flavors, customer service, Décor change, free gifts and the usage of Chi-square analysis of independence states that the customers frequenting the franchise outlet are due to the knowledge management techniques used by the franchise and subsequently has increased the business performance. The findings of the study are that the knowledge management factor of customers frequenting the franchise outlet has significant relation with knowledge management techniques adopted by the franchisor and the franchisee which leads to the improved business performance. This implies that knowledge management in franchise business can be fruitful for the performance of the business.

Keywords: Knowledge Management, Customers Frequenting, Franchise.

Knowledge management is a new field used in organizations to perfect their experiences and proper transfer of knowledge happens in the organization which ultimately brings in the desired result or profit for the organization. Franchising is an industry which has a franchisor and several franchisees. the franchisor has a proven model or a product with fair amount of success in its outlets initially that is developed and knowledge transfer is effected by the franchisor to the franchisees in

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certain areas of the business to run the franchise successfully and to keep the brand name in tact. In a franchisor, Franchisee set up Knowledge transfer takes place in the following areas only Training, customer handling, appointment of the employees, outlet design and equipments are provided by the franchisor, the franchisee gains the knowledge and operates the outlet under the brand name of the franchisor and expands the business. When the knowledge is transferred the management of the same is utmost important for the franchisor to keep its brand name, customer satisfaction. A study by Mukhtar Shehu Aliyu (2015) reveals that there exists a positive relationship between knowledge management and business performance. This paper deals with aspects in the franchising industry that promotes knowledge management with the franchisor and the franchisee namely Customer needs by the franchisee, Service delivery to customer by the Franchisor.

Franchisor has knowledge about the process, product and preference in a particular area and the franchisee has knowledge about the region/area and the preference of the customer in that area where he operates. Both the franchisor and franchise needs to manage their knowledge in their expertise and improve the performance of the brand Every area is different also localities varies in India there can be area where people could afford the service and there could an area where the people cannot afford the service from a particular franchise. The knowledge management in the fas food outlets starts with customer service if it is good the customer will be retained, combo offers are always attractive for students and single individuals as the study shows this is the age group that frequents the outlets very often Ambience or the decor with mouth watering pictures also stimulates the mind to eat some thing delicious combined with new flavors the customers are likely to frequent the outlet. Gifts like crowns for children, toys, stationary also has attracted customers to the outlets frequently this is more in the case of children. Through analysis of the variables have been done and limited to five variables which have ben analyzed. Eugenie Byukusenge*, John Munene, Laura Orobia(2016) revealed that innovation played a role in business performance franchises can be innovative using their knowledge management

OBJECTIVE

To study the impact of Knowledge management in the increase in customer frequenting franchise outlets in Coimbatore city- Tamilnadu. The study checks for customers view on knowledge management used by the franchise.

STATEMENT OF THE PROBLEM

Knowledge management plays an important role in the success of several organization it is the same in the franchising business were the franchisor has acquired lot of technical and practical knowledge in different aspects of its business and have found ways to overcome the problems. This study checks for the certain knowledge management factors and their contribution to the increase in customer frequenting the franchise outlets

RESEARCH METHODOLOGY

The methodology of the study is based on primary data collected from customers coming to Meat and Eat fast food franchise in different areas of coimbatore. A questionnaire consisting of variables of knowledge management like Combo offers, customer service, decor gifts, new flavors and the corresponding factor frequenting of customers to a franchise outlet which leads to the better performance of the franchise business also the normal demographic factors like age, gender, income of the respondents where included in the questionnaire. The outlets in consideration was Meat and Eat fast food restaurants in Coimbatore city Chi-square analysis was used to check the test of independence.

REVIEW OF LITERATURE

Knowledge management defines the usage, creation, sharing and managing of the resources in an organization and also deals with knowledge, process and information John Girard, JoAnn Girard (2015). Emilio Esposito 1Eugenio Oropallo 1 and Renato Passaro (2020) study states that customer knowledge management (CKM) as the logical intersection of customer relationship management (CRM) and knowledge management Some studies discuss about innovation and customer satisfaction benefit small businesses from knowledge management activities it can also ensure their competitiveness and sustainability Salina Daud, Wan Fadzilah Wan Yusuf, (2008) Knowledge management differ from small and large businesses Varintorn Supyuenyong, Nazrul Islam, Uday Kulkarni (2007), the employees of the organization are most valuable resource for knowledge and its performance how they can effectively create, share among others in the organization De Brún (2005). Another study also revealed that there exists a positive relationship between knowledge management and business performance Mukhtar Shehu Aliyu (2015). Using SMEs characteristics tailor made Knowledge management systems can be tailor made E. Tapissier, F. Mantelet and A. Aoussat (2018) KM process consists of four stages: acquisition, storage, distribution, and use of knowledge Rodrigo Valio Dominguez Gonzalez1 Manoel Fernando Martins2(2017) Jennex and Olfman (J&O) KM model is considered to be success model and have been tested Mei-Hsiang Wang*, Tarng-Yao Yang (2015). Another study by Eugenie Byukusenge*, John Munene, Laura Orobia (2016) revealed that innovation played a role in business performance then KM. Drebes Pedron2, Felipe Nodari1 and Rodolfo Ribeiro2 also had four factors of KM analysed like internal context, process, content and external environment. Roman Kmieciak/ Anna Michna (2012) feels there is correlation between KM and market orientation, Josephine Kayaga Nsubuga-Mugoa (2019) study revealed having supportive leadership, ensuring sustainability, embedding KM practices in the organization culture, socialization, and embracing modern technology are needed. Judith Jacob Iddy, Ilan Alon (2019) study sates that KM in franchising is associated with 3 factors: governance structure; performance outcome; and franchise network growth. All these literature reviews clearly leaves the gap of application of knowledge management in the field and their outcome the factors like performance outcome of a franchise comes from the knowledge management of the outlet which involves

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the franchisor and the franchisee. The main idea being business performance to attain that retaining the customer and making the customer frequenting the outlet by self and with friends and relatives is mandatory. This lead to the finding of the variables in the outlet which will make the customers frequent the outlet. Out of several variables Combo offers, New Flavors, Customer service, Decor change, Gifts were found to be appropriate, this was done using a pilot study with the peers and customers.

ANALYSIS

A convenient sampling was taken 200 respondents were taken after screening the data. The respondents frequenting the fast-food outlet where mostly in the age group of 18-25 which accounted for about 45% and age group of 25-30 about 30% and above 30 years of age was 10% and notably children population were 15% frequenting the outlets. Gender-wise both male and female population frequented and did not have a significant difference. Income did play a part for frequenting above 25,000 rupees monthly income families and individuals frequented the outlets.

A test of independence was checked using Chi-square test Franchise outlet of Meat & Eat fast food chain was taken for this study and the customers visiting these outlets were given a questionnaire regarding the knowledge management factors Meat and eat outlet has about 10 outlets in the Coimbatore city at different locations it is all a small restaurant with a maximum capacity of 15 customer seating capacity providing fast food like burgers and chicken.

Table 1: Chi-Square Test: Customer Visiting Frequency Vs Factors of Knowledge Management

	Results					
Customer Frequenting	**Combo Offers**	**New Flavors**	**Customer Service**	**Decor Change**	**Free Gifts**	**Row Totals**
0 - 5	50 (45.05) [0.54]	67 (46.99) [8.52]	49 (42.39) [1.03]	18 (32.94) [6.78]	18 (34.64) [7.99]	202
6-10	45 (37.02) [1.72]	38 (38.61) [0.01]	37 (34.83) [0.13]	26 (27.07) [0.04]	20 (28.46) [2.52]	166
11-15	34 (38.58) [0.54]	35 (40.24) [0.68]	36 (36.30) [0.00]	38 (28.21) [3.40]	20 (28.46) [2.52]	166
16-20	37 (41.48) [0.48]	36 (43.27) [1.22]	39 (39.03) [0.00]	39 (30.33) [2.48]	30 (29.66) [0.00]	173
21-25	20 (23.86) [0.63]	18 (24.89) [1.91]	14 (22.45) [3.18]	15 (17.45) [0.34]	40 (18.35) [25.56]	107
Column Totals	**186**	**194**	**175**	**136**	**143**	**834 (Grand Total)**

The chi-square statistic is 70.0175. The *p*-value is. 00001. The result is significant at $p <$. 05.

A chi-square test of independence showed that there was a significant association between Knowledge management and increase in frequency of the customer visiting the outlet in 3 months time X^2 (4, N = 200) = 70.0175, p =. 00001

FINDINGS

The findings of the study are that the knowledge management factor of customers frequenting the franchise outlet has significant relation with knowledge management techniques adopted by the franchisor and the franchisee which leads to the improved business performance.

SUGGESTIONS

Franchise outlets are known to apply better management techniques as it is proven model but knowledge of the customer gives an added advantage to make innovative changes to retain the customer and to make the customer to frequent the outlet, not only the franchisor franchisees involvement and knowledge sharing can bring in better knowledge management in that region of operation.

LIMITATIONS OF THE STUDY

The study has taken five variables and one factor the area taken is limited to Coimbatore city and the sector taken is local franchise fast food restaurant. Business face competition from all quarters to overcome them the entrepreneur employs different methods particularly in the fast food sector were it can be easily copied and delivered but still the know-how and the knowledge gained from the experiences will definitely make them successful if applied and given to the customer. As the study was with the customers frequenting the outlet again and again certain answers could be same and at times misleading proper judgment needs to be made at the spot. All limitations of primary data are applicable to this study to differences in data can appear in other cities of the country.Future studies in this area could be in other sectors where knowledge management can bring a difference to the business as well as the customers.

CONCLUSION

The study states that the knowledge management variables like Combo offers, customer service, gifts, new flavors decor with respect to one factor frequenting of customers to the outlet in 3 months definitely plays a role in the better business performance.

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Is Bitcoin the New Gold, as an Asset Class?

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ABSTRACT

Through this research, it is tried to find out the similarity between Bitcoin and Gold as per their price movements. Equities are also considered to see if not gold, then does Bitcoin functions like Gold or takes a path of its own. The time period considered for this is 2020 year. This is essential because, it provides uncertain times under which everyone looks at Gold as a safe haven asset. It would be the best environment to see Bitcoin takes Gold's path or not. Let's have a look at the study.

Keywords: Cryptocurrency, Bitcoin, Blockchain

INTRODUCTION

Time and again we have seen the supremacy of Gold as an asset class for over a century. It also describes the underlying challenge faced by this asset class in the recent past due to an uptick in technology. This upgradation in technology, namely blockchain, has given birth to a 21st century modern asset class called Cryptocurrency. It is a touch-less currency that is secured by a technique called cryptography. Hence, making it not possible to counterfeit or double spend.

The most notable and first Cryptocurrency in this world was Bitcoin, which was launched in 2009. Bitcoin has taken leaps and bounds in growth since then. With 2020 being a pandemic year, where the whole world was put in lockdown, a standstill. We see the old philosophy of "Gold A Safe Haven" coming back in the picture. Numerous parameters suggested a rally in this asset class, and many experts have been bullish on this from time to time during the year 2020.

LITERATURE REVIEW

Post the financial crisis in 2008, the inefficiencies in the financial system were out in the open and the confidence in the system was at an all-time low. *Satoshi Nakamoto (2008)* published a paper that presented the idea for a possible alternative to conventional means by creating a virtual currency called Bitcoin. With time we have seen the virtual currency grow from strength to strength. Its importance has grown even more in uncertain times. Even some studies suggested that in times of economic downtrend and diminishing confidence, Bitcoin would seem to boom. *(Bouri 2017a; Luther & Salter 2017; Demir 2018, Fang 2019).* Some researchers also argue that Bitcoin could turn out to be the answer for the problems in the structure by applying it as a hedge against the markets. *(Dyhrberg 2016; Bouri 2017a; Demir 2018; Selmi 2018; Guesmi 2019; Fang 2019).*

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Since Bitcoin is based on blockchain technology which provides an exclusive decentralised payment system, it gathered the attention of people across all domains. *(Wang 2018)*. Another reason for Bitcoin drawing attention was the independence from sovereign governments, regulators, and the banking system. *(Fang 2019)*. An interesting aspect of Bitcoin's working is its price determination. Several experts attempted to predict the price of Bitcoin, like *Kristoufek (2013),* and concludes that with conventional financial theories it is not easy to predict Bitcoin's price. *Aalborg (2019)* concluded that Bitcoin's price is unpredictable, though volatility might be predicted by past data.

It is indicated that Bitcoin maybe a part of an alternative economy *(Bouri 2017b)* based on the evidence that it is a decentralised currency that is independent of sovereign governments *(Fang 2019)*. Several experts even attempted to explain Bitcoin's behaviour with stocks *(Bouri 2017b; Fang 2019)*, bonds *(Bouri 2017b; Fang 2019)*, commodities *(Bouri 2017b, Bouri 2018a, Selmi 2018, Shahzad 2019; Fang 2019)*, conventional currencies *(Bouri 2017b)*, financial stress *(Bouri 2018b)*. These studies created an upcoming area of research about the possible connections between the behaviour of Bitcoin and economic turmoil to check its function as a safe haven asset.

In one of the studies, it found evidence of the impact of positive and negative macro news on Gold and Bitcoin. Concluding that Gold reacted in a systematic consistent manner, Bitcoin did not react in the same way *(Al-Khazali 2018)*. While we saw the researches about the positive impact of Bitcoin on the system. Some studies were also conducted to see the problems due to the birth of Bitcoin. Some experts studied the potential speculative bubble *(Cheah and Fry 2015)* and concluded to say that its price contains a significant speculative bubble aspect. It was also said that the fundamental value of Cryptocurrency is zero *(Dowd 2014)*. Another expert who studied the speculative bubble in Bitcoin was *Corbet (2018)*. It was also concluded that Bitcoin goes through bubble periods. *Bouri (2019)* also identified the making of the speculative bubble in Cryptocurrency. A particular expert in their study showed high temporal volatility of Bitcoin *(Brandvold 2015)*. On the contrary, *Baur (2018)* in their study defended the part of Bitcoin as a speculative bubble asset.

Based on the above studies, the aim of this research is to find whether Bitcoin acts as Gold through the time of pandemic in 2020.

OBJECTIVES OF THE STUDY

Through this research, we want to see the strength of the old philosophy on Gold with a new asset class (Bitcoin) being in the picture as well. This paper would work towards finding the differences and similarities between these two asset classes. It also looks at the pattern of movement of Bitcoin with Equities. Therefore, to see if Bitcoin is more like Gold or Equity or takes a path of its own. This research is essential in today's time due to the growing interest of investors, traders, speculators in Cryptocurrency. With initial interest coming from retail investors, institutional investors' increasing interest is expected to jolt the supremacy of Gold and provide strength to Bitcoin.

