ISSN 2278-8247

SYNDICATE - The Journal of Management

VOLUME 22 **MARCH-2023**

CONTENTS

Published by

M.O.P. VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)

(College affiliated to University of Madras and Re-accredited at A++ grade by NAAC)

CHENNAI-600 034

ISSN 2278-8247

SYNDICATE - The Journal of Management

VOLUME 22 MARCH-2023

CONTENTS

Published by

M.O.P. VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)

(College affiliated to University of Madras and Re-accredited at A++ grade by NAAC)

CHENNAI-600 034

SYNDICATE - The Journal of Management

(VOLUME - 22, MARCH 2023 ISSN: 2278-8247)

EDITORIAL OFFICE
DEPARTMENT OF BUSINESS ADMINISTRATION
M.O.P. Vaishnav College for Women (Autonomous)
#20, IV Lane, Nungambakkam High Road, Chennai 600 034
Tel: (044) 28330262, 28330677
Website: www.mopvc.edu.in, Email: editor.sjom@gmail.com

FROM THE EDITOR'S DESK

M.O.P Vaishnav College for Women encourages Researchers to explore various areas of study for increased understanding from different perspectives. Syndicate Journal of Management is a peer-reviewed online journal which publishes content in areas of Humanities and Social Sciences. It provides a platform for academicians to publish articles and thereby expand their knowledge base. Articles in this edition focused on technology and digital. A study on trends of Digital Security and the role of social media in Digital Security, A study with specific reference to how you can measure your reach in Social media, A Data Analytics Tool for mining needle from the Haystack, A study on assessing the adoption of E-Governance services by Citizens are some of the areas explored in this edition.

Dr. Lalitha Balakrishnan
Editor-in-Chief and Principal
M.O.P. Vaishnav College for Women (Autonomous)
Chennai

A STUDY ON ASSESSING THE ADOPTION OF E-GOVERNANCE SERVICES BY CITIZEN'S

Dr. E Nirupama[1], V Shruthi [2]
[1]Associate Professor, P.G. Department of Commerce,
M.O.P Vaishnav College for Women (Autonomous), Chennai.
[2]Research Scholar, M.O.P Vaishnav College for Women (Autonomous), Chennai.

ABSTRACT

E-Governance offers better services and has improved the performance of both public and private sectors of the country or in fact the whole world. This would not have been possible without the backup support of Information and Communication Technology (ICT). The National e-Governance Plan of Indian government emphasized on better accessibility of government services to the common man and various government departments. Therefore this study aims to determine the type of e-governance service preferred or used by the citizen's and also to identify the factors influencing the citizens to adopt e-governance services. Both primary and secondary data are used. Tools taken to analyse the preferences of the citizens are percentage analysis, reliability analysis and Structural Equation Model (SEM). Research focused on analyzing the usage of e-governance services and to determine the preference towards the e-governance services by the citizens. The research findings revealed that more than half of the respondents have adopted and agreed that e-governance services are very useful and it has been agreed that trust between the citizens and government has increased by using the e-governance services.

KEYWORDS: E-Governance, Information and Communication Technology (ICT), Structural Equation Model (SEM).

I. INTRODUCTION

E-Governance or Electronic Governance is the application of information and communication technology (ICT) for delivering government service, exchange of information, communication transactions, integration of various stand-alone systems between government-to-citizens (G2C), government-to-business (G2B), government-to-government (G2G), government-to-employees (G2E) as well as back-office processes and interactions within the entire government framework. Through e-governance, government services are made available to the citizens in a convenient, efficient, and in a transparent manner. The three main target groups that can be distinguished in the governance concepts are government, citizens, and business.

Government to citizens (G2C):

G2C deals with the relationship between government and citizens. It allows citizens to access government information and services instantly, conveniently, from everywhere, by use of multiple channels. Government-to-Citizens (G2C) model have been designed to facilitate citizen interaction with the government. The focus of G2C is customer centric and integrated electronic services where public services can be provided based on a "one-stop shop" concept.

Government to Employees (G2E):

G2E refers to the relationship between government and its employees only. The purpose of this relationship is to serve employees and offer some online services such as applying online for an annual leave, checking the balance of leave, and reviewing salary payment records, among other things.

Government to Government (G2G):

G2G refers to the online communications between government organizations, departments and agencies based on a super-government database. Moreover, it refers to the relationship between governments.

Government to Business (G2B):

Government to business, or G2B, is the second major type of e-government category. G2B can bring significant efficiencies to both governments and businesses. G2B include various services exchanged between government and the business sectors, including distribution of policies, memos, rules and regulations.

II. REVIEW OF LITERATURE

Kriti priya gupta, Swati Singh, & Preeti Bhaskar (2018): The paper classifies the benefits of E-governance services in India, where four dimensions of benefits were suggested (i.e) quality of service (QOS) benefits, quality of governance (QOG) benefits, personal development benefit, and economic benefit. The study selected the E-governance services which were offered by New Delhi Municipal Council (NDMC). 515 user's perception on NDMC's e-governance services have been collected in order to know the e-governance benefits where factor analysis technique has been used. The study also examines how citizen's perception change and differ according to the demographic factors. The findings concluded that e-governance services are most beneficial in the terms of quality of governance, quality of service, and economic benefits.

Dr. B.Ramadoss, Ram Palanisamy (2015): The paper classifies the impact of technology in the functioning of government. The study also examines both the issues and challenges in implementing the e-governance projects. The findings concluded that in order to receive the benefits of e-governance, issue on technology, management of change related issues, and funding issues are to be considered.

Kiran Yadav & Sanatan Tiwari (2014): The paper tells that the e-governance projects provide a design for the efficient delivery of services. The study also explores the usefulness of e-governance for the government business and the citizens of India. It also classifies various e-governance projects which is currently been used. They also concluded that e- governance is the key to “Good Governance” for the developing countries like India, in order to minimize corruption, and to offer quality service to the citizens.

Puneet Kumar, Dharminder Kumar, Narendra Kumar (2013): The paper categorises that only 15% of the e-governance project has attained success in all the aspects. The authors have also examined that improper planning incorrect cost estimation, etc are some of the factors which are responsible for the failure of e-governance projects. GDC (Government Data Centre) is the most important component of well-developed e-governance infrastructure. In this study they have designed an improved service delivery & cost effective framework that will be useful for the e-governance projects & delivery mechanism in India by using virtualization, consolidation & cloud computing, adoption of free and open source software.

Nikita Yadav, V.B. Singh (2014): In this paper the latest trends of technology that is being adopted in many countries has been examined. The paper has also provided a mechanism for improving e-governance service by including recent technologies like Open source Software(OSS), and Cloud computing. They concluded that e-governance has made the working of the government more efficient, and more transparent to the citizens.

III. DATA COLLECTION AND METHODOLOGY

3.1 DATA COLLECTION

PRIMARY DATA: It is collected through questionnaire. The questionnaire consists of close-ended, multiple choice, and 5-point likert scale questions.

SECONDARY DATA: The data has been collected through articles, journals, magazines and websites.

The research study had a sample size of 110 respondents from the entire sample group. The questionnaire was forwarded to the respondents were completed and sent back. There were no incomplete responses to the questionnaire sent as all the questions were to compulsorily filled before submitting the same.

3.2 METHODOLOGY

The following Statistical Tools were used for the statistical study:

- Percentage Analysis
- Structural Equation Modelling (SEM)

IV. RESULTS

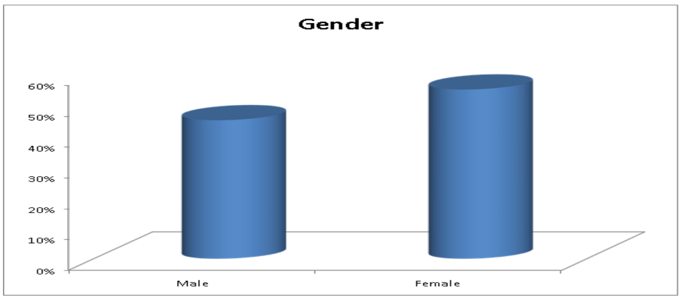
4.1 PERCENTAGE ANALYSIS

One of the simplest methods of analysis of data that is widely use is the percentage analysis method. It is the traditional statistical tool. Through the use of percentage analysis, the data are reduced in the standard form with the base equal to 100% which also facilitates relative comparison. In this study, the percentage analysis is been used for categorizing the response in a defined form for the demographic factors and also for the factors which is important for the study.