The scope of this study would majorly be limited to 2020, the pandemic year. The research would be based on secondary data of daily price movements of Bitcoin, Gold, NIFTY 50, and S&P 500. The objective of this study is to find if Bitcoin could be considered as the new Gold. It also tries to find if the old philosophy of "Gold A Safe Haven" applies to Bitcoin?

DATA & RESEARCH METHODOLOGY

The motive of the research is to find out the behaviour of Bitcoin and to determine whether it acts similar to Gold or Equities or else take a path of its own. To find that out daily price data is collected for the year 2020 for NIFTY 50, S&P 500, Gold and Bitcoin. The data for NIFTY 50, S&P 500 and Bitcoin is collected from Yahoo Finance and the data for Gold is collected from MCX commodities exchange.

In order to answer the question in focus, daily price movement is analysed as well as trying to get insights from the data through use of mega stats and find out empirical rule, Kurtosis, skewness, coefficient of variation etc. Apart from that relative daily price movements are also utilised to see the performance of each asset class. Year 2020 is selected due to the crisis faced by the world; it acts as a perfect stage to check the behaviour of various asset classes in uncertain circumstances. Visual representation of the price movements is also employed to come to a better conclusion. An inductive approach is followed in this study with price data insights providing support and therefore helping in reaching a conclusion.

FINDINGS

The findings from this research are based on certain parameters, like long-term price stability, it is found that Gold has considerably more price stability in comparison to Bitcoin. In terms of regulatory oversight, Gold has national level oversight for various purposes, whereas Bitcoin is outside the regulatory purview. In terms of returns, Bitcoin outperforms Gold by leaps and bounds. And last for acceptability, Gold is a highly acceptable product but in terms of Bitcoin, its acceptability is quite low, which is increasing with time. These provide important insights for Bitcoin being more a wealth creator rather than a wealth protector unlike Gold.

IMPLICATIONS AND CONCLUSION

During the analysis, many elements were investigated to see the behaviour of Bitcoin for each element against that of Gold. A key thing that came out is that Bitcoin could be the future only if the sovereign governments accept it. Otherwise, its future maybe uncertain. On the question of initial hypothesis of is Bitcoin like Gold. Based on the elements and factors discussed above it is found that Bitcoin is not the safe haven asset like what Gold is considered to be. Bitcoin could be considered as a wealth creator and for the period in discussion it has outperformed Equities in wealth creation. Though a potential speculative bubble could also be present, and its presence could not be out ruled. Gold on the other hand, is always considered as a wealth protector rather than a wealth creator. And it volatile and wild price actions that Bitcoin has; it could be difficult to consider it as a wealth protector.

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A Study of the Behavior on Social Media and the Influence on Purchase Decisions

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ABSTRACT

Internet usage has steadily increased over the past five years, Internet penetration increased to 50% in 2020 in India, India is thus second in the whole world in terms of active internet users. Smartphone penetration in India was expected to grow to 520 mn by 2020, making India one of the largest smart phone economies in the world. Facebook is the biggest social network worldwide with 3.3 billion people using at least one of the products (Facebook, WhatsApp, Instagram, or Messenger). This research paper has studied the use of social media by companies. Companies want to increase brand awareness, intention to share and purchase intention. This is an exploratory part of the study to know what all behaviours are seen of respondents on social media pages of brands. It was though found from the initial study that respondents liked to follow FMCG products. Hindustan Unilever Ltd (HUL), Cadbury, Nestle, Gillette, Amul and Pepsi have been more popular brands. This study will be followed up with further research on FMCG brands. There was a pilot study done in Mumbai, using a structured questionnaire, with convenience sampling . The sample size was 121. Those respondents who followed brands were told to take the survey. Purpose was to find out whether the behaviour of people who follow brands on social media and their behaviour related to purchase is different based on gender, their employment status and their age. The key findings are as follows: (a) It was found that there was no difference between males and females for the time spent and (b) amount spent on social media, (c) the importance of being part of the brand community, (d) the effect of reviews on purchase decision, and (e) the sharing of posts. (f) Younger people and (g) not working people spend more time on social media. (h) "Daily Deal" would influence more women and (g) working people to complete a purchase. (i) Exclusive discount too would influence more working people to complete a purchase.

Keywords: Social Media, Brands, Social Media Behavior, Purchase Intention

INTRODUCTION

Internet penetration increased to 50% in 2020 in India, from just 4% in 2007. It means half the population, that is half of 1.37 billion people accessed the internet (Keelery Sandhya, 2021).

Smartphone penetration in India was expected to grow to 520 mn by 2020, making India one of the largest smart phone economies in the world, (Shah and Jani, 2016). As of October 2020, most Facebook users accessed the social platform almost exclusively via mobiles devices (Tankovska H, 2021). 97% internet users access internet on their mobile (http://dcac.du.ac.in)

Social Media use has also grown tremendously. As of October 2020, India ranked first in terms of Facebook user base size (Tankovska H, 2021).

Facebook's ad spend-From 135 in 2015 to 2260 in 2020 in million US Dollars, (Tankovska H, 2021).

Companies on their social media pages, create engagement with customers, create communities where consumers can share their thoughts, get advice, get information and are entertained, ultimately leading to brand awareness and purchase intention.

The use of social media by companies is growing, which is seen from the number of social media agencies, In 2011 there were only 50 agencies in India and now they are 710, India has more Facebook users than any other country, and not many research papers are written on Indian consumers, this paper will give information about the behaviours of Indian consumers on brand pages on social media, thus helping Indian companies and brands to tailor their social media marketing strategies. The academicians and researchers will also get the perspective of the mind of the Indian consumers, thus adding to the useful academic literature. Thus it is an important topic to study.

LITERATURE REVIEW

Companies use Social Media for brand awareness, share content with users, which has ultimately lead to purchase. Social media has been a much cheaper option than advertising through Ad films. For the consumer to remain on social media, more and interesting content should be available. There have been various research papers written on many of the aspects of social media and the companies' strategies to make consumers remain on it.

One of the ways to make consumers remain more on social media pages of brands is interesting content, and content updated frequently, this what we see in the references given below. Consumers have been spending more and more time on social media pages.

Korgaonkar & Wolin (1999) noted the number of hours per day spent on the web, in 2012 48% people had spent 1–2 hours on social media (Bashar Abu, Dec 2012), in 2016 it became 68% said an Ernst and Young report on Social Media Marketing (Shah and Jani, 2016). New content was posted on Facebook every second. Smartphone users had logged in and received updates 14 times a day. More time is spent on smartphone by younger people 18–29 years.

Even though the ultimate goal of companies could be purchase intention, achieving brand awareness, has also been very important. Purchase and Purchase Intention has been discussed by many research papers (Bruno and Dabrowski, 2015), (Baum, 2018).

There was a higher likelihood of purchase where people could identify the social media content with their own life story (Escalas, 2004). It is seen in the following reference that the people who followed social media pages of brands were more likely to buy than the people who did not follow. Casey (2017) 2016 Nielsen Social

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Media report found out that from heavy, medium and light users, three-quarters of them had made a purchase in the last year as compared to only 46% of non social media users in the US.

Social Media communities play a significant role for brands. There was a certain amount of community bonding in the group too. It played a role in influencing purchase intention and intention to share, Zaglia, M. (2013), Baum D. (2018).

Twitter also had built a community. Hull (2014), has noted in his paper that Twitter was a more attractive medium for connected fans in ways that transcended Twitter's obvious advantage in timeliness.

Companies want to create brand awareness, they would also like consumers to share the company's content by e-word of mouth (EWOM) with their other friends. EWOM or Intention to share, can enhance a social media community. We see the reference of social interaction, and EWOM in the following study.

Consumer's desire for social interaction has lead to EWOM (Hennig-Thurau , 2014), it has lead to brand awareness (Stojanovic Igor, 2018) , and it has been considered a reliable source of information (Gruen, T. W. *et al*., 2006).

Consumers Read Reviews and Ratings on social media pages, which in turn plays a part in the decision of a purchase, (Doorn Van et al, 2010) (Xueming Luo *et al*, 2013), (Eigenraam Anniek W. *et al*, 2018), (LaMontagne, 2015).

There have been many ways that companies could influence consumers to complete a purchase. Discounts have been given to consumers, which has been an effective way of doing that (Raji Ridwan Adetunji et al, 2018), (Norsiah, Sobhi & Norhafezah, 2016) , (Casey, 2017), (LaMontagne Liva, 2015) , and loyalty points have been given, said the report of Ernst & Young by Shah and Jani(2016).

The variables used in this study have been adapted from various models in the following research papers. Korgaonkar and Wolin's (1999) seven factor model, Information motivation and spending time on net to read, and the socialization motivation. Godey B et al (2016), their study has Interaction or socialization and EWOM. Bruno and Dabrowski's model noted about user generated content, or intention to share, and Purchase Intention and in Luo and Zhang's (2013) model they mention about Online Buzz, where they identified the motivation to read Reviews and Ratings. Adetunji Raji Ridwan et al (2018), also explained about Interactivity on social media and also of EWOM. There was no one single model which mentioned all of these variables. As there was this gap, these variables were taken up in this study.

OBJECTIVES

- To understand whether the behavior of people on Social Media is different based on the demographic variables gender, employment status (Working / Not working) and Age.
- To understand whether the various factors that influence people to complete a purchase give different results based on demographic variables, gender, employment status (Working/ not working) and Age.

RESEARCH DESIGN / METHODOLOGY

For the quantitative primary research, a pilot study was conducted using convenience sampling from Mumbai, where primary data was collected by using a structured questionnaire. As it was a voluntary survey, only those respondents who wanted to answer it filled the questionnaire. Also, only those people who followed brands were told to take the survey. The response rate was 37%. The sample size is 121. The respondents are well represented by both genders, 50 females and 71 males, various age groups and employment status - Working and not working people. A 5 point Likert scale was used. The category scales include demographic data like Gender, employment status - Working/ Not working and age. It was to find out about the behavior of respondents on Social media pages of companies / brands, the time they spend, the reason they are there, what are they influenced by, what do they do on the page, and which factors influence them to complete a purchase.

FINDINGS

Inferential analysis is used. Hypothesis were tested. As the variables did not follow normal distribution (it was checked through Kolomogorov Smirnov test), non parametric tests Mann Whitney test and Kruskal Wallis tests were used.

Hypothesis	Test Used	Significance Value	Status of Hypothesis	Comment
There is no significant difference between males and females (1) regarding time spent on social media,(2) amount of purchases on social media, (3) importance of community, (4) number of times they check social media, (5) reviews affecting their decision and (6) sharing of posts	Mann Whitney test	P value for all six questions > .05	Accepted	Hypothesis accepted
There is a no significant difference between the two genders for the question - "What would Influence You to Complete a Purchase - Daily Deal".	Mann Whitney test	P value is .50 which is not less than .50	Rejected	There is a significant difference between the two genders for the question - "What would Influence You to Complete a Purchase - Daily Deal". Also Females are more influenced by "Daily Deals"

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Hypothesis	Test Used	Significance Value	Status of Hypothesis	Comment
There is a no significant difference between Working and not working people in the time they spend on social media.	Mann Whitney Test	P value is .005, which is< .05	Rejected	There is a significant difference between Working and not working people in the time they spend on social media. Also, not working people spend more time on it.
There is a no significant difference between Working and Not working people for two questions, with regard to the influence to complete the purchase, for "Exclusive discount" and "Daily Deals".	Mann Whitney Test	P value for "Exclusive discount" is .002, < .05 P value for "Daily Deal" is .016 < .05	Rejected Rejected	There is a significant difference between Working and Not working people for two questions, with regard to the influence to complete the purchase, for "Exclusive discount" and "Daily Deals". In both cases more Working people complete the purchase than not working people due to "Exclusive discount" and 'Daily Deal".
There is no significant difference between the time spent on social media and the Age groups.	Kruskal Wallis test	P value is .005 < .05	Rejected	There is a significant difference between the time spent on social media and the Age groups. Also the younger age group 18 – 21 years spends more time than older age group > 30 years.
There is no significant difference between the age groups and the questions related to the influence various incentives have on completing a purchase.	Kruskal Wallis test	P value for all eight questions is > .05	Accepted	Hypothesis accepted

IMPLICATIONS

With regards to the time spent on social media or the number of times a person checks social media or the amount of money spent on purchasing on the internet, or the importance of being part of the community, or being affected by Reviews and ratings, or even the sharing a post or commenting on a post as opposed to reading it, there is no significant difference between males and females. Thus brands need not keep gender in mind for these six issues.

Females are influenced more to complete a purchase because of Daily Deals. Thus when brands are selling products for females they should have "Daily Deals".

Not working people spend more time on social media. When companies are catering to the not working audience like students or housewives etc, they should provide more content for them to read or see videos, as they spend more time on social media.

With regard to influence in completing a purchase, More Working people have said that Exclusive discount and Daily Deal is instrumental in making them purchase. Thus brands should provide "Exclusive discount" and "Daily Deal" when their target audience is Working people.

Younger age group 18 – 21 years spends the most time on social media as compared to older age groups. Companies should therefore have content which is suitable for the younger age group.

Social media use, is growing in India, not just in urban India but also in the rural. The younger population is also quite large. The impact of social media is huge, insights from this study can benefit marketers. It is thus imperative for marketers to study this for understanding brand awareness and purchase decision as India is an emerging economy and a burgeoning market.

LIMITATION AND SCOPE FOR FURTHER RESEARCH

This was a study to explore the behavior of customers towards brand pages of companies on social media. Based on the understanding got out of this study, a further research can be taken up for specific category of products. The sample was taken from Mumbai, so the data represents the urban population of India. In the further research the study can be repeated in other cities, in smaller towns, different regions of India and also in rural India. It would be interesting to see the differences between different regional cultures and income classes too.

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A Comparative Analysis of Deep Learning Techniques for Sentiment Identification from Reviews and Tweets

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ABSTRACT

Sentiment analysis helps extract a single score from the text and helps understand the text polarity. Nowadays, people incessantly share their opinions and experiences on various online platforms and, companies need to track user experiences and sentiments towards their products and services. This paper identifies the sentiment of reviews and tweets using deep learning techniques. The performance of Deep Neural Network (DNN), Convolutional Neural Network (CNN) and Recurrent Neural Network (RNN) has been analyzed for sentiment identification from using different datasets. The sentiment models have been evaluated based on the identification accuracy as the performance measure.

Keywords: Sentiment Analysis, Deep Neural Networks, Convolutional Neural Networks, Recurrent Neural Networks.

INTRODUCTION

In recent years, the decision to buy consumer products, select restaurant for food, or watch a movie is made on the basis of reviews and discussions on various online platforms. Also, conducting surveys and opinion polls is no longer mandatory for an organization to understand the public sentiment because an abundance of this information is available online. People share their feelings or sentiments through textual means, i.e., either by a tweet or a comment or a review of a product/service. Business requires the right tools and techniques to harness the information from these text data. Machine learning models have been widely used for text classification and worked well earlier. However, the performances of machine learning models vary depending upon how efficiently the feature extraction is performed. Feature extraction is manually intensive process and requires domain expertise. Hence, for sentiment analysis, the research is enduring in the deep learning arena as these techniques achieve high accuracy and reduced efforts of feature selection. Deep learning, an advanced machine learning paradigm tries to simulate a human brain's working. However, the deep learning model's initial learning is a highly time-consuming process and requires large amounts of data. An analogy of the same can be made with that of a child learning to make a grammatically correct sentence or understand

emotions. Even if they can do this, they need to evolve and learn to reach the next level continuously. The main objective of this paper is to analyse various deep learning techniques, Deep Neural Network (DNN), Convolutional Neural Network (CNN) and Recurrent Neural Network (RNN) to identify the sentiment of a text.

LITERATURE REVIEW

Several studies have been conducted on building powerful and effective models for sentiment analysis. Even though sentiment analysis has a wide range of applications, it involves many challenges in its implementation. Tang *et al.* [1] had introduced the concept of sentiment identification and opinion extraction in their work. Zhang and Zheng [2] discussed machine learning and its application in sentiment analysis. The above researches used parts of speech (POS) and TF-IDF to calculate the word's weight. Of lately, deep learning models are employed to enhance the performance and accuracy of sentiment analysis. Moraes *et al.* [3] results showed that Artificial Neural Network (ANN) produced better results than the SVM method in most cases for document-level sentiment classification. Sharma and Dey [4] used ANNs and the feature extraction technique Information Gain to analyze the movie reviews dataset. Severyn and Moschitti [5] used CNN and tried to identify how the initialization of weights affects the model's overall accuracy. A hybrid model was proposed by Ghosh and Veale [6] for text analysis. They have used CNN and bi-directional LSTM in their research. BoW-CNN, a CNN variant proposed by Johnson *et al.* [7], uses a bag of word conversion on the convolution layer. They demonstrated the Seq-CNN model, which concatenates the one-hot vector and maintains the words' sequential information. Singhal and Bhattacharyya [8] developed a multilingual sentiment analysis model at the review/sentence-level and checked it with various languages. These languages were converted to English first using machine translation, and then the word embeddings from English were used to determine the polarity using the CNN model. The most recent developments have been in transfer learning, which uses existing knowledge to solve various domain problems, producing state-of-the-art results. This has prompted many researchers to use transfer learning for sentiment analysis too. Transfer learning methods like ULMFit, BERT, and XLNet are also currently being used for sentiment analysis and domain learning.

RESEARCH METHODOLOGY

Data Sets

Two standard NLP datasets, which are popularly employed datasets in the research community, have been used in this work for sentiment analysis. The two datasets cover different business domains and are obtained from different sources, as given below.

- Tweets Airline: Public tweets about U.S. airlines. Data is labeled as positive, negative, and neutral.
- Amazon-Fine Dine food reviews: Reviews of fine foods from Amazon. The data is labeled as negative if the rating is between 1-3 and positive if the rating is between 4 and 5.

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Global Vector (GloVe)

Word embeddings act as a connector between human and machine understandable language. It is a technique for calculating a word vector representation. If two words have a similar meaning, then their vector representation should also be similar. Developed at Stanford, GloVe is an unsupervised distributed word representation model. GloVe tries to encode probability ratio information in the form of word vectors using a co-occurrence matrix.

Deep Learning Models

Deep Neural Network

A neural network is organized in the same way as the human brain and is made up of artificial neurons, also known as nodes. These nodes are sequentially placed on top of one another in three layers: an input layer, an output layer, and hidden layers in between. In a neural network, an activation function defines how the input's weighted sum is transformed into an output from a node in a neural network. Fig. 1 shows the DNN architecture for sentiment identification. The activation functions used in the network is given in Table 1.

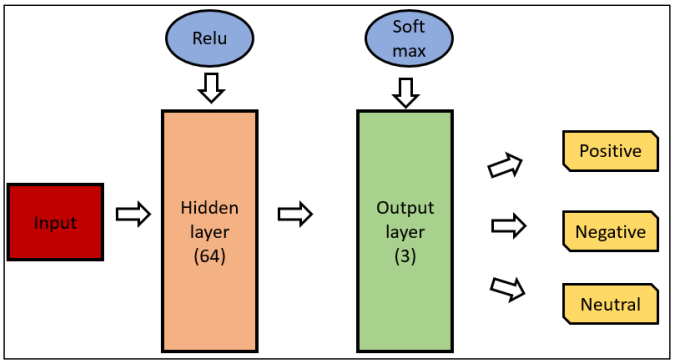

Fig. 1: DNN Architecture

Table 1: Activation Function.

Total Output Class	Hidden Layer Function	Output Layer Function
2	Relu	Sigmoid
>2	Relu	Softmax

Convolution Neural Network (CNN)

The convolutional layer is at the convolutional neural network's heart, hence the name. This layer performs a process known as "convolution." A 'convolution' is basically a linear operation that involves multiplicating a set of weights with the input, similar to a traditional neural network. The convolution layer has several filters that help perform the convolution task. In a CNN, kernels or filters are like matrix which move over input data performing the dot product with the sub-region of input data and returning a dot product matrix. The pooling layer's purpose is gradually reducing the representation's spatial size to reduce the number of parameters and

computation in the network. We have used GlobalMaxPooling () function for our pooling layer. Fig. 2 represents the proposed CNN architecture.

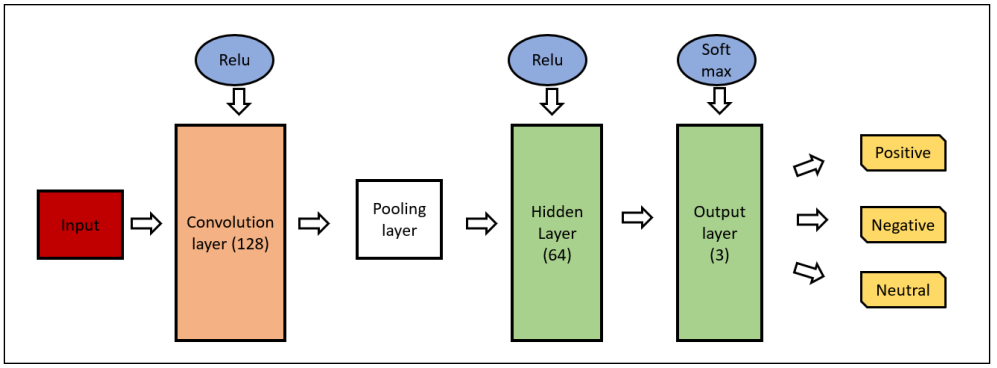

Fig. 2: CNN Architecture

Recurrent Neural Network

Recurrent neural network which allows previous output to be used as input. RNN is repetitive since it performs the same operation for each data input, and the output of the current input depends on previous computation. The current input, as well as the output of previous input, is considered for decision making. Long Short-Term Memory (LSTM) is a modified variant of RNN that makes recalling past information easier. LSTM is capable of learning and remembering long-term dependencies. The default behavior is to recall past information for extended periods. The Dropout layer acts as a regularization method to prevent overfitting. During training, few layer outputs are randomly ignored or dropped out and not considered for training. In the below figure, 20% of the outputs are ignored before being passed to the next layer.

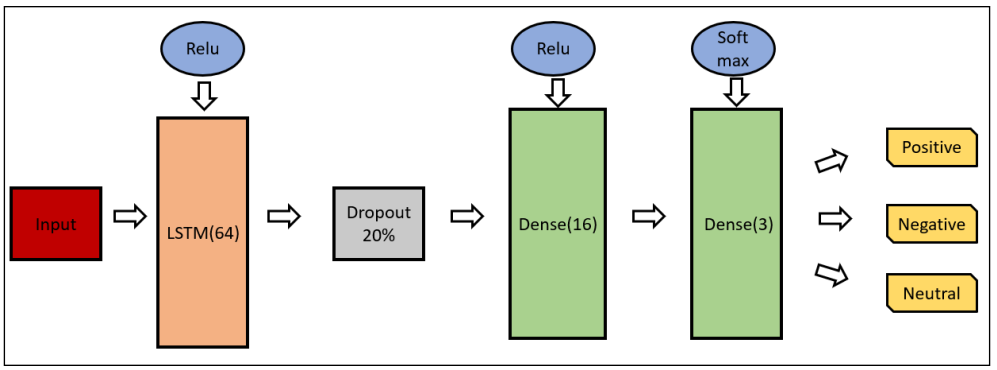

Fig. 3: RNN LSTM Architecture

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RESULTS AND DISCUSSION

The efficiency of three deep learning techniques DNN, CNN, and RNN has been analysed using two sentiment analysis datasets described in Section 3.1. The datasets are preprocessed and embedded using GloVe. DNN models are easy to implement, and training is faster when compared to CNN and RNN. Whereas, the DNN model's accuracy is low on the validation data. The CNN is slower to train as compared to DNN but achieves higher accuracy. However, RNN model depicts highest accuracy on both datasets when compared to CNN and DNN. Though RNN take nearly double the time for training compared to CNN, they are more reliable. The RNN is trained for 400 epochs for Tweets Airline and 75 epochs for Amazon-Fine Dine. The comparative analysis of the identification accuracy achieved for the two datasets using DNN, CNN, and RNN is shown in Table 2.

Table 2: Performance of Sentiment Identification using Deep Learning Techniques.

	Amazon Food	Tweet
DNN	0.89	0.72
CNN	0.89	0.77
RNN(LSTM)	0.92	0.78

The model accuracy and the loss are shown in Fig. 4 and Fig. 5, respectively. In Fig. 4, for the Airline Tweet dataset, there is no significant change in the model loss after 350 epochs. Similarly, for the Amazon Fine Dine dataset, model converged after 65 epochs. The training and the test dataset accuracy are also shown for the two datasets.

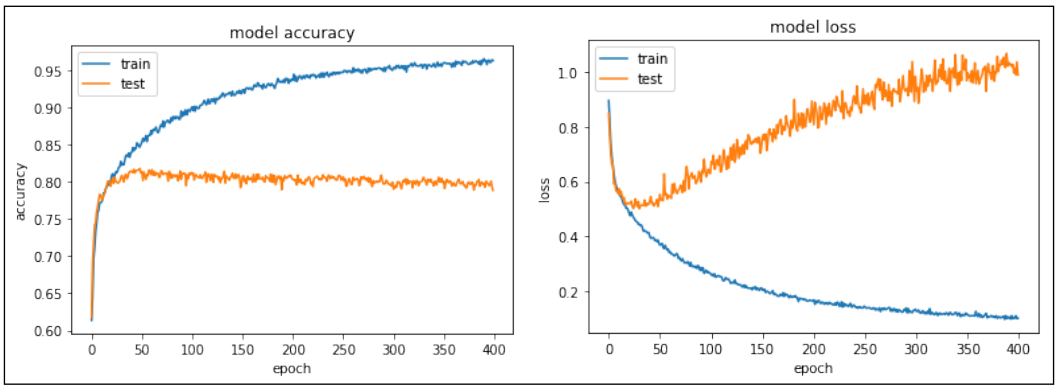

Fig. 4: Model Accuracy and Loss during the Training Process of RNN. (Airline Tweet)

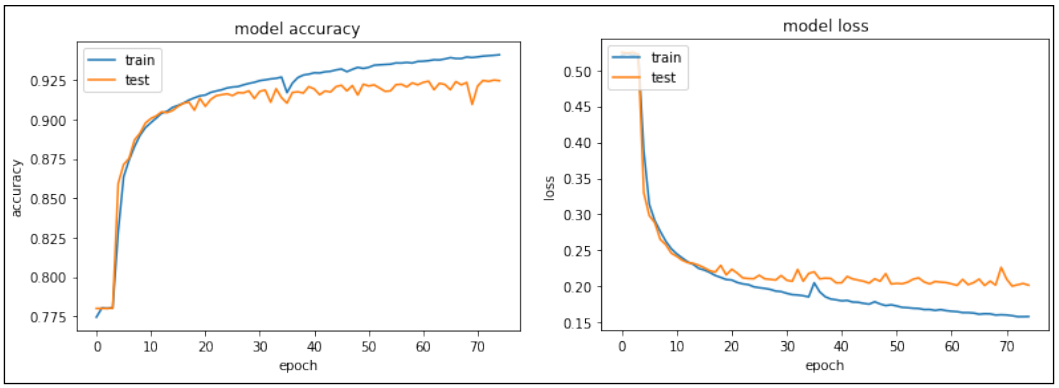

Fig.5: Model Accuracy and loss during the Training Process of RNN. (Amazon Fine Dine)

CONCLUSION

In this work, the efficiency of basic deep learning models has been analyzed for sentiment analysis using two different datasets. GLOVE has been used for word embedding and transforming the data before feeding it into the networks. The architectures of DNN, CNN, and RNN are analyzed and compared. Standard NLP datasets of two different topics are used to evaluate DNN, CNN, RNN models and their results have been compared. The analysis shows that RNN models are more efficient than CNN or DNN for sentiment identification even though they take a longer time to train. This research gives us a broader perspective of applying neural networks-based models for sentiment analysis.

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Testing Dilemmas During Development and Deployment of Websites Created using Ready to Use CMS Framework

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ABSTRACT

India is a huge market for website development , due to the increase in the number of online base customers and business processes. Enterprises having low IT infrastructure budgets come with demand for immediate website design and development with most static and some percentage of dynamic web contents. Due to low budget and immediate deadline, developers choose CMS frameworks which provide ready to use platforms with some inbuilt functionalities and some extended plugins and extensions for enhanced designing and implementation tools. In the whole process the quality aspect of CMS website is neglected due to various reasons such as deadline, low budget, inexperienced developers and most of the time even enterprises give testing the low priority, since they feel it will increase budget and deadline. This paper focuses on how to increase the quality of such CMS based websites, by comparing and analyzing the various categories of CMS based web pages and websites to make developers and enterprises aware about the quality of CMS while developing such CMS based products and services.