DEMOGRAPHIC CHARACTERISTICS

GENDER DISTRIBUTION

Gender	No. of. Respondents	Percentage
Male	49	45%
Female	61	55%



From the above table it is clear that majority of the people who have responded to the research are Female (55%). Therefore it is understood that adoption of e-governance services has created a major impact in the minds of female as compared to male.

OTHER IMPORTANT FACTORS

TRUST ON E-GOVERNANCE SERVICES

Based on trust	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	No	%	No	%	No	%	No	%	No	%
E-gov websites are trustworthy	15	14	61	55	31	28	2	2	1	0.9
Enables privacy and security	17	15	56	51	36	33	1	0.9	-	-
Better in terms of IT	20	18	48	44	34	31	8	7	-	-
Improves image of govt	16	15	65	59	27	25	2	2	-	-

The table clearly represents that almost all the components under trust has received positive response. The percentage of people who have agreed the components are high comparatively.

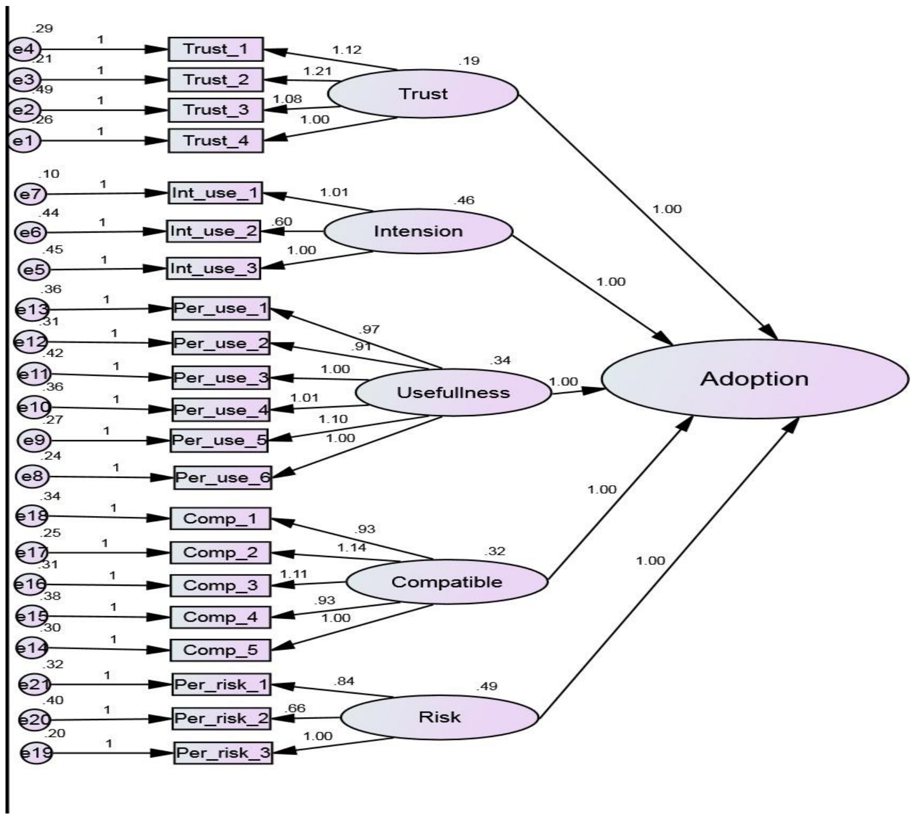
AMOS (STRUCTURAL EQUATION MODEL)

Amos is the powerful structural equation modelling software that enables to support the research and theories by extending standard multivariate analysis methods, including regression, factor analysis, correlation, and analysis of variance. With the help of Amos, it is very easy to build attitudinal and behavioural models that reflect the complex relationship more accurately than with the standard multivariate statistics techniques using either an intuitive graphical, or programmatic use interface.

LIST OF HYPOTHESIS

S.No	FACTOR	HYPOTHESIS
1	Trust factor	H0: Trust has no impact on adoption of e-governance services
2	Intension to use factor	H0: Intension to use has no impact on adoption of e-governance services
3	Perceived usefulness factor	H0: Perceived usefulness has no impact on adoptionof e-governance services
4	Compatibility factor	H0: Compatibility has no impact on adoption of e-governance services
5	Risk factor	H0: Risk has no impact on the adoption of e-governance services

CONCEPTUAL FRAMEWORK OF LEVEL SATISFACTION



Under this model of Amos the relationship is tested between each factor such as Trust, Intension to use, Perceived usefulness, Compatibiliy, and Risk.

STANDARD REGRESSION WEIGHTS

			Estimate
Trust_4	<---	Trust	.649
Trust_3	<---	Trust	.556
Trust_2	<---	Trust	.752
Trust_1	<---	Trust	.670
Int_use_3	<---	Intension	.714
Int_use_2	<---	Intension	.519
Int_use_1	<---	Intension	.905
Per_use_6	<---	Usefullness	.768
Per_use_5	<---	Usefullness	.776
Per_use_4	<---	Usefullness	.700
Per_use_3	<---	Usefullness	.667
Per_use_2	<---	Usefullness	.692
Per_use_1	<---	Usefullness	.684
Comp_5	<---	Compatible	.719
Comp_4	<---	Compatible	.648
Comp_3	<---	Compatible	.747
Comp_2	<---	Compatible	.793
Comp_1	<---	Compatible	.671
Per_risk_3	<---	Risk	.842
Per_risk_2	<---	Risk	.590
Per_risk_1	<---	Risk	.723
Adoption	<---	Trust	.323
Adoption	<---	Intension	.507
Adoption	<---	Usefullness	.433

Adoption	<---	Compatible	.422
Adoption	<---	Risk	.523

VARIANCES

	Estimate	S.E.	C.R.	P	Label
Trust	.188	.057	3.271	.001	
Intension	.462	.135	3.429	***	
Usefullness	.338	.075	4.478	***	
Compatible	.321	.080	4.029	***	
Risk	.492	.120	4.098	***	
e1	.258	.046	5.638	***	
e2	.489	.077	6.342	***	
e3	.209	.049	4.272	***	
e4	.292	.054	5.419	***	
e5	.445	.102	4.381	***	
e6	.445	.067	6.648	***	
e7	.103	.084	1.225	.221	
e8	.235	.041	5.715	***	
e9	.270	.048	5.620	***	
e10	.361	.058	6.274	***	
e11	.420	.065	6.462	***	
e12	.305	.048	6.324	***	
e13	.360	.056	6.368	***	
e14	.300	.051	5.915	***	
e15	.385	.060	6.402	***	
e16	.313	.055	5.647	***	
e17	.246	.049	5.052	***	
e18	.341	.054	6.269	***	
e19	.201	.084	2.392	.017	
e20	.402	.065	6.224	***	
e21	.315	.070	4.489	***	
e17	.246	.049	5.052	***	
e18	.341	.054	6.269	***	

e19	.201	.084	2.392	.017
e20	.402	.065	6.224	***
e21	.315	.070	4.489	***

- From the above table it can be stated that every 1 unit increases in trust and intension there will be .188 and .462 unit increase in the adoption of e-governance services.
- For every 1 unit increase in usefulness and compatibility there will be .338 and .321 unit increase in the adoption of e-governance services.
- For every 1unit increase in risk there will be .492 unit increases in the level of adoption of e- governance services.
- Hence it can be concluded that trust has a significant impact on the adoption of e-governance services with p "value 0.001. Therefore the null hypothesis gets rejected.
- Intension to use has a significant impact on the adoption of e-governance services with the p "value equal to 0.05 (***). Therefore the null hypothesis gets rejected.
- Perceived usefulness has a significant impact on the adoption of e-governance services with the p "value equal to 0.05(***). Therefore the null hypothesis gets rejected.
- Compatibility has a significant impact on the adoption of e-governance services with the p "value equal to 0.05 (***). Therefore the null hypothesis gets rejected.
- Risk has a significant impact on the adoption of e-governance services with the p "value equal to 0.05(***). Therefore the null hypothesis gets rejected.

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	42	788.984	189	.000	4.175
Saturated model	231	.000	0		
Independence model	21	1508.512	210	.000	7.183

The chi-square for the model is also called the discrepancy function, likelihood ratio chi-square, or chi-square goodness of fit. In AMOS, the chi-square value is called CMIN. If the chi-square is not significant, the model is regarded as acceptable. In SEM a relatively small chi-square value supports the proposed theoretical model being tested. In this model, the value is 788.984 and is small compared to the value of the independent model i.e. 1508.512. Hence the value is moderately good.

Also the CMIN/DF value should be equal to or lesser than 5 to accept that there is a good fit of the model. In this research the CMIN/DF value is 4.175, which is lesser than 5. Therefore we can say that there is a good fit of the model.