Keywords: CMS - Content Management System, WYSIWYG - what you see is what you get, Unit Testing.

INTRODUCTION

A business is characterized by the product or services it offers and each of them have customers. One of the primary touch points for the customers to get introduced to the product and services is a website of an enterprise. The current pandemic scenario has created more demand for the faster development and deployment of the details on a website in order to keep pace with the customer's changing needs and demands. Also, with the restricted movements imposed by the regulatory authorities, the customers prefer to buy online and therefore it becomes essential for the business to update the contents on their website. Announcing the arrival of new products and services innovations on the website is the norm for the survival of the business.

The Content Management System Providers offer frameworks that claim to make businesses life easier by offering them self-help development and deployment of contents on websites even without having any technical know-how thus eliminating the need for professional website developers. Since time to deployment at minimum possible cost is the main objective of using CMS framework, businesses often ignore the testing aspect thus compromising on quality, leading to the very important and pertinent question "is testing necessary in the first place and if yes, how much testing is enough?".

LITERATURE REVIEW

- J. Cabot (2018) mentions that WordPress is tool for non-technical person to create and publish webpages and website, the ecosystem poses interesting challenges for the researchers [1].
- Kaluza, M. (2016), talks about CONTENT MANAGEMENT SYSTEM SECURITY in his work, where he mentions that WordPress, Joomla and Drupal as often considered as the web development tool. Most of these are vulnerable to security attacks since they are rarely tested with security aspects [2].
- O'Callaghan (2005), mentions need of using tested Enterprise Content Management (ECM) frameworks in order to maintain the consistency in performance, delivery. ECM refers to tools, technologies and methods to perform similar performance throughout enterprise [3].
- S.K. Patel (2013), says that Web Application Security is the major concern in current scenario for all enterprises. In web development Content Management System (W-CMS) so much popular as it uses to make easy editing and publishing process for novice even if he doesn't know web programming knowledge like php, .NET, java etc. [4].

CONTEXT SETTING

A Content Management System (CMS) should facilitate most of the following:

- Knowledge management
- Users and privilege management
- Workflow management
- Version control
- Change management

Content Management System is expected to provide an environment that enables the businesses design their websites depending upon their need. Selecting an appropriate that suits a particular user therefore remain a continuous challenge. The following table enlists the category of CMS and features it supports.

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Table 1: Category and Classification of CMS

CMS Category	Description
Learning CMS (L-CMS)	Content driven and caters to the needs of the enterprises that use websites to deliver write-ups and other literature pertaining to specific subject or topic. Moreover, the content upgradation on websites depends more on the user experience than the functional experts. The current trend is that users get attracted to visual representation more than the textual information leading to lesser time spent by the users on such websites. Framing testing strategies are therefore difficult. Example: w3Schools.com, tutorialspoint.com
Publication CMS (P-CMS)	Input from diverse audiences using different avenues defines the contents. The contents are in the form of blogs, articles, poems, images and sometimes discussion forums. The testing parameters are word limits, image sizes, authorized users etc. Example: bloggers.com, quora.com
Enterprise CMS (E-CMS)	For an enterprise, capturing, storing and sharing details pertaining to business processes, documents and contents are the crucial elements of the websites. Volume and uptime are the important features for websites. These websites are large in size and needs to be subject to stress and load testing. Example: dotcms,opencms
Transaction CMS(T-CMS)	A business is characterized by the product and services it offers and each one of them need to have customers to pay for product or services it receives. These are referred to as CMS websites that enables e-commerce facilitations. These are high risks website and needs definite attention to security and quality aspects. The Unit Acceptance Testing phase involves user signing on the dotted lines endorsing that all the technical and functional aspects are met before the website goes live. Needless to say reliability and downtime are two crucial parameters that testers need to include in their test strategy. Example: HRMthreads, convertonlineforfree.com
Web CMS (W-CMS)	The most common category of CMS currently trending in the digital world. It enables one-stop function such as purchasing of domain names and servers, designing of websites and hosting of the websites. During the current pandemic its usage are increased exponentially. For the end users security and high performance are the two important parameters and hence the testing strategies need to revolve around these aspects. Example: hostinger, godaddy, bigrocks etc

For the developer of website using CMS, its' important to evaluate the website against the following criteria:

- Cost
  a. Development cost
  b. Maintenance cost
- CMS capabilities
  a. Best indexing
  b. Storage
  c. User management
  d. Formats supported

- User Friendliness
  a. Easy to access information
  b. Easy to give inputs
- Security
- Code Optimization

The acceptance of CMS for development and deployment of websites is therefore, more based on ease of use then the other technological features. Most of the end users look for the following before selecting a CMS

- Open source tools/frameworks
- How easy is it to install/configure to start with
- The core functionalities - add, update, delete, publish, unpublish the contents
- The perfect editor - simple and WYSIWYG
- Managing assets, contents
- Layouts supports
- Plugins and extensions available
- How easy it would be to for a developer to design theme/template on his/her own
- The programming language knowledge required to customize the theme/template etc.
- Managing the versions/revisions of the contents created
- User interaction
- Managing user roles and permissions
- Multiple website support
- Multilingual website support

In simple terms, for the business following are the aspects that classifies websites to be the effective touch points:

1. Attracting visitors to the websites
2. Contents
3. General settings
4. Security

However, it is crucial to understand that like any software application development project, Contents and Content Management system too have independent lifecycles to be followed by the developers and clients and the implementation varies according to the business domain or the type of CMS. Planning and deciding on test strategies are the integral part of any development and deployment of technology backed services. Websites being one first touch points that a customer visits to know about the businesses products and services, it needs to be tested optimally for quality and reliability.

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Testing is the process of investigating the product/website for faults, bugs, errors against the functional and non-functional requirements [7]. It has everything to do with the quality check with all aspects of the Content Management System. Since quality and reliability is observer dependent, it's necessary that the one understands the importance of testing before the deployment of websites. Severity and priority of the bug depends on the exact location of bug as shown in figure 1.

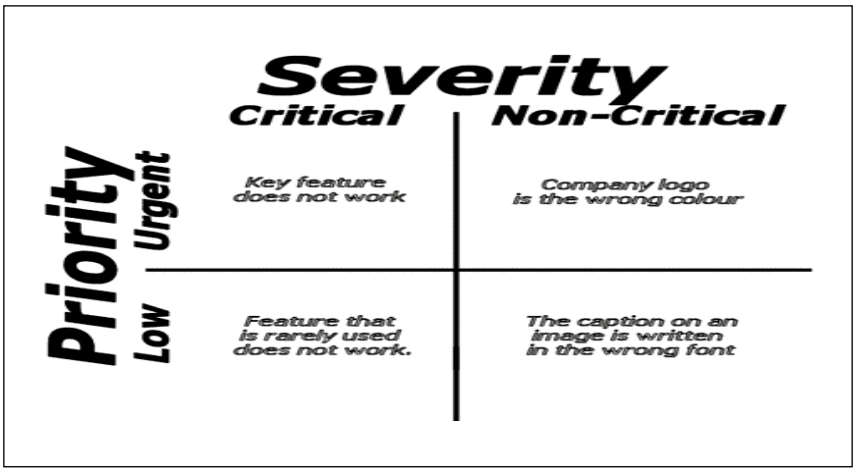

Fig. 1: Severity and Priority Metrics of Bugs Detected in Websites (Source:www.guru99.com)

For applications catering to business processes, planning a test strategy starts with matching the deliverables that the application generates with requirements of the user however, for the website developed using CMS, it requires add-on skills and technical know-hoe to plan the test strategy. A typical CMS website *developer* can start testing with the understanding of the following five steps:

- Configuring CMS framework/tools like WordPress; Drupal; joomla etc.
- Setting and adding users and user privileges
- Creating the template, and basic file structure like css, javascripts etc
- Configuration of global display settings
- Creation of basic and foundation components like articles, landing pages etc.

Some of the Testing techniques for websites include:

- Browser testing - how contents are looking in browser
- Device testing - are these contents compatible with mobile, tablets and other devices.
- Functionality testing
- GUI testing
- Performance testing

METHODOLOGY

Comparing Websites Created Using Different CMS

Website Created Using Drupal Demonstrating a lack of Functionality

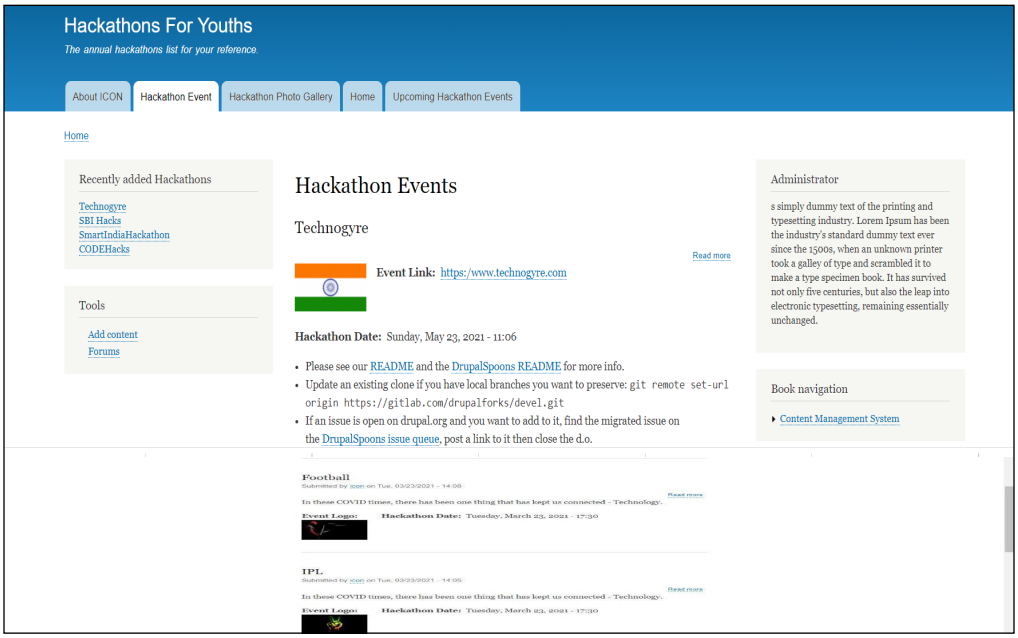

Fig. 2: Website Lacking Functionality Testing

Observation: The website has the content and look and feel aspect, but lacks in demonstrating the functional purpose for this website. Moreover, it is possible that the user may not employ a functional/domain expert to do the functional testing due to budget constraints.

Website Created using WordPress Demonstrating a lack of SEO Coding

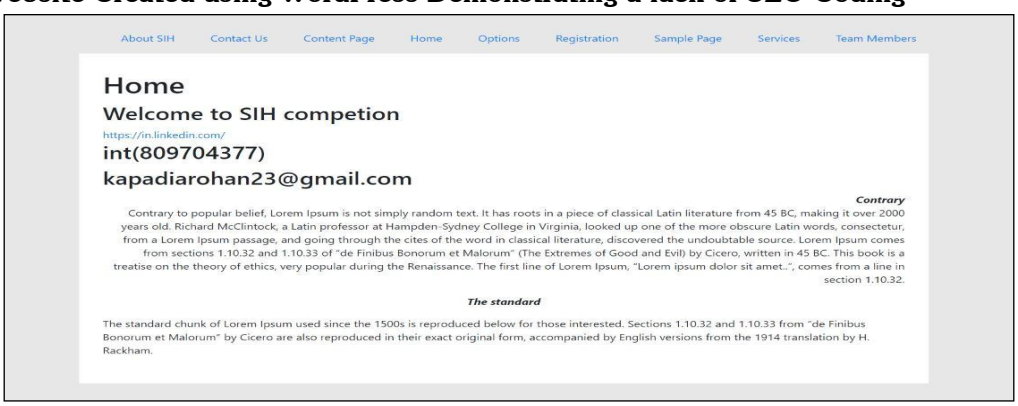

Fig.3: Website Lacking SEO Coding

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Observation: The website focusses only on the delivery of the contents and not the quality aspects. It also needs some exclusive features that facilitate search engine optimization [6].

Website Created using Templates Demonstrating a Lack of Appealing GUI

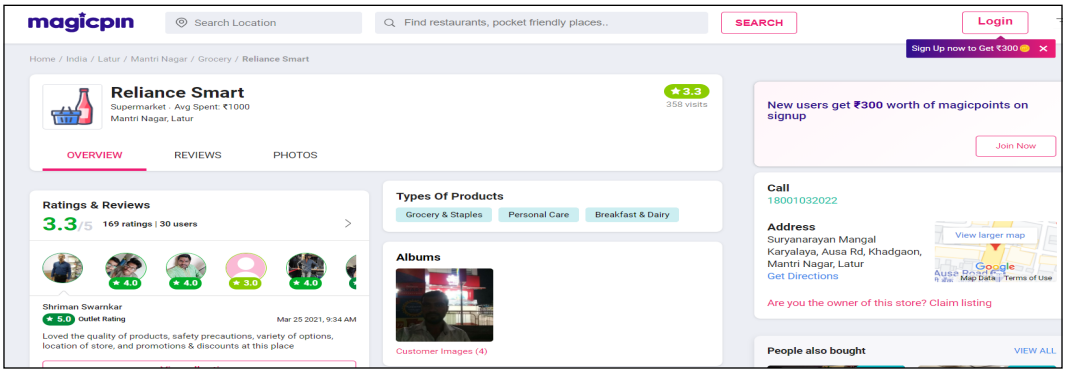

Fig. 4: Website With Lack of GUI Testing

Observation: Customizing existing templates may cause issues with designing the website where either space is too empty or existing module is kept as it is without checking any functional or non-functional requirements of the business.

[**Note**: All the websites created are for the purpose of academic demonstration only. It does not reflect any of the real websites of the companies]

Checking the Number of Errors, Performance and Security Aspects of a Website by Obtaining Platform Details

- Get the website URL
- Right click on the webpage
- Click on inspect
- Go to source - returns the platform details, for example:
    a. WP-CONTENT specifies that web page is created with WordPress website
    b. WIX-DOM specifies WIX platform
    c. CDN.SHOPIFY specifies SHOPIFY as the platformw
- Check the performance of system
- Check the security of the webpages like shown below
- Furthermore, number of errors a website has can also be viewed

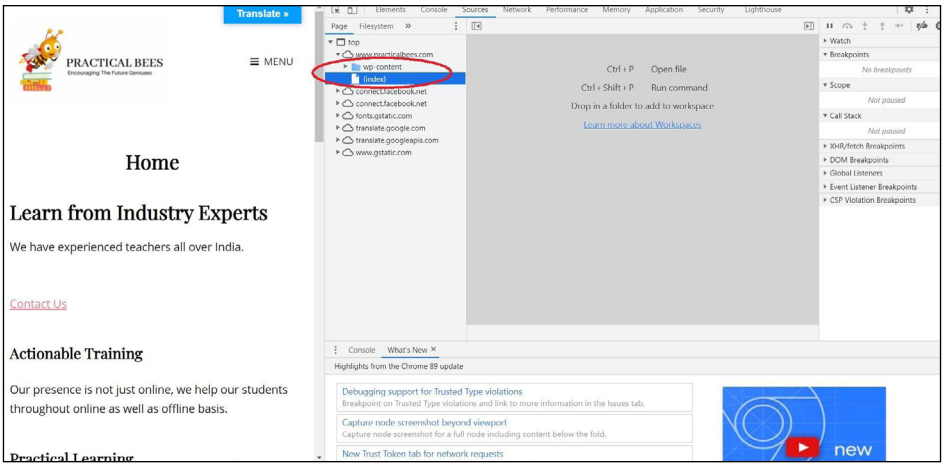

Fig. 5: Inspecting the Source

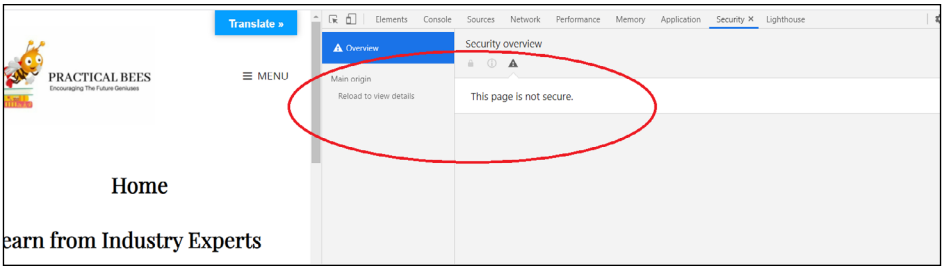

Fig. 6: Security Status of a Website (The page is not secure)

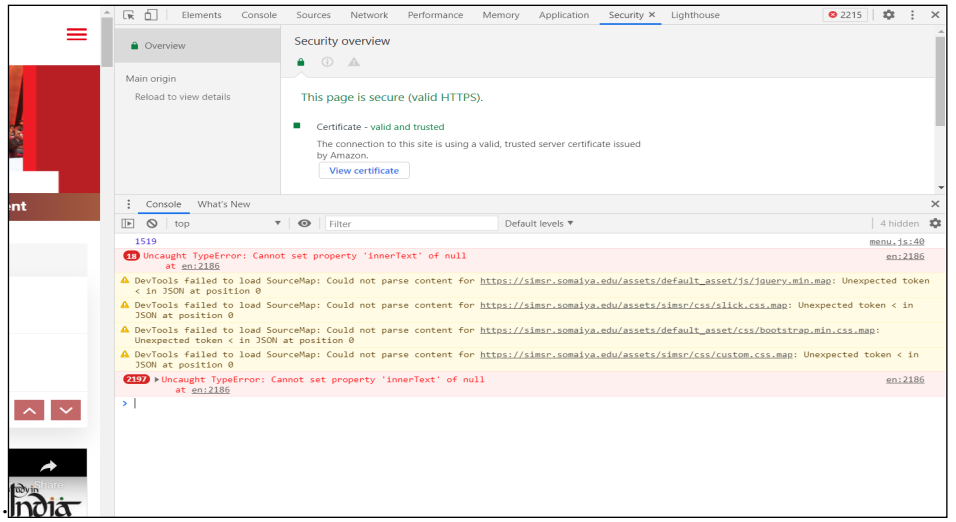

Fig. 7: The Error Description

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Use of Web Analytical Tools to get the Platform and Other Related Information of a Webpage and Website

There are several web analytical tools such as open web analytics, motomo, AWStats, w3c validator, nu html checker etc that are available as open source and are easy to use. It returns the details that can further help improve the website performance. The following figures are the output generated through the use of one of these web analytics tool [8]:

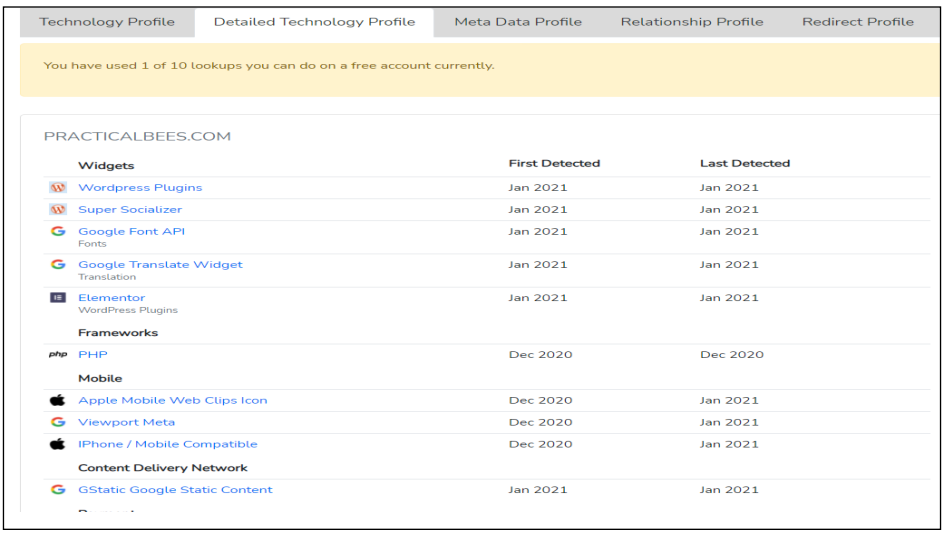

Fig. 8: Details Returned by a Web Analytical Tool

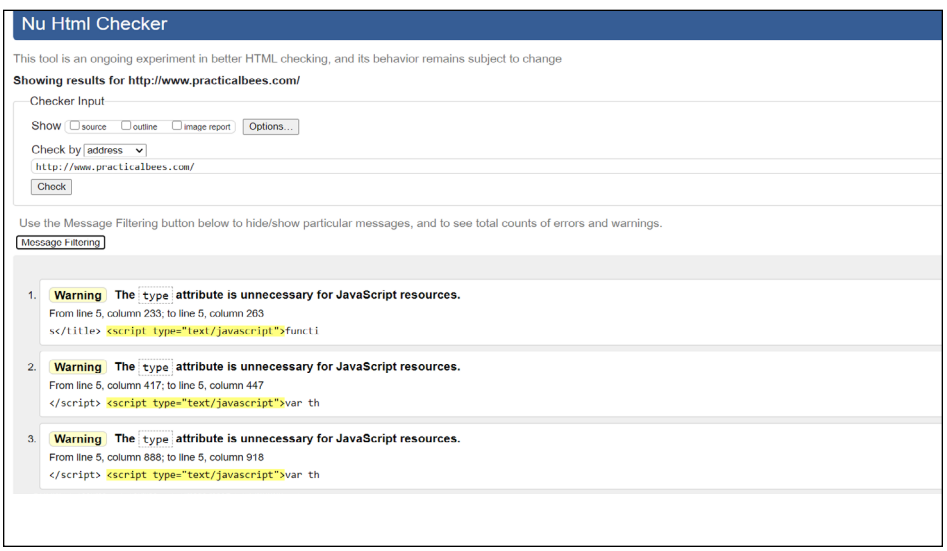

Fig. 9: Warning and Error Displayed by a Web Analytical Tool

FINDINGS AND ARGUMENTS

- Very few developers and end users (functional) know which CMS platform/ frameworks are best suited for which types of domains. So selecting the platform for development is one of the major challenges which is underrated and neglected by both parties.
- Having knowledge about the business processes can help in functionality testing.
- Since the development of the website is done through easy-to-use frameworks, which hardly needs the coding to be done by the developers, the concept of unit testing is by far not practiced and has practically vanished from the process of development (which was default practice in any software development application). Instead testing aspects concentrates on for the GUI / look & feel purpose only.
- Developers use the templates and themes available on the internet or recommended by the clients as feedback from peers. These templates are customized for the current purpose but the implementation varies from developer to developer due to its inbuilt features and display settings.
- Getting listed on Google whenever a search is made, is important for the business. However, most of the end user remains unaware of the SEO techniques required to get listed
- The 3-click rule for any Content Management System is very rarely followed by any website designer and for that matter even by content managers. Which may lead to the unsatisfied visitors and less retention rate of frequent visitors [5].

RECOMMENDATION

- Developers should follow the complete SDLC model even in case of agile development of CMS.
- Performing a fixed set of software testing techniques to improve the overall quality of any type of content management system.
- Customers should be trained and made aware of the basic quality with respect to the CMS websites so that at User Acceptance Testing (UAT) he can ask for quality assurance from the vendors.
- Customers should get CMS websites developed from quality assurance certified vendors to get basic quality in product and services.
- Even these types of products should get some basic certification for its quality like either rating system or star quality indicators from some authorized body so that this becomes mandatory for the vendors to develop things with basic quality.
- There should be must-to-perform checklist for vendors and customers while developing and accepting the CMS based products t

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CONCLUSION

Even though there may exists constraints like meeting deadlines and cost associated with the project, businesses must perform some of the basic testings like functionality testing to check basic system functionalities, boundary value analysis for checking the input and output types, browser compatibility testing for consistent and reliable GUI for all clients on any type of device, smoke and sanity testing to check that the additional functionality and features are integrated properly. Without testing the content management system will not add value to the business processes even if they perform some basic functionalities. Low cost/budget and less time estimation may get the websites up, live and running but in the long run it may impact the market perception, brand value and the goodwill, which may ultimately end with very low customer satisfaction and retention rate.

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Comparative Analysis of Various Cryptocurrencies and its Future Growth

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ABSTRACT

This research paper focuses on analysing the potential that the cryptocurrency has in terms of developing into a fully decentralized network system and their existence in the market. This study intends to show the different types on cryptocurrencies and how they have progressed since their creation in 2009. Certain advantages of cryptocurrencies will be analysed from an objective point of view which will demonstrate the usage of cryptocurrency as a new version of money.

Keywords: Cryptocurrency, Virtual Money, Bitcoin, Blockchain

INTRODUCTION

In past few years' technology has played a key role in changing the world especially the financial market. The argument that cryptocurrency and other digital currency will drive the digital economy is gaining importance. However, any development in technology brings in new issues and challenges before it becomes acceptable as a popular and most used mean for any business transaction.

Cryptocurrency is a digital form of currency which is secured with the help of cryptography. In this paper we are using digital currency and cryptocurrency interchangeably. The digital currency is based on the distributed network having various terminals connected. The fundamental point that comes under cryptocurrency is that the decentralised nature of it allows them to operate outside the control of the governing bodies and central authority.

The word cryptocurrency is derived from the underlying encryption techniques used. Blockchain is underlying technology of many cryptocurrencies which ensures the integrity of the various transactions on the cryptocurrency network.

Bitcoin is the first blockchain based cryptocurrency which was launched in the year 2009 by an individual or group known by the pseudonym "Satoshi Nakamoto". Some of the competing cryptocurrencies are Etherium, altcoins, Peercoin, EOS, etc.

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The advantages of cryptocurrency are that it holds the promise of making the funds transfer in more reliable and faster way, as it directly connects the two parties in transaction and the transactions are stored on the distributed ledger on each terminal in the distributed network making it tamper proof.

Supreme court has allowed a trade in cryptocurrency which is a positive sign showing the promising environment for the cryptocurrency in India. RBI added that it will take a call on official cryptocurrency soon [12] [13].

LITERATURE REVIEW

Cryptocurrency has attracted a large segment of users and investors and distributed ledger technology has been a centre for research for the start-ups, government organizations, for discovering its usage in the various area of applications such as healthcare, land records, capital management, financial institutions, and other non-monetary applications [1]. Distributed ledger technology is the base for many cryptocurrencies. First the cryptocurrency was introduced as a possible implementation of digital currency.

It is stated that cryptocurrency market is more fragile in nature than the stock market, thus it is currently the high risk financial market. While doing privacy and security analysis on cryptocurrency applications it has been found that the mobile applications are vulnerable to various malware attacks [3]. The study also stated that the conventional financial services applications are only slightly better than that of the cryptocurrency applications [3].

Today many countries are working upon formulation of the legislative regulation on cryptocurrency. Cryptocurrency which is also known as virtual currency or virtual asset [5] are having many characteristics for which no regulations or law enforcement has been imposed upon [5]. So it is important to enforce law practices on the technology since it is believed that cryptocurrency in the absence of law will attract more criminal activities [5]. Having a proper regulation, will be useful for the users of cryptocurrency technology as many might not be fully aware of the basic principles of the technology and the risk associated with its usage.

There are many cryptocurrencies in the market with different valuation. So, it is necessary for the user to know the basic fundamental concepts which decides the market value of any cryptocurrency. The properties from which the cryptocurrency are differentiated from each other are [6]:

- Volatile Value of Cryptocurrency
- Market Capitalization
- Block Time
- Market Rank
- Proof of Work
- Cryptographic Algorithm

RESEARCH METHODOLOGY (RESULTS AND IMPLEMENTATION/ CHALLENGES WITH CRYPTOCURRENCY)

The aim of this study is to find out whether the cryptocurrency has long term usage in the Indian market or not. To find that out we have taken top 5 cryptocurrency worldwide and analysing it's growth during the time period January 2009 to December 2020 [17]. In the data set referenced and analysed in this study, the number of daily transactions in the 5 cryptocurrency Bitcoin (BTC), Etherium (ETH), Chainlink (LINK), Stellar (XLM), Litecoin (LTC) is available. The table (1) list down the number of transactions from the year 2009 to 2020 for the 5 given cryptocurrency and Figure (1) shows the graphical representation of the data.

Table 1: Number of Cryptocurrency Transaction during the Year 2009-2020 Worldwide

Year	Sum of Bitcoin (BTC)	Sum of Ethereum (ETH)	Sum of Chainlink (LINK)	Sum of Stellar (XLM)	Sum of Litecoin (LTC)
2009	4	0	0	0	0
2010	1506	0	0	0	0
2011	61798	0	0	0	3656
2012	263438	0	0	0	9944
2013	610637	0	0	0	62609
2014	830978	0	0	0	70800
2015	1562318	37910	0	194	61121
2016	2766756	476750	0	957	52962
2017	3438144	3821661	4053	58279	282973
2018	2625748	7934462	2405	1925229	386074
2019	3957485	7900335	18231	3173672	289606
2020	3705175	11767564	81013	18432571	607665
2021	7118606	28071882	351013	112391645	1924142
Grand Total	**26942593**	**60010564**	**456715**	**135982547**	**3751552**

As shown in the Figure (1), we can observe the rapid growth in the cryptocurrency transaction during the year 2017-2020, which in turn promises the future growth in cryptocurrency markets.