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.263	.577	.483	.472
Saturated model	.000	1.000		
Independence model	.293	.181	.099	.165

The RMR, also called as the RMS represents the square root of the average or mean of the covariance residuals – the difference between corresponding elements of the observed and thepredicted covariance matrix. Zero represents a perfect fit. But the values equal to or less than 0.1 represents an acceptable good fit. In this research, the value is 0.263, which indicates a good fit. Therefore we can say that there is a moderately good fit of the model with the data.

PARSIMONY – ADJUSTED MEASURES

Model	PRATIO	PNFI	PCFI
Default model	.900	.429	.484
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

The PNFI value should be equal to or greater than 0.5 for a good fit. The value in this paper is0.429. Thus, we can say that there is a good fit of the model. The value of PCFI should be greater than or equal to 0.5 for a good fit of the model. The PCFI score in this research is 0.484. Thus there is a good fit of the model to the data.

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.171	.158	.183	.000
Independence model	.238	.227	.250	.000

The RMSEA is currently the most popular measure of model fit and is now reported in virtually all papers that use CFA or SEMand some refer to the measure as the “Ramsey”. Values closer to 0 represent a good fit. In theabove table, the RMSEA for default model is 0.171 which is a moderately fit model.

V. CONCLUSION

E-governance will facilitate an open government and access to the information and knowledge by providing transparent and open dealing in government services through simultaneous use of infinite, expandable, diffusive, and instant transmission of information. E-governance is a precondition for a good and transparent administration with e-democracy backed by e-government acting as the prime mover for the economic growth. Government role in the e-governance lies in developing high capacity communication infrastructure, linking the communities locally and globally, enhancing the potential of the individuals through knowledge sharing, developing self-confidence and self-respect. The process of introduction of IT plays an important role in the development of e-governance services. It is not one simple of automating the manual process. It has to go in tandem within the overall existing manual process so as to minimize the benefits for the use of new technology. By adapting to the e-governance services at large, people will then be able to bring a radical change in the society.

REFERENCES

[1] Kriti Priya Gupta, Swati Singh and Preeti Bhaskar (2018), "Citizen's perception on benefits of e-governance services", International Journal Vol.10, No.1

[2] Dr. B. Ramadoss, Ram Palanisamy (2015), "Issues and Challenges in Electronic Governance Planning", International Journal 1(3):253-272

[3] Kiran Yadav, Sanatan Tiwari (2014), "E-Governance in India: Opportunities and Challenges", Research India Publications, Volume 4, pp.675-680

[4] Dr. Pardeep Mittal, Amandeep Kaur (2013), "E-Governance – A challenge for India", International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 2, Issue 3

[5] Puneet Kumar Dharminder Kumar Narendra Kumar (2013), "Improved Service Delivery and Cost Effective Framework for e-Governance in India", International Journal of Computer Applications (0975 – 8887) Volume 74– No.2

[6] Nikita Yadav, V. B. Singh (2012), "E-Governance: Past, Present, and Future in India", International Journal of Computer Applications (0975 – 8887) Volume 53– No.7

[7] Mithun Barua (2012), "E-Governance adoption in government organization of India", International Journal of Managing public sector Information and Communication Technologies,Vol. 3, No. 1

PRIVATE LABEL GROCERIES: A STUDY ON PERCEPTION OF CUSTOMERS IN CHENNAI

Dr. M K Shakila[1], Dr. Srividya Prathiba[2]
[1]Research Scholar. M.O.P.Vaishnav College For Women, Chennai.
, [2]Associate Professor, M.O.P.Vaishnav College For Women, Chennai.

ABSTRACT

Private label brands have been a major contributing factor to the bottom of any Retail organisation. Consumers get choices of private label, national and International Brands. The study looks into different attributes that customers prefer to go for a private label brand.

Key words: Private label brands, customer perception, attributes, Quality, price

I. INTRODUCTION

There is no standard definition for private labels. Private labels are the array of products which are sold under the brand owned by the retailers. A private label is a product or brand with the label of the retailer or wholesale group products, which are being distributed exclusively in their own stores with the labels owned by them.

Private label brands are the products which are produced by a manufacturer but are sold in retail under the name of another company (Burton et al., 1998). The Private labels are the retailer's creation of a unique product line with strong point of differentiation that distinguishes them from their competitors by selling the product under their own name and license (Abernathy et al., 1999). A private label brand (PLB) is defined as a brand of the ownership of the dealer or the wholesale trader for a line of the diversity of products under its sole or the controlled distribution (Nielsen, 2005). The private labels are the brands which owned and sold in retail, at the same time distributing it in the retail channel (Lincoln & Thomassen, 2009, p. 20). Private label brands are normally manufactured by a third party with licensing by the retailers (Beneke, 2010). Store brands are the only brand the retailers must assume full responsibility including the evolution, the supply and storage of merchandising and marketing.

II. REVIEW OF LITERATURE

The first study concerning the private label brands leads to the first of the confrontation with the importance of private labels and their strategic importance from the point of view of the retailers (Stern, 1966). With the growth of retailers, the number of research on the Private Label has increased. As a result, many studies have been made as regards the fulfilment of the market to the private label brands (Ailawadi, 2001) and of differences and the competition between private label brands and national brands (Baltas, 1997; Richardson et al., 1994). Private labels as a strategy aimed at the improvement of the image of the store and the profitability (Quelch & Harding, 1996). Private Labels also leads to a better store differentiation (Ailawadi, 2001).

Richardson et al. (1994) argue that consumers' propensity to purchase private labels depends demographic factors, such as income, family size, age and education; individual difference variables, such as the degree of reliance by the consumer on extrinsic cues and the consumers' tolerance of ambiguity; and consumer perceptions of the particular category, as well as the degree of consumer knowledge about the category.

In terms of quality and packaging enhancements, Private label products have significantly improved and it makes the private labels analogous to the national brands. Private label producers react to consumers' perceptions and change their marketing strategies. Nowadays, private labels tend to focus more on the innovative ideas (Quelch & Harding, 1996).

The main factors that favour a large market share for private labels are high quality relative to the national brand, low variability of quality of private labels, high product category sale, high gross margins and low national advertising expenditures (Dhar & Hoch, 1997). Since the Private labels are falling under the roof of the retailers, they are for all intents and purposes being upheld in aggregation with all company promotions (Berry, 2000). The introduction of Private labels generates a decrease in the wholesale and Retail price of the leading National Brand, a decrease in promotion activities of the National Brand (Chintagunta et al., 2002).

Household penetration is defined as households that bought a brand as a percentage of total households that bought the product category. Baldinger et al. (2002) highlighted on the importance of household penetration for a private label to understand its acceptance, growth and development. Penetration of the Private Label is made possible by the price, assortment, and quality of the product, in comparison to the National Brand's price, assortment, and quality.

Davidsz et al. (2003) explained that a Private Label has the ability to succeed when the product contains the characteristics that the consumer perceives the product to be a low-price/low risk; the product is highly perishable; the product does a high volume; and the category contains lack of variety of brands and/or products.

The cost effectiveness of the private label brands can be attributed to the fact that private label brands often being imitations of manufacturer brands. As a result, the low research and development costs helps the retailers in their ability to charge a reduced price (Davies & Brito, 2004). Also, the cost of test marketing can be lower for the private label brands as the products can be test marketed in their own stores. This further contributes in lowering the research and development costs. Above all, the reduction in advertising expenses has the greatest impact on the price of the private label brands.

Walker (2006) suggests that the consumer quality perceptions on the private label brands are negatively impacted due to the lower price. Thus, the customers view the private label brands as the inferior alternative of the national brands.

In recent decades, the gap in the quality of Private Label and National Brand is narrowing with time. This is because of the fact that the Retailers are emphasizing more on the quality (Abhishek & Koshy, 2008). The Retailers have now started providing depth in their product category in terms of size, colours, features, design, packaging, style and other product attributes. They also brought out consumer perception about the brand in terms of the advertising. A brand with higher expenditure on advertising is perceived by consumers as a high quality Brand. With the Private label the Retailer can have better bargain power with National Brands. For the customers, the price competitiveness of the private labels over the National Brands is the reason of its growth (Debjani, 2011).

There is a link between the income-level of customers & choice of private label cola. Private label colas were found to be more popular in less affluent areas of the country (Chakraborty, 2011). Premium brands of colas have taken years to create a strong and favourable image thus loyal customer base while customers' perception about private label colas was found to be of negative attitudes & unfavourable perceptions about price, quality, taste, packaging and promotion. Diallo et al. (2015) studied the dimensions of hedonic value and found that different aspects of shopping value, i.e. "quality, price and emotional" bear an encouraging and favourable influence towards the customers' maintenance and patronage toward the store.

III. RESEARCH DESIGN

This study is descriptive and the data was collected through a structured questionnaire. The population for this study consists of the customers who are buying groceries in organised retail stores in Chennai. The sampling method used in this study is convenient sampling method. The responses from 250 respondents were collected and were used in the data analysis. The demographic summary of the respondents is shown in table 1.

TABLE 1: DEMOGRAPHIC SUMMARY

		Count	Percentage
Gender	Male	122	48.8
	Female	128	51.2
Avg. Household Income	Upto 10,000	33	13.2
	Between 10,001 and 20,000	42	16.8
	Between 20,001 and 30,000	45	18
	Between 30,001 and 40,000	54	21.6
	Between 40,001 and 50,000	45	18
	Above 50,000	31	12.4
Education	Under Graduate	142	56.8
	Post Graduate	85	34
	M.Phil/Ph.D.	23	9.2
Occupation	Home Maker	36	14.4
	Salaried Domestic Pvt. Ltd.	71	28.4
	Salaried in MNC	75	30
	Salaried in Public Sector (Govt.)	48	19.2
	Self Employed	20	8

RESEARCH OBJECTIVES

The objectives of this study are

- Analysing the preference of the customers with respect to the attributes of groceries
- Identifying the extent to which the customers prefer the private label brands against the national brands
- Analysing the level of satisfaction with individual attributes of the private label brand groceries
- Analysing the degree to which the satisfaction on individual attributes contribute to the overall satisfaction private label brand groceries

IV. DATA ANALYSIS AND INTERPRETATION

Preference on Attributes

Considering the groceries, the major factors that the customers look for are price, quality, availability, convenience and brand-image. The factors have been ranked by the respondents according to the degree of importance of each factor compared to the other factors. The summary of the ranks has been shown in table 2.

TABLE 2: RANKING OF FACTORS PREFERRED

	Mean Rank
Quality	1.62
Price	3.05
Convenience	3.07
Availability	3.57
Brand Image	3.69

The table shows that the customers have high preference towards the quality of the groceries which is followed by price. The brand image gets the last position. Further, the ranking of these factors have been compared with two groups of the customers based on the amount spent for the groceries every month. It is found that there is no difference between the orders of the preference of the factors with respect to the average monthly spending on groceries. However, the mean rank given for the factors are found to be varying as shown in table 3

TABLE 3: RANKING OF FACTORS PREFERRED WITH MONTHLY SPENDING

	Average Monthly Spending	
	Less than Rs. 6000	Rs. 6000 and above
Quality	1.66	1.58
Price	3.01	3.10
Convenience	3.02	3.12
Availability	3.62	3.52
Brand Image	3.70	3.69

Preference on Private Label Brands

The preference of the respondents i towards the private label brands and national brands in terms of groceries has been recorded. The summary of their preference has been shown in table 4.

TABLE 4: PREFERENCE ON PRIVATE LABEL BRANDS AND NATIONAL BRANDS

	Count	Percent
Mostly Purchasing Private Label Brands	62	24.8
Purchase Private Label as well as National Brands depending on the product	163	65.2
Mostly Purchasing National Brands	25	10.0
Total	250	100.0

The table shows that about 24.8% of the respondents mostly prefer private label brands while 10% of the respondents mostly prefer national brands for groceries. 65.2% of the respondents choose private label brand or national brand based on the product they are purchasing.

Satisfaction with Private Label Brands

The level of satisfaction with respect to each the attributes of the private label brands has been analysed using a five point scale, where 1 denotes highly dissatisfied, 2 denotes dissatisfied, 3 denoted neither satisfied nor dissatisfied, 4 denotes satisfied and 5 denotes highly satisfied. The summary of these responses has been shown in the table

TABLE 5: DESCRIPTIVE SUMMARY OF SATISFACTION ON PRIVATE LABEL

	Mean	Std. Deviation
Price	3.72	.842
Quality	3.60	.781
Reliability	3.33	.804
Packaging	3.29	.737

Ease to Locate Products	3.43	.825

The table shows that the respondents are more satisfied with the price of the private label brands compared to the other factors. The packaging of the private label groceries is having the least satisfaction.

In addition to the satisfaction on the individual factors, the overall satisfaction of the respondents with respect to the private label grocers has also been recorded. In order to find out which variable causes the overall satisfaction more compared to the other variables, the multiple-linear regression has been performed with the overall satisfaction as dependent variables and the satisfaction on the individual factors as independent variables. The summary of the regression model is shown in table 6.

TABLE 6: REGRESSION MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.871	.759	.754	.29977

The model fit of the regression model is explained by the R Square value. R Square value of the regression model is 0.759. Since the model includes multiple dependent variables, it is meaningful to consider the Adjusted R square, with the adjustment done for the number of predictors. Here, the adjusted R Square is 0.754. Thus, the model is found to be fit.

The result of the ANOVA for regression model has been shown in table 7. ANOVA provide information about levels of variability within a regression model. Thus it forms a basis for tests of significance.

TABLE 7: ANOVA TABLE FOR REGRESSION MODEL

	Sum of Squares	df	Mean Square	F	Sig.
Regression	69.209	5	13.842	154.031	.000
Residual	21.927	244	.090		
Total	91.136	249			

In this regression model, the significance of the F statistics is 0 which is less than 0.05 and thus the model is significant. The summary of the coefficients in the regression model has been shown in table 8.

TABLE 8: REGRESSION COEFFICIENTS SUMMARY

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-.094	.134		-.704	.482
Price	.301	.026	.419	11.681	.000
Quality	.205	.026	.265	7.974	.000
Reliability	.085	.026	.113	3.262	.001
Packaging	.178	.028	.217	6.362	.000
Ease to Locate Products	.219	.027	.298	8.241	.000

From the table, it can be seen that the satisfaction with respect to price is the major predictor of the overall satisfaction. The least importance predictor is the reliability that the customers get out of the private label groceries. The structural representation of the regression model has been represented in figure 1.

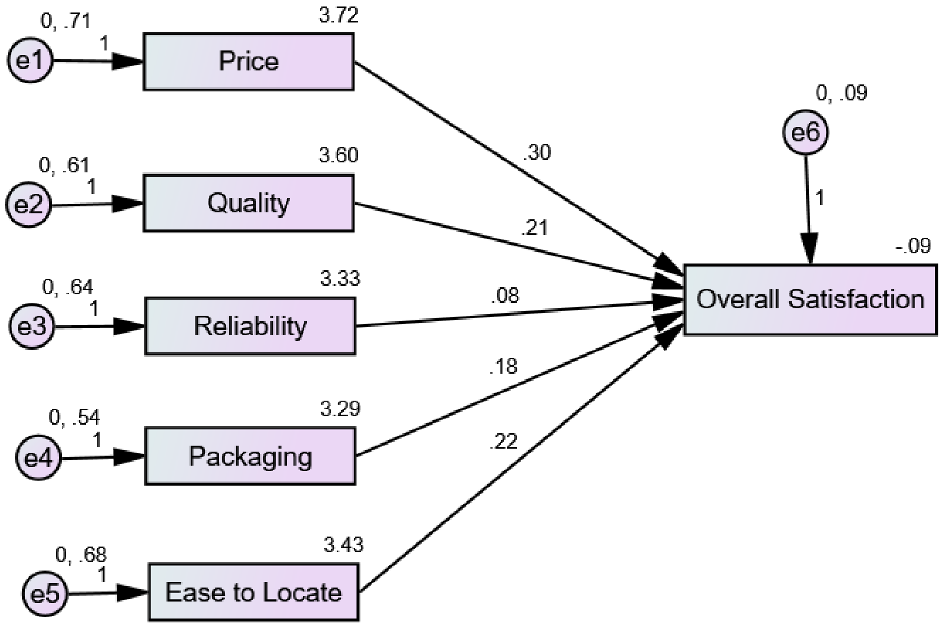


FIGURE 1: REGRESSION MODEL OF SATISFACTION WITH PRIVATE LABEL GROCERIES

Findings and Discussion

The customers are found to have high preference towards the quality of the groceries, whether it is private label or national brand. The next highly preferred attribute is the price of the groceries. This order of the preference remains same across the different level of the spending done by the customers. When it comes to groceries, the brand image has least preference. Only 10% of the customers are blindly going for private label brands in most occasions. About 65% of the customers select the private label brands or the national brands based on the product they purchase. They are not blindly influenced by the preconceived idea about the national brand in general.