Also secondary sources such as RBI and other Regulatory Authorities Document has been reviewed. RBI as a regulatory authority and supervisor of the payment systems says that in order to keep in pace with the Indian Fin Tech development such as payment space, the global developments in technology such as blockchain, distributed ledger, etc. will be monitored, and regulatory framework as required, will be put in place [14].

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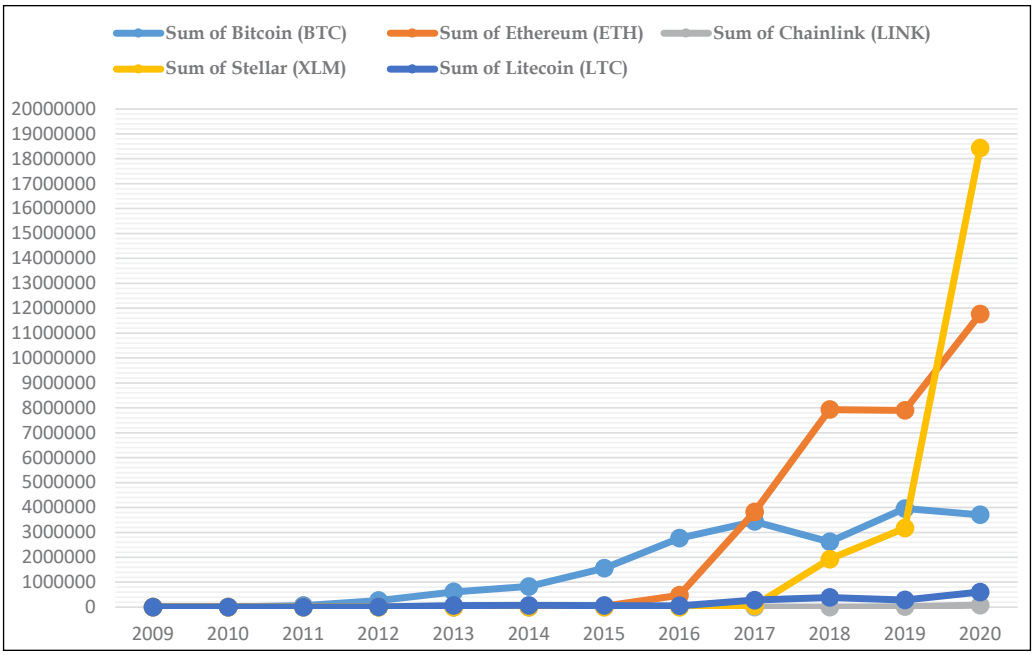

Fig.1: Growth in the Number of Cryptocurrency Transaction during 2009–2020 Worldwide

Though the cryptocurrency such as bitcoin is not yet legal in India but buying merchandise with the help of Bitcoin is possible. Some of the products that can be transacted is listed below [15].

Table 2: Some of the things that can be Bought using Bitcoin

S. No.	Product	Description
1.	Amazon.in via Purse	Amazon doesn't accept bitcoin directly but we can use a service called Purse to convert our e-monities to Amazon gift cards and then it can be used to buy products.
2.	Overstock	Overstock is one of the very first consumer facing companies to start accepting Bitcoins after tying up with coin base in 2014.
3.	Windows and Xbox	Microsoft is one of the biggest companies in the world to accept Bitcoin as a valid means of payment.
4.	Domain name and web Hosting via NameCheap	There are few domain name registers and web host that offer customers the payment mode as Bitcoin
5.	Sapna Online	Sapna online is a Bangalore based book-retailer that advertised itself as India's largest online book mall and it allows the readers/ customers to buy anything and everytihing using Bitcoin
6.	UnoCoin, ZebPay Wallets	Yu can topup or make payment for the mobile bill using Bitcoin on the go using these app.
7.	Kolonial	There are actually multiple standalone restaurants who offer payment via Bitcoin and Kolonial is one of them situated in worli area of Mumbai.

These are some of the businesses accepting payments via Bitcoin [15]. Among the biggest are Microsoft, At&T and Home Depot. Additionally, applications in the android and Apple store allows crypto-connoisseurs to pay for airline tickets by converting Bitcoin to Fiat money in real time. Mastercard announced a launch of crypto-based debit card in partnership with Bitpay that could be used at more than 3000 merchants worldwide [16].

So, looking at this growth and the number the cryptocurrency technology sure has a future in the Indian market.

FINDINGS

Right now there are no crypto regulation in India. Supreme court has allowed a trade in cryptocurrency which is a positive sign showing the promising environment for the cryptocurrency in India. RBI added that it will take a call on official cryptocurrency soon.

So, looking at the historical data for cryptocurrency, the number of cryptocurrency transactions have increased drastically since 2017. And once the crypto regulations are in place the users will not hesitate to invest in this digital asset promising the positive outcome for the whole society.

Indian Fin Tech sector may be young but is growing rapidly says RBI. Fintech has the power to provide solutions to the problems faced by traditional banking system. RBI have organized an innovation context through the Institute for Development and Research in Banking Technology (IDRBT) to provide a platform for innovators to showcase their models particularly in the area of payment systems.

DISCUSSION

Digital currency is one form of cryptocurrency that uses cryptographic algorithms for more secure transactions. Cryptocurrency implements blockchain technology, distributed ledger technology, peer-to-peer transactions, etc.

Regulatory authority such as RBI are working on strengthening the transactions and we expect the new guidelines to come out in near future. This is a current discussion point and may help I context setting in near future.

SUMMARY & CONCLUSION

From the data set analysed above it can be concluded that the cryptocurrency has market value and has the potential to disrupt the traditional ways of payment.

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Role of Strategic Intent, School Leadership and Access to Resources for Implementing Information and Communication Technology (ICT) in the Classroom

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Keyword: School Leader, ICT in School Education, The Role of Strategic Intend

INTRODUCTION

One of the major impacts of global pandemic COVID19 is that more than 1 billion school children from more than 180 countries are missing education due to the closure of the schools. In India itself, more than 250 million students are out of schools in the present situation. In such a situation, the role of Information and Communication Technology (ICT) is of paramount importance. Indian government started focussing on ICT at the school level in 2000 and asked all the school boards to integrate ICT in the school curriculum and made budgetary provisions to provide support for developing ICT infrastructure at the school level. The evidence shows that most of the schools are equipped with at least minimal ICT infrastructure. At the same time, the implementation of ICT at the classroom level has been very poor. A few of the reasons are lack of clear strategic intent of the schools to move towards ICT integration, poor school leadership to bring out the cultural change required to move towards e-learning, and inadequacy of ICT resources. This paper is attempting to explore further the role of the strategic intent of the schools of moving towards e-learning, school leadership, and the access of ICT resources in implementing ICT effectively at the school level. It further tries to find out the barriers perceived by the school leaders in the effective implementation of ICT at the school level.

REVIEW OF LITERATURE

Research till date covers the number of aspects related to school leadership and ICT implementation at the school level. It covers the attitude of the school leadership towards the efficacy of ICT as a teaching and learning tool, the strategies used by them to implement ICT at the school level, and the resources made available by them to implement ICT.

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Most of the researchers mention that the positive attitude of the school leaders towards ICT as a tool of teaching and learning tool affects the implementation of ICT in a significant way. Apsorn *et al*., (2019) give a summary about the role of school leadership in implementing ICT. School leaders play an important role in developing mission and vision about the use of ICT, establish strategies to implement the same, develop plans to improve the knowledge and skills of the teachers and staff, create suitable IT infrastructure and resources, and create a conducive learning culture. The authors mention that communication with all the stakeholders plays a key part in its effective implementation. Implementation of ICT at the school level is a complex phenomenon as it needs to be integrated with the course structure and pedagogies. The school leaders need to become technology entrepreneurs by acting as a change agent by designing a suitable vision and culture Yue *et al*., (2003).

Tahir *et al*., (2015) conducted an exploratory study of head teachers in Malaysia and concluded that head teachers' readiness to learn computers themselves and their perception related to its effectiveness in using ICT in the learning process is essential for its successful implementation. School leadership and school policies towards ICT implementation also affect the individual teacher level. Those who are not very proficient are likely to learn ICT and use ICT in the classroom with the positive attitude of the leaders Varderlinde *et al*., (2015). Another study surveying more than 500 school principals from Malaysia found that though school principals use computers for instructional and administrative responsibilities quite frequently, their knowledge about its integration with the school curriculum is moderate and it hampers its effective implementation at the school level Arokiasamy, *et al*., (2014). Alenezi, 2017 mentions the role of a technology leader along with an administrative leader in the school to integrate technology into a school educational environment. His or her role should be to supervise innovations, conduct training courses for the teachers, nurturing learning and innovation culture to implement ICT in the classroom.

The authors by Raman and Thannimalai, 2019 do not fully agree with the existing research and mention that though visionary school leadership doesn't have a significant role with teachers' technology integration, the principals should take technology-oriented training to inspire the teachers. In another study Raman *et al*, (2019) also mention that the school principal's preparatory programmes for ICT integrations should focus on building technology leadership by helping them understand the integration of technology in the classrooms.

Avidov-Ungar and Shamir-Inbal, 2017 examine the perceptions of ICT coordinators for its effective implementation at the school level. They found that along with the IT resources and conducive policy, ICT is successfully implemented when the ICT coordinators or technology leaders are also aware of the organizational knowledge about how to develop a systematic perspective, build vision and programmes and identify the key stakeholders, and are trained in leadership skills.

Many authors have commented on the leadership styles required for implementing ICT effectively at the school level. School leaders face a lot of challenges in

implementing ICT at the school level. One of the challenges is the lack of ICT infrastructure. Many times school leaders depend on development organizations or government for the provision of ICT infrastructure which may not work effectively (Mingaine, 2013). Instead, it would be better if school leaders allocate some funds for ICT infrastructure development and implement it by using a transformational leadership style. Elaborating further Chen *et al*, (2013) mention that technology leaders at the school level need to depict transformational as well as instructional leadership so that the teachers will put extra efforts to study and use ICT in the classrooms. School leadership can also be assessed on four parameters such as the extent of digital practice by the teachers, ICT maturity in terms of the school's preparedness, integration of ICT in curriculum and assessment, and collaborative approach taken by the school (Ottestad, 2013). The author comments that collaborative and transformational leadership positively affects all four parameters and brings a positive attitude of the teachers towards the implementation of ICT.

The existing research proves the positive relationship between school leadership and the effective implementation of ICT. It also looks into leadership challenges and the need to bring out the change in the conventional school culture. It is seen that there is relatively very scant literature available about the role of school leadership in implementing ICT at the school level from a developing country like India. The present study tries to fill this gap. It is especially relevant in the present situation of the pandemic where many school-going children are missing online education due to lack of access to smart devices. The strong and transformational school leadership focusing on the implementation of ICT will pave the way for online education for many children.

OBJECTIVES

- To find out the strategic intent of the schools of moving towards e-learning by making use of ICT.
- To find out the role of school leadership – principals in bringing out the cultural shift towards the use of ICT (strategic intent, reward, autonomy, and opinion, training, usage by self)
- To find out the access of ICT resources to implement it at the classroom level
- To understand the perceived barriers of the school leaders in effectively implement ICT at the classroom level.

RESEARCH METHODOLOGY

The objective of the study was to understand the relationship between the role of the school leader and the adoption of ICT in the school. The questionnaire approach was used for data collection. The school principal's- leader's questionnaire was majorly taken from the questionnaire used by the survey funded by European Commission and was administered in 31 countries. The questionnaire was validated by industry experts like educationists, NGO working in the education field, and statisticians.

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34 school heads/principals from different schools were surveyed for the study. The school principals were also from Mumbai and suburban areas, Maharashtra, India. These school heads/ principals represent different schools affiliated to different boards such as SSC board, CBSC board, ICSE board or IB board. They also represent the schools where the language of delivery in the class is different.

DATA ANALYSIS

Demographic Profiles of the School Leaders

Table: 1

S. No.	Particulars	Category	Number	Percent
1	Gender	Male	10	30%
		Female	24	70%
		Total	**34**	**100%**
2	Age	Less than 35 Years	5	15%
		36 – 45 Years	5	15%
		46 - 55 Years	22	65%
		More than 55 Years	2	5%
		Total	**34**	**100%**
3	Experience as a school leader in current school	Less than 3 Years	8	24%
		3 – 5 Yeats	4	11%
		6 – 10 Years	5	15%
		11 – 20 Years	8	24%
		21 and More Years	9	26%
		Total	**34**	**100%**
4	Language of delivery in school	English	17	50%
		Regional	17	50%
		Total	34	100%

The data was collected from 34 school principals. The data shows nearly 70 percent are female. In India, this profession is preferred by female more. Around 65 percent of the school principals are between age group 46 to 55 Years. Around 50 percent of the school principals are working the current school for more than 11 years. Nearly 50% principal were from the school where language of delivery was English and same percent was from regional Language.

Strategic Intent of the Schools

The strategic intent of the school of implementation of ICT can be seen in terms of their declaration in terms of school policy and policies related to action plan for the support to be given to the stakeholders in implementing the policy.

Table 2: School Strategies to use ICT in Teaching and Learning

S. No.	Availability of ICT infrastructure	Number	Percent
1	Written policy of ICT of the specific school	17	50%
2	Written policy to use of ICT for pedagogical purposes	14	41%
3	A clear written statement and action to use ICT for teaching and learning in specific subjects	23	68%
4	Peer discussion about ICT use for the pedagogical purposes	22	65%
5	A clear policy to prepare the students for responsible internet behavior	14	41%
6	A clear policy regarding social networks in teaching and learning	18	53%
7	cooperation and collaboration among teachers policy	22	65%
8	Formal discussion time for teachers to evaluate or develop instructional material and approaches and share with fellow teachers	21	62%

Around 50 percent of the schools have their Written policy of ICT of the specific school, and about using social networks in teaching and learning policy. More than 60 percent of the schools have a policy and action to use ICT for teaching and learning in specific subjects, regular discussion with teaching staff about ICT use for pedagogical purposes, a specific policy to promote cooperation and collaboration among teachers, scheduled time for teachers to meet to share, evaluate or develop instructional material and approaches. But hardly 41 percent have its own written statement specifically about the use of ICT for pedagogical purposes, a specific policy or a programme to prepare students for responsible internet behaviour.