With respect to the level of satisfaction, the customers are more satisfied with the pricing of the private label brands in general. This means that the private label brands are reasonable priced comparing to the quality of the products they provide. This is followed by the quality. The price and quality are above the marginal mean of the level satisfaction of all the factors, while the other factors such as reliability, ease to locate the products and the reliability are below this marginal mean.

Further, with regression model, it has been found that the satisfaction with respect to the price contributes more towards the overall satisfaction of the customers, considering the private label brands. This is followed by the ease to locate the products. This is because of the fact that the retailers make their private label brand to be accessed easily. The satisfaction with respect to quality gets third place in predicting the overall satisfaction.

V. CONCLUSION

This study has been carried out with the intention of analysing the customers' perception towards the private label grocery brands. The study finds that most of the customers are giving equal preference towards the private label brands and national brands depending upon the product they are purchasing. The quality of the groceries is the highly preferred attribute by the consumers and the second highly preferred is price. However, the satisfaction is found to be the major predictor of the overall satisfaction with respect to the private label brands. This means that they expect a trade off in price when prefer private label brands to national brands. Also, unless the national brands provide the high quality products, the brand image will be less significant. Further, the private label brands are having more scope for differentiating themselves from the national brands and other private label brands, providing the high quality product.

The population of this study is the customers of groceries in Chennai only. The implications of this study are limited to the markets which are having similar characteristics of Chennai. However, there could be some difference due to the cultural changes in other regions. For researchers, it is recommended that this study can be extended to other regions covering the major cities in India.

REFERENCES

[1] Abernathy, F. H., Dunlop, J. T., Hammond, J. H., & Weil, D. (1999).

[2] *A Stitch in Time: Lean Retailing and the Transformation of Manufacturing--Lessons from the Apparel and Textile Industries*. Oxford University Press.

[3] Abhishek, & Koshy, A. (2008). *Quality Perceptions of Private Label Brands: Conceptual Framework and Agenda for Research* (IIMA Working Paper No. WP2008-02–04). Indian Institute of Management Ahmedabad, Research and Publication Department. https://econpapers.repec.org/paper/iimiimawp/wp02088.htm

[4] Ailawadi, K. L. (2001). The retail power-performance conundrum: What have we learned? *Journal of Retailing*, *77*(3), 299–318. https://doi.org/10.1016/S0022-4359(01)00047-1

[5] Baldinger, A. L., Blair, E., & Echambadi, R. (2002). Why Brands Grow.

[6] *Journal of Advertising Research*, *42*(1), 6–14. https://doi.org/10.2501/JAR-42-1-6-14

[7] Baltas, G. (1997). Determinants of store brand choice: A behavioral analysis. *Journal of Product & Brand Management*, *6*(5), 315–324. https://doi.org/10.1108/10610429710179480

[8] Beneke, J. (2010). Consumer perceptions of private label brands within the retail grocery sector of South Africa. *African Journal of Business Management*, *4*(2), 203–220. https://doi.org/10.5897/AJBM.9000150

[9] Berry, L. L. (2000). Cultivating service brand equity. *Journal of the Academy of Marketing Science*, *28*(1), 128–137. https://doi.org/10.1177/0092070300281012

[10] Burton, S., Lichtenstein, D. R., Netemeyer, R. G., & Garretson, J. A. (1998). A scale for measuring attitude toward private label products and an examination of its psychological and behavioral correlates. *Journal of the Academy of Marketing Science*, *26*(4), 293. https://doi.org/10.1177/0092070398264003

[11] Chakraborty, S. (2011). Perceptions and Buyer Behavior Towards Private-Label Colas: An Exploratory Study to Understand the Views of the Store Managers of United Kingdom. *IUP Journal of Marketing Management*, *10*(1).

[12] Chintagunta, P. K., Bonfrer, A., & Song, I. (2002). Investigating the Effects of Store-Brand Introduction on Retailer Demand and Pricing Behavior. *Management Science*, *48*(10), 1242–1267. https://doi.org/10.1287/mnsc.48.10.1242.274

[13] Davidsz, B., Waradani, K., & Cavagnaro, E. (2003). Introducing a private label: Success and failure factors for multi-brand apparel retailers. *Proceedings from the 12 Th European Association for Education and Research in the Commercial Distribution Conference, Paris, France*.

[14] Davies, G., & Brito, E. (2004). Price and quality competition between brands and own brands: A value systems perspective. *European Journal of Marketing*, *38*(1/2), 30–55. https://doi.org/10.1108/03090560410511113

[15] Debjani, . (2011). Changing face of apparel retail in India. *Retail Biz*, *8*(11), 9–14.

[16] Dhar, S. K., & Hoch, S. J. (1997). Why Store Brand Penetration Varies by Retailer. *Marketing Science*, *16*(3), 208–227. https://doi.org/10.1287/mksc.16.3.208

[17] Diallo, M. F., Coutelle-Brillet, P., Rivière, A., & Zielke, S. (2015). How Do Price Perceptions of Different Brand Types Affect Shopping Value and Store Loyalty? *Psychology & Marketing*, *32*(12), 1133–1147. https://doi.org/10.1002/mar.20851

[18] Lincoln, K., & Thomassen, L. (2009). *How to Succeed at Retail: Winning Case Studies and Strategies for Retailers and Brands*. Kogan Page Publishers.

[19] Nielsen, A. (2005). The Power of Private Label. An Insight into Consumer Attitudes. *ACNielsen Global Study*.

[20] Quelch, J. A., & Harding, D. (1996). *Brands versus Private labels-Fighting to win”*.

[21] Richardson, P. S., Dick, A. S., & Jain, A. K. (1994). Extrinsic and Intrinsic Cue Effects on Perceptions of Store Brand Quality. *Journal of Marketing*, *58*(4), 28–36. https://doi.org/10.1177/002224299405800403

[22] Stern, L. W. (1966). The New World of Private Brands. *California Management Review*, *8*(3), 43–50. https://doi.org/10.2307/41165683

[23] Walker, J. (2006). Bye-Bye Big Brands. *BRW*, *28*(17), 23–23.

SOCIAL MEDIA MARKETING WITH REFERENCE TO OMNICHANNEL MARKETING

Ms. K Nikkath Thaseen[1], Dr. R A Rabika Begum[2]
[1]Research Scholar, Department of Commerce
[2]Associate Professor, Research Supervisor, Department of Commerce,
M.O.P. Vaishnav College for Women (Autonomous), Chennai

ABSTRACT

Social media is a powerful platform. And being a business in this digital era can be of great benefit if this opportunity is used to the fullest by Entrepreneurs, Marketers, or even bloggers. Creating an extremely influential social media presence is the key to persuading and appealing the content that would connect with the audience instantly. Social media is a powerful revolution that has changed our lives all around; it has changed the way that we socialize, conduct our businesses, engage in political affairs, build professions, and set job recruitment. A brilliant social media strategy and innovative marketing will find a way from traditional social media platforms and continuously find new ways of reaching target customers.

I. INTRODUCTION

- Digital media means information shared through a digital device or on the screen including TV and Radio. Digital media can be created, viewed, distributed, modified, listened to, and preserved on digital electronic devices. Digital marketing uses both online and offline digital means to reach out to the target audience. (digital media is unilateral information social media is bilateral media)
- Digital media include software, digital images, digital video, video games, web pages and websites, social media, digital data and databases, digital audio such as MP3, electronic documents, and electronic books.
- Digital media often contrasts with print media, such as printed books, newspapers, and magazines, and other traditional media, such as photographic film, audio tapes, or video tapes.
- Technology and scientific advancement have their own standards, the perception of buyers differs between generations and the adaptability from conventional to convenience marketing which is needed to be understood.
- Change in cost of living, lifestyle, expectations, and attitude varies as per the age and have theirs on omni-channel marketing.

OMNI CHANNEL MARKETING

Omni-channel marketing is the digital marketing model which enables marketers to get a clear picture of their user journey. With the introduction of Google's Web + App feature, marketers can easily see how and where users are interested in a specific brand.(omni means all) It is

a multichannel approach to sales that seeks to provide customers with a seamless shopping experience.
An omnichannel retail experience will include brick-and-mortar stores, app-based options, and online platforms. For instance, a clothing brand might sell its products on its website, app, Instagram's "Shopping" tab, Amazon, and brick-and-mortar stores. Omni-shoppers are consumers who use technology for the full range of shopping experiences – online from a desktop or mobile device, by telephone, or in a brick-and-mortar store.

With the growth in digitization, consumers today interact with firms across online, mobile, and offline media channels. This, in turn, has led to a shift towards "omnichannel" marketing, which emphasizes a unified consumer experience rather than just facilitating transactions. Omnichannel marketing in this article focuses more on the customer side and the ensuing impact on revenues rather than on the supply-side costs that firms may incur in achieving such integration.

The firm can identify a consumer from multiple databases. For example, a subscriber of The Hindu, would log in to both the website and the app using the same email login, allowing for perfect identification of the same user.

A machine learning and other predictive technologies are primarily focused on allowing firms to make predictions about an individual customer's future behavior. For example, imagine that a customer is browsing a web supermarket storefront, and a predictive analytic suite that uses privacy-compliant aggregated and anonymized data that associates mobile data with desktop website–based data predicts that, in line with her browsing behavior, she is also likely to be interested in contraception. The customer may still find such a suggestion intrusive, even though the suggestion itself was made using privacy compliant analytics.

FINDINGS

The findings from this study provide strong evidence that customer satisfaction is influenced massively by lifestyle, individual preferences, as well as website usability and capabilities.

SUGGESTIONS

A specific, realistic and measurable goal is must. Measurable goals help to track the business progress towards each goal. Moreover, omnichannel goals should tie in with the overall sales, marketing and productivity goals.
Audit of current social media status requires figuring out who is currently connecting to via social media, which social media sites the target market uses and a comparison with the competitor‟s strategies.

The content strategy should include: a) What type(s) of content company intend to post and promote via social media? b) How often the content is posted? c) Who is target audience for each type of content? d) Who will create the content? e) How will be the content promoted?

II. REVIEW OF LITERATURE

Lazaris*, A. Vrechopoulos ELTRUN (2014) in their study on MULTICHANNEL TO "OMNICHANNEL" RETAILING, approached the topic by conducting exploratory empirical research attempts that could support researchers to obtain important knowledge and understanding of consumer behavioral patterns and characteristics in this emerging landscape.

Syed Asif Raza and Srikrishna Madhumohan Govindaluri (2021) in their study on OMNI-CHANNEL RETAILING IN SUPPLY CHAINS, examined unique contributions by using advanced tools from network analysis along with the standard bibliometric analysis tools to explore the current status of Omnichannel research, identify existing themes and the guidance for potential areas of future research interest in Omnichannel

Mosquera Ana (2019) in his study on OMNICHANNEL SHOPPER SEGMENTATION IN THE FASHION INDUSTRY, identified groups of Omni shoppers based on their main motivations (usefulness, enjoyment, and social influence); and, secondly, characterized the Omni-shopper clusters.

Nima Barhemmati and Azhar Ahmad December (2015) identifies the way Social media marketing impacts the commerce of a brand or establishment with its customers through the virtual world directly and laterally attached with the emotional
bond participated between the company and client. Also, the result of this engagement relates to the purchase behaviour of those customers through commitment and emotional evaluation of the client consequently.

III. RESEARCH GAP

- A wide gap between performance and expectations and they can turn wider if remained unchecked. All the voice solutions and call centers are prepared to stay with and convince customers to meet their demand, reverting to their "failsafe phone" method, when substitute channels fail to meet customer needs.
- The research focuses on digital natives and does not address differences that may vary by specific messages shared across generational groups or ethnicity.
- More research is also necessary, to examine the effects of digital consumption versus content creation behaviors.
- Marketers should integrate the omnichannel touchpoints deemed to be most effective for each target based on specific campaign goals.
- The papers address a gap in marketers' understanding of how digital natives perceive social referral campaigns (give thanks to positive feedback and respond to complaints) targeting their social circle via various omnichannel touchpoints.

OBJECTIVES

- To study the factors which influence the consumers to purchase the product through omnichannel marketing.
- To identify the significance of social media in omnichannel marketing
- To analyze the impact of omnichannel marketing on consumer purchase behavior.
- To find the overall satisfaction of the consumers for omnichannel marketing services.
- To study the awareness of omnichannel among consumers.

IV. RESEARCH DESIGN/METHODOLOGY

- Primary data and Secondary Data
- Software proposed to be used – SPSS
- Sample size – 500 Respondents.
- Target sample–Consumers purchasing Products through omnichannel marketing services.
- Proposed to be Collected through a structured questionnaire.
- Convenience sampling technique
- The statistical tools – chi-square, T-Test, Annova, Mean, Standard Deviation, Correlation and Regression, and factor analysis.

V. CONCLUSION

Consumers maintain a very clear view regarding what they anticipate from branded products in views of customer service, and mostly, they feel let down by companies who fail to meet their expectations. Understanding that the reward for obtaining it correctly includes higher spending, better customer loyalty, and cultivating valuable brand-promoting diplomats, it becomes startling that branded products need not make more efforts to please their customers, but the after-sales service aspects are particularly demanding concerning the real-time, customer service option. There is an increasing need for the speed of work and response to complaints and solutions, and to provide a single stage of contact, regardless of which channel is used.

REFERENCES

[1] I Ding Chiang (September 2017) Client Engagement Behaviour in Social Media Advertising Antecedents and Consequences. Contemporary Management Research Pages 193-216,Vol. 13,No. 3, doi10.7903/ cmr.17673.

[2] Perumal Prasath and Archchana Yoganathen (July 2018) Influence of Social Media Marketing on Consumer buying decision- making process.Article in SLIS Student Research Journal.

[3] Nima Barhemmati and Azhar Ahmad (December 2015) Goods of Social network marketing on consumer purchase through client engagement. Journal of Advanced Management ScienceVol. 3,No.

[4] S.Monika. (Research Scholar) "A Study on Impact of Social Media Marketing on Consumer Buying Behaviour in Chennai City." http://ijariie.com/AdminUploadPdf/A_STUDY_ON_IMPACT_OF_SOCIAL_MED_MARKETING_ON_CONSUMER_BUYING_BEHAVIOUR_IN_CHENNAI_CIT_ijariie10685.pdf

[5] Barefoot, D., & Szabo, J. (2010), "Friends With Benefits: A Social Media Marketing Handbook", San Francisco: No Starch Press.

CONSUMER AWARENESS STUDY ON SUSTAINABLE CONSUMPTION AMONG THE YOUNG GENERATION IN CHENNAI

Dr. Kamatchi Preethi V[1], Ms. Nisha M[2]
[1]Assistant Professor Department of Commerce, M.O.P. Vaishnav College for Women (Autonomous), Chennai.,
[2]Assistant Professor, Department of Commerce, M.O.P. Vaishnav College for Women (Autonomous), Chennai.

ABSTRACT

Today's youth are a part of a crucial target group for intervening in unsustainable overconsumption habits and for setting the path and ideas on responsible living. The study is exploring young people's sustainable consumption behaviour. The study is an empirical study carried out in Chennai among the respondents who belong to the age group from 15 to 34 years of age. The sample size considered for the study is 75. The type of sampling is judgemental sampling, where the data was collected from the respondents who are trying to adapt to sustainable consumption of the products that they purchase and use on a day-to-day basis. The primary data was collected with the questionnaire, constructed with three parts, part one of the questionnaires has demographic questions, part two of the questionnaire has the questions related to the terminologies of the sustainable consumption and green purchase behaviour, part three of the questionnaire has the factors relating to the sustainable consumption behaviour. The secondary data is from the Relevant Books, Journals, Newspapers and Websites. The tools of study used are descriptive statistics, t- test, correlation, regression and factor analysis. The scaling techniques used for the study was Likert scaling. The study revealed that if the young consumers are given a chance or if there was a way to purchase product that are sustainable to environment. They prefer to adapt and be responsible to conceive the environment for their future generations.

Keywords: *Sustainable Consumption, Green Purchase, Environmental Protection, Consumer Behaviour.*

I. INTRODUCTION

In this modern age of digitalization, consumers have access to an ample amount of information regarding a product's quality and benefits, which makes consumers more conscious of their consumption patterns and their impact on social and environmental development. Likewise, marketing strategies have also taken a dramatic leap forward and started focusing on social responsibility, ethics, and environmental protection. The notion of environmental sustainability has created a market niche over several decades and has captured the market of pro-environmental consumers. However, there are still many latent factors that are obstacles to shifting the behaviour of consumers towards buying green products.The present study was conducted to recognize factors that affect the consumers' behaviour when purchasing eco-friendly products.

The idea of sustainable development is linked to the actions and procedures taken by corporations to protect the environment. Significant changes in economic activity in the direction of a more integrated and systemic interdisciplinary approach are also associated with the effective implementation of sustainable development. The various facets of sustainable development address the interconnection of the environment and the socioeconomic system required for economic growth and resource conservation. Additionally, according to Meyer et al. and Meyer and Meyer, a healthy environment is a critical component of a region'senabling environment, which favourably affects company development and economic progress.