Role of School Leadership

Role of the school leaders (school principals) can be seen in multiple action plans they are using to implement ICT in the school. It covers their perception related to efficacy of ICT as a teaching learning tool, making ICT infrastructure available to the staff and teachers, making training facilities available to the teachers as well as providing incentives for effective implementation of ICT at the classroom level.

Opinions of School Leader about Use of ICT for Educational Purpose

The school principals' opinion about impact of ICT on students learning is positive. School Principals are convinced that ICT enhances teaching learning process. In all 91 percent of the school leader feel ICT can help teacher to work in collaborative way. Around 60 percent of the school leader strongly agree that 'ICT use in teaching and learning is essential to Prepare students to live and work in the 21st century'. Overall school Principals' opinion about the impact of ICT usage in the class is positive and favourable.

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Table 3: Availability of ICT Infrastructure

S. No.	Availability of ICT infrastructure	Number	Percent
1	School's website	17	50%
2	More than 50% teachers have email address	26	77%
3	More than 50% students have email address	14	41%
4	A LAN (Local Area Network)	23	67%
5	If yes, is this LAN also WI FI	15	44%
6	A virtual learning environment (i.e platform or knowledge Management System etc..)	10	29%
	If yes, can it be accessed from outside the school		
7.1	By the Teachers?	7	21%
7.2	By the Students?	4	12%
7.3	By the Parents?	2	6%
7.4	Outside School Hours?	2	6%

In all 50 percent of the schools have their website or homepage. Nearly 77 percent of the schools have email address for more than 50% of teachers. But only 41 percent of the schools have email addresses for more than 50% of students. In all 67 percent of the schools have Local Area Network but only 44 percent of the school have Wi-Fi.

Only 29 percent schools have virtual learning environment. Out of that only 21 percent teachers can access it from outside of the school. Only 12 percent students and 6 percent of the parents can access it from outside of the school. Only 6 percent schools have accessibility to the virtual learning environment outside school hours.

Areas for Professional Development Attended by Teachers

Around 50 percent of the schools state that more than 50 percent of their teachers have taken at least one introductory course on internet use and general applications. More than 50 percent of the schools said that 25 percent or less number of teachers have done advanced courses. Few of the teachers have not done any advanced courses. The same scenario is there for the courses on pedagogical use of ICT in teaching and learning. Around 49 percent of the schools have stated that their less than 25 percent teacher underwent subject specific training. There is good number of participations seen in peer learning communities or group work with other teachers about the use of ICT for teaching and learning.

Table 4: Rewards to the Teachers for using ICT in Teaching and Learning

S. No.	Rewards to the Teachers for Using ICT in Teaching and Learning	Number	Percent
1	Increase Salary or give incentives to teachers	5	15%
2	Moderate teaching hours	2	6%
3	Prizes for competition and initiatives	10	30%
4	More training for teachers	19	56%
5	Adequate ICT equipments	1	3%
6	Other	1	3%

The above table show that 56 percent schools provide additional training hours as incentives for using ICT in teaching and learning process.

Access to ICT Resources

This data covers the information related to various types of resources and equipment available at the school level, their operational use and the resources available for their maintenance and repairs.

Table 5a: School ICT Infrastructure

		Number of Desktop in School				
S. No.	**Particulars**	**Not Available**	**1 - 10**	**11-20**	**More than 20**	**Total**
1	Desktop with no internet	13 (38%)	5 (15%)	16 (47%)	0 (0%)	34 (100%)
2	Desktop with internet	3 (9%)	3 (9%)	2 (6%)	26 (76%)	34 (100%)
3	No. of Desktop in computer Laboratory	0 (0%)	4 (12%)	18 (53%)	12 (35%)	34 (100%)

Table 5b: School ICT Infrastructure

		Total Numbers of Desktop, Laptop and IWB available for Teaching Learning Process				
S. No.	**Particulars**	**0**	**1**	**2**	**3 and More**	**Total**
1	Laptop with No internet	27 (80%)	3 (9%)	3 (9%)	1 (2%)	34 (100%)
2	Laptop with internet	22 (65%)	5 (15%)	3 (9%)	4 (12%)	34 (100%)
3	Interactive white Board – educational software (IWB)	13 (38%)	7 (20%)	4 (12%)	10 (30%)	34 (100%)
4	No. of Computers in the classroom	24 (71%)	10 (29%)	--	--	34 (100%)
5	No. of computers in library	21 (62%)	10 (29%)	2 (6%)	1 (3%)	34 (100%)
6	No. of computer at any other location that is accessible to the students	26 (77%)	4 (12%)	1 (3%)	3 (8%)	34 (100%)
7	No. of IWB or educational software in computer Laboratory	21 (62%)	5 (14%)	4 (12%)	4 (12%)	34 (100%)
8	No. of IWB or educational software in the classroom	24 (71%)	10 (29%)	--	--	34 (100%)
9	No. of IWB or educational software in library	31 (91%)	3 (9%)	--	--	34 (100%)
10	No. of IWB or educational software at any other location that is accessible to the students	30 (88%)	1 (3%)	3 (9%)	--	**34 (100%)**

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From Table 5a the data shows that 38 percent schools do not have even one desktop (without internet). In all 47 percent schools have more than 20 computers without internet connection. Around 76 percent schools have computers which are connected to internet. In all 53 percent of the schools i.e. more than half schools have 11 to 20 computers in the computer lab. It is seen that 35 percent schools have more than 20 computers in the computer lab.

From Table 5b nearly 80 percent of the schools do not have laptop without internet connections. The data also shows that around 65 percent of the schools do not have any laptop with internet connection. In all 38 percent schools do not have access to interactive white board–the educational software and 30 percent schools had access to interactive white board – the educational software.

Nearly 71 percent schools do not have computers in the classroom and 62 percent schools do not have computers in library. The data reveals that 77 percent of the schools do not have computer at any other location other than classroom, laboratory or library for students use.

The survey shows that 62 percent of the schools do not have interactive white board or any educational software installed in their computers laboratories. Nearly 71 percent of the schools do not have any educational software installed in their classroom computer. In all 91 percent of the schools do not have educational software installed in the library computers.

Table 6: ICT Equipment Maintenance Responsibility

S. No.	Responsibility of maintenance of ICT equipment	Number	Percent
1	The school staff	14	41%
2	External company contracted by school	14	41%
3	External company arranged by educational authorities	4	12%
4	Other	2	6%
5	**Total**	**34**	**100%**

In all 41 percent of the schools have their internal staff for maintaining their own ICT infrastructure. Nearly 41 percent of the schools have contracted with some external company to maintain the ICT infrastructure of the school. The schools which are governed by the government have some designated company arranged for maintaining ICT infrastructure.

Table 7: ICT Equipment in Use (Operational)

S. No.	Proportion of the ICT equipment which are fully operational	Number	Percent
1	Less than 50% operational	10	30%
2	50% to 75% operational	7	20%
3	76% to 90% operational	4	12%
4	More than 90% operational	13	38%
5	Total	**34**	**100%**

Around 30 percent of the schools have half of their equiments which are not working. There are only 12 percent of the schools where 76 percent to 90 percent

equipments are in use and only 38 percent of the schools where more than 90 percent ICT equipments are functional. Even according to the surveyed teachers access to the up to date hardware and software was inadequate.

Barriers Perceived by School Leaders in Effective Implementation of ICT in the Classroom

Barriers perceived by the school teachers are given in two parts – i) the level of autonomy given to the schools in designing their ICT related strategies and policies and ii) other barriers faced in actual implementation of ICT in the schools

SCHOOL AUTONOMY IN PEDAGOGICAL AND ICT DECISIONS

Procuring the ICT infrastructure is done by school governing body in 35 percent of the schools. In all 46 percent of the school principals state that ICT course contents are developed by teachers or school principal. Nearly 61 percent of the school principals responded that choosing teaching methods for ICT is done by teachers. The data shows that 33 percent principal decide on teachers training programme. Nearly 44 percent teachers choose the learning resources for teaching ICT in the classroom.

Table 8: Rank Order Analysis of Barriers of ICT According to School Principal/ Leader

S. No.	Barriers	Total
1	Fixed time table for the school students	182
2	Pressure of exams and tests on the students	167
3	Lack of pedagogical model for integrating ICT for learning	153
4	Most teachers are not in favor of the use of ICT at school	146
5	Low self-esteem regarding the use of ICT	141
6	low internet bandwidth	138
7	Lack of interactive white board or any other educational software	137
8	Scarcity of technical support for teachers	137
9	Too tough to integrate ICT into curriculum	136
10	ICT in teaching and learning not being a goal in our school	136
11	Parents not in favor of the use of ICT at school	134
12	Lack of contents in vernacular language	132
13	Lack of knowledge of how to use ICT effectively in teaching and learning	131
14	Time tabling arrangement	129
15	Insufficient number of internet connected computers	127
16	Insufficient number of computers	126
17	School space organisation (Class room size and furniture etc..)	126
18	Inadequate training for ICT for using in the class	126
19	Lack of contents in national language	123
20	School computers out of date or need repair	122

Table 8 (Contd.)...

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...(Contd.) Table 8.

21	Insufficient pedagogical support for teachers	118
22	Lack of interest of teachers	117
23	No or unclear benefit to use ICT for teaching	113
24	Lack of adequate contents or material for teaching	109
25	Lack of adequate skills of teachers	103

FINDINGS

The above table brings out the most important and least important barriers affecting the use of ICT in the school from the school principal's perspective. The most important barriers perceived by the school principals are as follows:

- Lack of adequate skills of teachers
- Lack of adequate contents or material for teaching
- No or unclear benefits to use ICT for teaching
- Lack of interest of teachers
- Insufficient pedagogical support for teachers
- School computers out of date or need repair.

The least important barriers perceived by school principals are

- School Time organization
- Pressure to prepare students for exams or tests
- Lack of pedagogical models on how to use ICT for teaching and learning
- Most teachers are not in favor of the use of ICT at school
- Lack of confidence regarding the use of ICT
- Insufficient internet bandwidth or speed

It can be seen that most of the important barriers are related to teachers. Lack of content insufficient pedagogical support for teachers are also major barriers to use ICT in teaching learning. Willingness to implement ICT will increase if these obstacles are removed or mitigated.

Teachers Rank order analysis (we can do comparison as that paper show language wises barriers overall are not published anywhere)

CONCLUSION

The study found that school leadership plays an important role in the same. The leadership role is specifically important in designing ICT structure, creating ICT infrastructure, organizing resources for maintenance of the ICT equipment and infrastructure, providing access to training for teachers, and monitoring the use and impact of ICT in the school. The study found that integration of ICT in the main curriculum is one of the major challenges. The school principal's role is very vital

in determining the extent of ICT used in various subjects. The role of the school head/ leader in building positive school climate and creating ICT required school infrastructure is of great importance.

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Pandemic Proofing the Fan Engagement in Sports Industry

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INTRODUCTION

The outbreak of the Covid-19 pandemic is likely to be regarded as the world's largest state of emergency since World War II. COVID-19 will certainly lead to the global economic crisis. The last economic crisis of 2007-08 had a significant impact on the non-sports and sports industries across Europe, but the negative impact on the elite professional football industry was limited. In fact, the football industry has received some protection and offers an impressive sales track record. The COVID-19 crisis has had impact on the sports and football industries.

Most of the sports clubs have physical space like a stadium as a combination of core brands. This partnership describes all the products owned by the brand and the products that consumers have the strongest working relationship with. These huge stadiums can also present brand positioning that creates meaning and profit for consumers. Famous venues such as the Santiago Bernabéu, Camp Nou, Old Trafford, Salt Lake Stadium and Madison Square Garden means more than where sporting events take place. As described by Blanka Vlasic in an interview to Anna Kessel of The Guardian "People don't come to stadiums only to see results. They come to see a reaction, they want to see we are also human, that we can cry or laugh." Sports venues are becoming important spots to many sports brand identities and strategies. But with the global health crisis of COVID-19, sports facilities around the world are limited in the near future by closing the door on fans and how sports organizations interact with consumers, provide an excellent experience and nurture a sense of community. These uncertain and inexperienced times, sports professionals and experts should consider the impact of the new sporting landscape.

The purpose of this study is to discuss the sports industry, given that COVID-19 has no stadium prospects. This knowledge allows sports professionals to leverage their existing foundations when coordinating their marketing strategies and further develop their fans and organizations through pandemics and resulting "new normal".

LITERATURE REVIEW

This study focuses on impact of COVID – 19 on three different perspectives namely - The Individual Fan, Virtual Spaces and The Sports Organization

THE INDIVIDUAL FAN

Apart from building connections between the club and the stadium, the sports organisations are working to create an environment for fans to form a group identity. Underwood, Bond, and Baer (2001) have mentioned that stadium size, structural design, stadium atmosphere and other special features offer the possibility to create identity. Also as Sloan and Wakefield in (1995) have documented, the characteristics of the stadium directly affect whether the crowd thinks the sporting event is fun and whether they plan to return in the future. While team loyalty affects the number of spectators, the environment and atmosphere of the stadium directly affects the audience's desire to watch more matches in the future. As a result, crowd participation, food, atmosphere, fan behavior, stadium parking and stadium cleanliness increase the number of fans, regardless of the team's performance. Recognition by their favourite sports organisation also brings the fans closure to their clubs.

This individual fan club relationships is changing due to OTT and other virtual avenues used by sports industry.

VIRTUAL SPACES

Mastromartino and Zhang (2020) and Naraine (2019) Sports fans have realised that virtual spaces have similar benefits as the ones they enjoy by attending live games in stadiums. These days, social media has definitely changed the ways of communications via the Internet. Many likeminded people come together and form a group and have the discussions of common interest subjects. These platforms are used by brands as influential place for marketing the products.

According to Gibbons and Dixon (2010), Millward (2008) and Phua (2010), sports fans who communicate with other online fans are the most famous fans in the team and are more committed to their fan base than the fans who are not participating in online communication.

According to Naraine, Pegoraro, and Wear (2019), social media platforms like Twitter, Instagram, Facebook and Youtube are incredibly relevant for fans looking for an interactive community. Twitter is known for promoting and strengthening its fan base, especially on the Internet. These platforms have also established direct connections with support teams and leagues, as well as other fans. Social media is becoming a popular way to maintain and develop a fan community, but there are other virtual events that have a similar effect and have not been explored or studied upon. Examples include online gambling, interactive TVs such as iTV in the UK and Watch With Your Friends on OTT platforms. However, most of the non-social media communities that hold online fans are created by users, for example, podcasts and fantasy leagues. Nevertheless, these activities show the potential for fans to watch the game outside sports facilities and build communities with their friends by joining

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through such OTT platforms for enjoying the game virtually.

These virtual platforms for games have impact on sports organisation, the infrastructure, location, stadium.

THE SPORTS ORGANIZATION

Now a days, according to Ross (2006), sports organizations are beginning to see coaches, managers, players and employees as part of a bigger brand that can be well utilised. That's why the brand collaboration is important to fans and the teams. Some researchers tried to study the central role of brand and its association in sports organizations, specifically in terms of team identity as mentioned by Heere and Wear (2019), team loyalty mentioned by Funk, King and Kunkel (2014), total brand value of the team mentioned by Stokburger-Sauer, Exler and Bauer (2008) and Ross (2006), brand value of league mentioned by Lock, Funk and Kunkel (2017), and fan behavior. When people identify with an organization, they begin to feel like a single consumer, like a collective group. Fans who interact with other fans encourage a fan base, but the group associated with a particular brand is the brand community. Instead of letting fans create their own communities, clubs that help in creation of communities like the Arsenal Fan Club or Manchester United Fan Club have a higher chance at retaining the fans for a longer time. This partnership between the organization and the fans is mainly made in the stadium, where the role of the stage in promoting the identity of the team and consumer loyalty has been mentioned. With almost all live sporting events in the world temporarily closed, many sports leagues, teams and media institutions lack the content and experience to create opportunities to interact with the public. Unfortunately, it added them using TV, the web and streaming at the same time that most people have free time. Two important methods used by sports organisations of media content during complete lockdown were 1) replay history games, highlights and interviews, and 2) live esports replacement activities.

One of the secondary goals of teams, leagues and sports networks is to replace live sporting events with esports events, streaming live and recording. This alternative term describes the use of sports-based video games and may be considered a comparable alternative to live sporting events. Major League Soccer (MLS) franchises, for example, broadcasted Toronto FC eMLS games live, mimicking previously scheduled events suspended due to the current situation of pandemic. At such events, representatives of "The Toronto FC eMLS team" will regularly face representatives of scheduled eMLS teams for live video game matches of popular FIFA 20 soccer matches produced by EA Sports.

Given the prospect of unlimited stadium closures during the Covid-19 pandemic, it is a challenge for smaller sports organisations whose maximum revenue is depended on stadium ticket sale to survive through the pandemic. It is important for individuals to understand how sports organizations work outside the stadium to engage the fans through Fan Fests in Malls and Live Game Drive-through. There is a wide new area of "Live Game Drive-through" that the smaller sport clubs can explore by charging the fans to come to enjoy live games and get some financial support during

the pandemic. For example, according to BBC Sports Online (2020), FC Midtjylland, a Danish club, had the idea of setting up two large screens in the car parking area of their stadium, so that fans could drive-in, park their cars and watch live matches from inside their vehicles while maintaining socially distancing.

As currently ongoing pandemic is changing the nature of games, fan engagement and brand association, It would be interesting to study this area. Very less studies are done in this domain of online, Interactive TV or OTT, virtual games and its impact on fan engagement. What are the other things sports club will come up with to cope up with this "New Normal".

RESEARCH METHODOLOGY

A questionnaire comprising of 22 questions was designed to capture some of the main dimensions of how people have perceived sports during pre-COVID and during COVID. Representational images were used in a few questions which made it easier for the respondents to understand the idea better. The questionnaire was prepared in Google Forms & was administered primarily via WhatsApp and other social media platforms such as Instagram and Facebook.

Non-probabilistic sampling method was used to achieve the preliminary objective of the research. The parameters were known only post-selection to the sample. Convenience Sampling and Simple Random Sampling was preferred which purely based on the reach and willingness of the respondents to participate in the research.

A total of 202 responses were collected with respondents belonging to various age-groups, gender and demographics along with a verified sports preferences. Since there were fairly less respondents, the data collected was intense and thorough allowing to give more time and effort to each respondent. The questionnaire was validated by academicians, based on the feedback changes were done in the questionnaire to ensure the face validity. The reliability of the scale was found as **0.803** .Tools like **Tableau and SPSS** was used for analysis.

Descriptive Statistics

More than half of the respondents (51.98%) belong to the age group of 21-25. The second largest group happens to be the people slightly elder belonging to the 26-30 age-group. 70.79% respondents were male and 29.21 % were female.

63.86% of the males feel an increased connection with their favourite sports club by following them on social media whereas only 25.25 % feel the same [Fig. 1].

We can see a fairly even distribution between the type of fans in the first three categories with most of the fans following a single sport followed by people who use sports primarily as a medium to socialize. There is a stark difference in the third category from the standpoint of gender and it can be inferred that males follow a wider range or all the sports as compared to females who happen to be more in the other two categories. A very less i.e. 5.45% of respondents fall in the fourth category who get too much into the game.[Fig.2]

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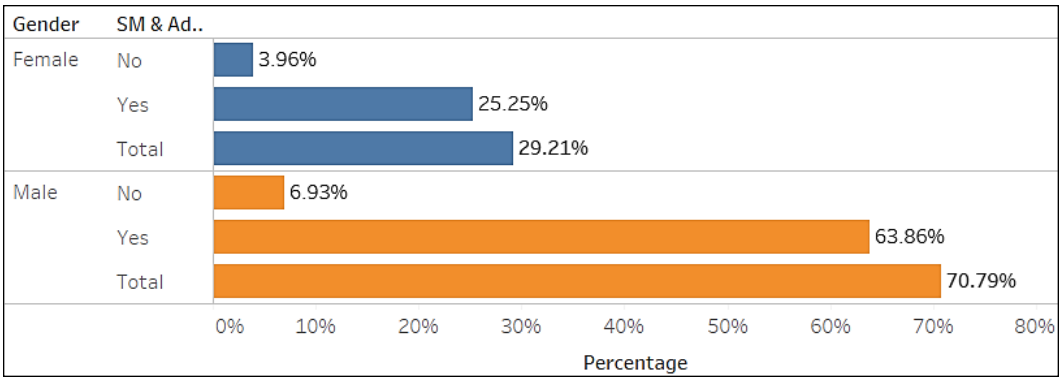

Fig. 1: Gender wise Distribution of Added Connection due to Social Media

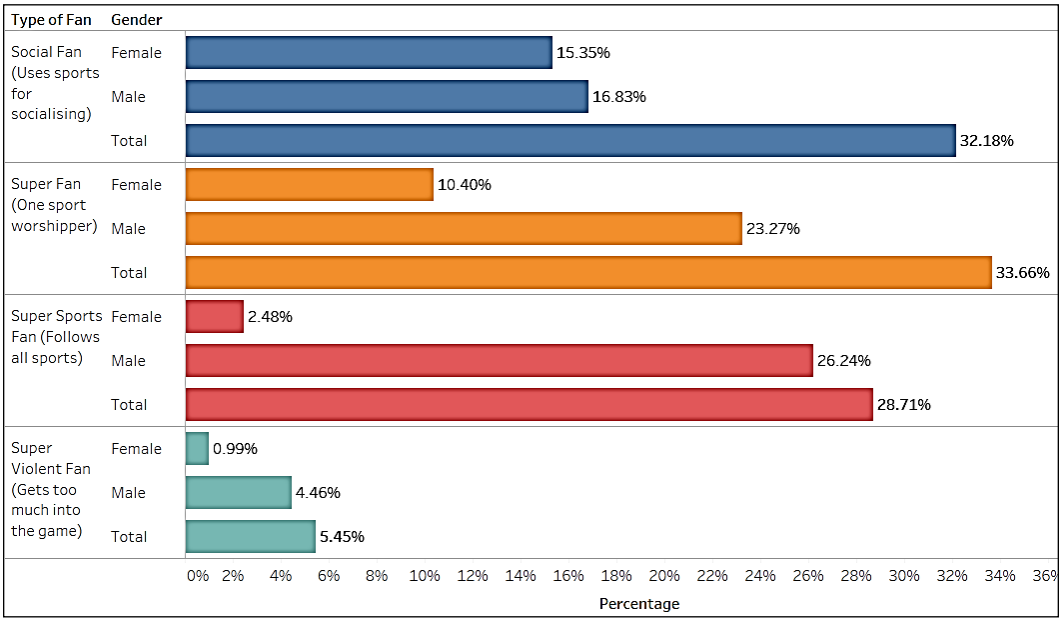

Fig. 2: Gender wise Type of Fans

The highest number of games are watched by the people in the income group group of 5-10 LPA followed by the highest income group with 178 total live games. It can also be seen that the number of live games watched by the people in the lowest income bracket of 0-5 LPA is higher than the number of live games watched by the people in the second highest income bracket of 15-20 LPA. An interesting preliminary inference that can be made from this is that there might not be any correlation between the yearly income and number of games watched. We can assume that people really like their favourite sport ad irrespective of their income they the live games.

Data shows that most of the respondents have a positive sentiment 93.05% towards Watch With Your Friends idea on the OTT platforms. Still there are a few respondents in the age groups of 21-25 and 26-30 who have fairly neutral score of likelihood which might possibly because these are the people who might not be aware of this OTT.

Though most of the respondents have a positive sentiment towards Live Game Drive-Through screening events it can be seen that it is fairly distributed in the age groups of 21-25 and 26-30. The negative sentiment is 12.88%.

Inferential Statistics

Objective 1

To test whether the number of Live Games watched by the respondents depends on the Yearly Family Income.

Hypotheses

H0: The number of Live Games watched does not depend on the Yearly Family Income.

H1: The number of Live Games watched depends on the Yearly Family Income.

Table 1: Number of Games Watched as per Yearly Family Income

S. No.	Family income	Number	Mean	S.D.	Minimum	Maximum
1	0 – 5 LPA	27	2.29	0.7	0	15
2	5 – 10 LPA	64	3.17	0.59	0	30
3	10 – 15 LPA	50	2.58	0.44	0	10
4	15 – 20 LPA	22	2.45	0.54	0	10
5	Above 20 LPA	39	4.56	1.11	0	30
6	**Total**	**202**	**3.09**	**0.32**	**0**	**30**

We can see there is not much difference between the mean scores of the different levels of the Yearly Family Income. It is found that the number of live games watched does not statistically depends on yearly family income. It is not statistically significant as $p > 0.05$.

Objective 2

To see if there is any difference in how recognition by their favourite sports team matters to men and women. The test used is Wilcoxon Mann Whitney Test which is analogous to Independent Samples t-Test. Here the gender is used as dummy variable.

Hypotheses

H0: Recognition by the favourite sports clubs matters to both the male and female respondents equally

H1: Recognition by the favourite sports clubs matters to both the male and female respondents in different ways.

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Table 2a: Gender wise Recognition Score

S. No.		Gender Dummy	Number	Mean Rank	Sum of Ranks
1	Recognition score	0	59	84.1	4962
2		1	143	108.68	15541
3	**Total**		**202**		

Table 2b: Test Statistics

S. No.		Recognition score
1	Mann-Whitney U	3192
2	Wilcoxon W	4962
3	Z	-2.82
4	Assymp. Sig. (2 Tailed)	0.005

The Recognition Scores for men and women have a statistically significant difference between the respective distributions (z = -2.821, p = 0.005)

The p-value is less than 0.05 alpha value so the Null Hypothesis can be rejected and the Alternative Hypothesis that recognition by the favourite sports clubs matters to both the male and female respondents in different ways can be accepted

Objective 3

To see the difference between the people who feel connected with their sports teams on social media and those who don't with respect to the preference of Watch With Friends Online The Kruskal-Wallis Test is also a non-parametric version of ANOVA and a generalized version of Mann-Whitney Test method since it permits two or more groups.

Test Performed: - Kruskal – Wallis Test

Social Media Connection vs Likelihood of Watch With Your Friends on OTT

Hypotheses

H0: Connection with the sports teams on social media does not cause an impact on respondents preferring Watch With Your Friends on OTT platforms

H1: Connection with the sports teams on social media causes an impact on respondents preferring Watch With Your Friends on OTT platforms

Table 3: Connections with Sport Team on Social Media

S. No.		SM Connections	Number	Mean Rank
1	WWYF	0	22	75.2
2		1	180	104.71
3	**Total**		**202**	

The Kruskal – Wallis Test p-value is 0.018 which is less than 0.05, we reject the null hypothesis. so, the Connection with the sports teams on social media causes an impact on respondents preferring Watch With Your Friends on OTT platforms. The ranking also tells us that respondents who feel more connected on social media with their favourite sports teams are more likely to prefer the Watch With Your Friends on OTT Platforms

Objective 4

To see if there is any relation between the favourite part of the live game and the likelihood of respondents preferring Live Game Drive-Through screening events

Test Performed - Kruskal – Wallis Test

Favourite part of the Live Games vs. Likelihood of respondents preferring Live Game Drive-Through

Hypotheses

H0: The stadium environment part of the live games impacts the likelihood of respondents preferring the Live Game Drive-Through screening events

H1: The stadium environment part of the live games impacts the likelihood of respondents preferring the Live Game Drive-Through screening events

Table 4: Stadium Environment Part of the Live Games

S. No.		Fav_Part_Game	Number	Mean Rank
1	Drive Through_ Dummy	1	59	109.11
2		2	105	100.97
3		3	38	91
4		**Total**	**202**	

Kruskal – Wallis Test p-value is 0.296 which is more than 0.05, suggesting we will accept the null hypothesis and the perception is true that the people who prefer the stadium environment as the most important factor of the live game would prefer the Live Game Drive-Through screening events.

SUMMARY AND CONCLUSIONS

The impact of the global pandemic covid-19 is an increasingly serious problem for Sports Industry. The way in which sport organizations utilize this “new normal” situation will depend on their understanding of the impact that the stadium closures have on themselves, the individual fan and society at large. This study was aimed at reviewing those areas and gather key literature to provide a different angle or direction of all the factors that matter for the sports organisations in these tough times. When faced with these new challenges in the sports industry, extensive research from multiple angles must be performed. The study clearly shows that there is no impact of gender on the loyalty of fans when they are recognised by their favourite club. This could be explored further by the sports organisations to modify their marketing and branding strategies.

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Now that the stadium shutdown has a significant impact on the sale of tickets and with rising use of OTT platforms for viewing live sports games, sports organisation have a chance to explore these options with ideas like the Watch With Your Friends for opening a new revenue stream. With the right investment strategy, sports clubs can also explore the option of "Live Game Drive-Through" and get an additional increase in revenue by sale of tickets. This could prove out to be a step towards the right direction in pandemic proofing the fan engagement.

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