As environmental challenges grow, more people are beginning to focus on sustainable development as a way to safeguard both society and the environment. Consumer spending on products and services has skyrocketed over the past ten years, which has resulted in catastrophic environmental degradation and the depletion of natural resources (Chen and Chai, 2010). Global warming, increased pollution, and a reduction in flora and fauna are just a few of the detrimental effects of environmental harm (Chen and Chai, 2010). Many nations throughout the world are starting to recognise this concern and have begun attempting to lessen the negative effects of their commercial activities on the environment. The concept of "sustainable development" has emerged as a result of this realisation and concern for society and the environment.

Environmental ethics are now a significant topic for businesses and consumers alike. The ongoing degradation of the environment has prompted concerns about its protection, which has led to ethical consumption defined as "green consumerism" (Moisander, 2007). Academics and practitioners alike are paying more and more attention to the idea of ethical consumption (Papaoikonomou et al., 2011). Consumer purchasing choices have also altered as a result of the growing focus on environmental ethics and natural environment protection (Kim and Chung, 2011). With time, consumers have begun acting ethically by favouring eco-conscious businesses and eco-friendly products (Nimse et al., 2007). (Han and Kim, 2010, Kim et al., 2013). Consuming sustainably is regarded as one of the broad

This study's primary goal is to evaluate young consumers green purchasing habits. The study focuses on young, educated consumers since young people are both present and future customers, making it essential to understand their purchasing habits. Therefore, the purpose of this study is to close a research gap by reviewing existing research on green consumption and by examining the variables affecting consumers' green purchasing decisions in Chennai.

II. LITERATURE REVIEW

Green shopping is the practise of choosing ecologically friendly products and staying away from harmful ones (Chan, 2001). The most common metrics for measuring green purchasing are green purchase intention and behaviour. The will of customers to buy green items is referred to as their green buying intention. The motivational elements that affect consumers' green purchase behaviour are captured by intentions (Ramayah, Lee, and Mohamad, 2010). Green purchasing practises are viewed as a type of socially responsible behaviour and reflect a complicated form of ethical decision-making. The green customer "considers the public ramifications of his or her private consumption and strives to use his or her purchasing power to bring about social change" as a socially conscious consumer (Moisander, 2007).

A green product is one that meets consumer needs while minimising environmental impact and working to create a more sustainable society (Shamdasami, Chon-Lin and Richmont, 1993). These goods are superior in terms of environmental effect and sustainability. Green products require less packing, use recyclable materials, and are safer for the environment (Chan and Chai, 2010). Organic items, energy-saving lightbulbs, herbal products, eco-friendly washing machines, etc. are a few examples of green products.

Previous research has concentrated on describing the underlying values, attitudeand behavioural intentions toward environmentally friendly products in an effort to explain customer green purchase behaviour (Foxall and Pallister, 2002; Vermeir and Verbeke, 2006; Wheale and Hinton, 2007). The two main theoretical frameworks adopted by the majority of the studies were the theory of reasoned action (TRA) by Ajzen and Fishbein (1980) and the theory of planned behaviour (TPB) by Ajzen (1985). Other hierarchical values-beliefs-attitude-behaviour models were used in a few research.According to TRA (Fishbein and Ajzen, 1980), two fundamental factors—individual attitude and social norms—determine individual behaviour. TPB (Ajzen, 1988) added perceived behavioural control as an additional element influencing individual behaviour. The perceived control one feels they have over their purchase decisions is known as perceived behavioural control. TPB has been used in numerous research to examine customer attitudes, intentions, and purchasing behaviour with reference to green products (Arvola et al., 2008; Smith and Paladino, 2010; Tanner and Kast, 2003; Tarkiainen and S undqvist, 2005).The majority of studies, or the attitude-behavior gap, found a limited correlation between customers' professed positive attitudes toward buying green items and their actual purchase behaviours (Tanner and Kast, 2003; Vermeir and Verbeke, 2008; Webster, 1975; Wheale and Hinton, 2007). The potential of attitudes to predict environmental consumerism is still controversial; most studies indicate that environmental concern or attitude variables fall short of capturing green purchase behaviour (Bamberg, 2003; Hines et al., 1987; Schultz et al., 1995; Scott and Willis, 1994; Tanner, 1999).Since TPB does not take into account the consumer affective component, which was discovered to influence consumer ethical behaviour, it was not deemed a suitable mode of explanation for ethical behaviour in the majority of studies (Magnusson et al., 2003; Padel and Foster, 2005). Additionally, it failed to take into consideration consumers' recurring purchasing patterns (Padel and Foster, 2005; Thogersen and Olander, 2003).Additionally, prior research has not evaluated the impact of numerous contextual elements (such as financial restrictions) that may skew the association between environmental attitudes and behaviour (Mainieri et al., 1997). TPB approach, despite looking at the causes of consumer intents in pre-consumption scenarios, is unable to explain consumer decision-making after the purchase of the product and if they would purchase it in the future (post-purchase behaviour). The attitude-intention-behaviour models also fail to take into account how environmental and situational elements can influence how consumers behave when making purchases. Foxall (1993; Carrington et al., 2010). In order to get over TPB's drawbacks, various studies have suggested some modifications. The reasons for the observed attitude-behaviour contradictions in the context of green purchasing may be explained by these alterations.

There are many ideas that contend that behaviour is not solely influenced by attitude and that there are additional factors that not only influence behaviour but also the strength of the attitude-behaviour relationship. To better explain human behaviour, Guagnano et al. (1995) proposed the Attitude-Behaviour-Context (ABC) paradigm. This model proposes that context, in addition to attitude, influences consumer green behaviour. The link between attitudes and behaviour is strengthened by favourable contextual circumstances while it is weakened by unfavourable contextual elements. Even those with weak environmental attitudes behave sustainably when circumstances are helpful, but even those with extremely favourable attitudes may find it difficult to act sustainably when circumstances are restrictive.The Motivation-Ability-Opportunity (MAO) model was introduced by Olander and Thogersen (1995) to explain customer behaviour. Ability and opportunity were two concepts that the MAO model highlighted as essential prerequisites for green consumer behaviour. The opportunity construct includes facilitating situations or the "chance" to conduct the behaviour, whereas the ability construct includes both habit and task expertise. This model states that customers' favourable attitudes will only result in desired behaviour provided they have the capacity and opportunity to engage in the desired behaviour. For instance, if green products are not readily available, green purchases will not be made. Reciprocal deterministic theory was recently introduced by Phipps et al. (2013) to explain sustainable consumer behaviour.This paradigm placed a strong emphasis on the significance of prior behaviour and saw it as a predictor of future sustainable behaviour. According to the paradigm, individual characteristics like attitude, combined with earlier sustainable actions and sociocultural contexts, influence present and future sustainable behaviour. Thus, it is evident from the explanation above that a variety of other personal and environmental factors, in addition to attitude, can influence consumer behaviour. Additionally, these elements can either improve or diminish the relationship between attitude and conduct.

III. RESEARCH METHODOLOGY

This is an empirical study. The method adopted for data collection is survey through Google forms. The scope of this study is confined to the respondents both male and female in the group 15 to 34 years, residing in Chennai who are consumers who trying to adapt sustainable purchase behaviour. The primary data was collected through structures questionnaire and secondary data was obtained from relevant books, journals, newspapers and websites. The questionnaire consists of 20 questions. Questionnaire consists of the three parts. Part I of the questionnaire consists of three demographic questions which are the age, gender and occupation of the respondents. The second part of the questionnaire consists of the various questions related to Consumer Awareness on Sustainable Consumption and the third part of the questionnaire consists of green purchase behaviour related questions.

OBJECTIVE OF THE STUDY

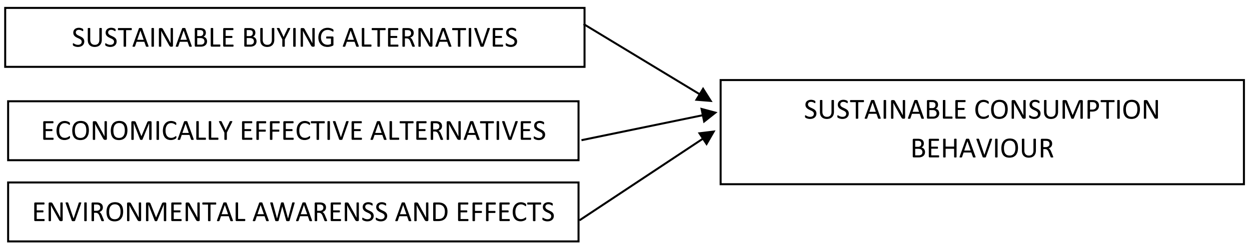
The main objective of the paper is

- To analyse the gender difference and awareness of the sustainable terms among the Young Consumers in Chennai.
- To examine the cause and effect of the individual being responsible to protect the environment and their consumption activities that have an impact on the environment.
- To examine the cause and effect of Possibility to consider a green concern in future purchases and considering "Green" as sacrificing.
- To identify the factors affecting sustainable consumption with respect to food and beverages.

RESEARCH GAP

The present research on sustainable consumption in Chennai City is relatively limited, most studies focus mainly on the awareness of the sustainable consumption, green purchase and factors affection sustainable consumption behaviour and there are no studies on the choice of sustainable consumption behavior, especially in the young people in Chennai among the age group of 15 to 34 years of age.

PROPOSED CONCEPTUAL RESEARCH MODEL



LIMITATION OF THE STUDY

(i) The study was conducted only in Chennai Metropolitan among the younger generation.

(ii) Quantitative study was only adopted.

(iii) The study was conducted among the young generation.

(iv) Time and Cost constraints.

DEMOGRAPHIC PROFILE

TABLE – I: PROFILE OF SAMPLE

SAMPLE PROFILE	GENDER		TOTAL
	MALE	FEMALE	
	7	68	75
AGE			
15 – 24 years	5	63	68
25 – 34 years	5	2	26
OCCUPATION			
Self – Employed	2	8	10
Employed	4	5	9
Without a professional activity	1	55	56
Total			75

Source: Compiled from SPSS Output

RELIABILITY ANALYSIS

The reliability test was conducted for the questionnaire. The Cronbach's Alpha is measured to be 0.672 and it is acceptable questionnaire and table II shows the reliability statistics.

TABLE – II RELIABILITY TABLE

Reliability Statistics	
Cronbach's Alpha	N of Items
.672	20

Source: Compiled from SPSS Output

From the above table, reliability analysis was carried out and it can be seen that the values are above 0.500. Hence, it is good instrument to collect data.

IV. ANALYSIS AND INTERPRETATION

The statistical tool used for the analysis is t – Test, Correlation, Regression and Factor Analysis. After analyzing using the SPSS, the analysis is interpreted accordingly.

t – Test Analysis

The t- Test was conducted to examine the objective of the study is to analyse the awareness of the terms 'Sustainable'/ 'Green' products and 'Sustainable Consumption'/ 'Green Consumption' among the gender who are trying to adapt to the Sustainable Consumer Behaviour, whether they are aware of the terms about Sustainable Consumer Behaviour based on these two hypotheses (H1 and H2) was formulated, analysed and interpreted.

H_1 – There is no significant difference between the Gender and Awareness of the term 'Sustainable'/ 'Green' products.

H_2 – There is no significant difference between the Gender and Awareness of the term 'Sustainable Consumption'/ 'Green Consumption'

TABLE – III t - Test

Awareness of the terms	Gender	N	Mean	SD	t – cal	df	p
'Sustainable'/ 'Green' products	Female	68	1.4286	.78680	-2.017	73	0.057
	Male	7	1.0882	.37597	-1.131	6.285	
'Sustainable Consumption'/ 'Green Consumption'	Female	68	1.4286	.78680	-.471	73	0.639
	Male	7	1.2941	.71360	-.434	7.055	

From the above table III, it can be seen that the significant value (2-tailed) 0.057 is greater than 0.050. Hence, the hypothesis (H_1) is rejected and it can be concluded that there is significant difference between the gender and awareness of the terms on sustainable consumer behaviour. It can be seen that the female respondents are higher and it can be concluded that the female shoppers purchased the sustainable products.

From the above table III, it can be seen that the significant value (2-tailed) 0.639 is greater than 0.050. Hence, the hypothesis (H_2) is rejected and it can be concluded that there is significant difference between the gender and awareness of the terms on sustainable consumer behaviour.

It can be seen that the female respondents are higher and it can be concluded that the female shoppers purchased the sustainable products.

Correlation between the individual being responsible to protect the environment and their consumption activities that have an impact on the environment.

TABLE – IV

		Consumption Activities that have an impact on the environment
Individual being responsible to protect the environment	Pearson Correlation	.474**
	Sig. (2-tailed)	.000
	N	75

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled from SPSS Output

The table IV indicates that there is correlation between Individual being responsible to protect the environment and their consumption activities that have an impact on the environment. The correlation is positively significant at 1percent level. There is a positive correlation between Individual being responsible to protect the environment and their consumption activities that have an impact on the environment ($r = 0.474$. $p<.01$).

The correlation result also shows positive correlation between Individual being responsible to protect the environment and their consumption activities that have an impact on the environment. Hence the null hypothesis (H_3) is rejected. It is inferred that there is positive relationship between Individual being responsible to protect the environment and their consumption activities that have an impact on the environment.

After examination of the relationship between the Individual being responsible to protect the environment and their consumption activities that have an impact on the environment, an attempt has been made to examine the cause-effect relationship. Here the dependent variable is the individual's consumption activities that have an impact on the environment and independent variables is Individual being responsible to protect the environment. The results of regression analysis with Individual being responsible to protect the environment as predictors of individual's consumption activities that have an impact on the environment is shown in the table below. The overall model is significant ($F=3.490$; $p< 0.001$; adjusted R-square = 0.046). Individual's consumption activities that have an impact on the environment is significant: It is having a positive relationship.

TABLE V - Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.214[a]	.046	.033	1.00689
a. Predictors: (Constant), Individual's consumption activities that have an impact on the environment				

Source: Compiled from SPSS Output

Table VI ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.538	1	3.538	3.490	.066[b]
	Residual	74.009	73	1.014		
	Total	77.547	74			
a. Dependent Variable: Individual being responsible to protect the environment						
b. Predictors: (Constant), Individual's consumption activities that have an impact on the environment						

Source: Compiled from SPSS Output

Table VII Coefficient table

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.228	.243		5.049	.000
	Individual's consumption activities that have an impact on the environment	.305	.163	.214	1.868	.066
a. Dependent Variable: Individual being responsible to protect the environment						

Source: Compiled from SPSS Output

The regression analysis reveals that Individual being responsible to protect the environment = Constant (Individual's consumption activities that have an impact on the environment)

= 1.228 + (0.305) Individual's consumption activities that have an impact on the environment

Individual being responsible to protect the environment is positively correlated to Individual's consumption activities that have an impact on the environment. It is evident that respondents who want to protect and safeguard the environment do prefer to accept the sustainable consumption.

Correlation between the Possibility to consider a green concern in future purchases and considering "Green" as sacrificing

TABLE VIII – CORRELATION TABLE

		Considering "Green" as sacrificing
Possibility to consider a green concern in future purchases	Pearson Correlation	.291*
	Sig. (2-tailed)	.011
	N	75

**. Correlation is significant at the 0.05 level (2-tailed).

Source: Compiled from SPSS Output

The table VIII indicates that there is correlation between Possibility to consider a green concern in future purchases and considering "Green" as sacrificing. The correlation is positively significant at 1percent level. There is a positive correlation between Possibility to consider a green concern in future purchases and considering "Green" as sacrificing. ($r = 0.291$. $p<.01$).

The correlation result also shows positive correlation between Possibility to consider a green concern in future purchases and considering "Green" as sacrificing. Hence the null hypothesis (H4) is rejected. It is inferred that there is positive relationship between Possibility to consider a green concern in future purchases and considering "Green" as sacrificing.

After examination of the relationship between the Possibility to consider a green concern in future purchases and their Considering "Green" as sacrificing, an attempt has been made to examine the cause-effect relationship. Here the dependent variable is the individual's Considering "Green" as sacrificing and independent variables is Possibility to consider a green concern in future purchases. The results of regression analysis with Possibility to consider a green concern in future purchases as predictors of individual's Considering "Green" as sacrificing is shown in the table below. The overall model is significant ($F=3.490$; $p< 0.001$;

adjusted R-square = 0.046). Individual's Considering "Green" as sacrificing is significant: It is having a positive relationship.

Table IX- Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.291[a]	.085	.072	.95236
a. Predictors: (Constant), Individual's Considering "Green" as sacrificing				

Source: Compiled from SPSS Output

Table X - ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.137	1	6.137	6.766	.011[b]
	Residual	66.210	73	.907		
	Total	72.347	74			
a. Dependent Variable: Possibility to consider a green concern in future purchases						
b. Predictors: (Constant), Individual's Considering "Green" as sacrificing						

Source: Compiled from SPSS Output

Table XI - Coefficient table

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.167	.305		3.825	.000
	Individual's Considering "Green" as sacrificing	.319	.123	.291	2.601	.011
a. Dependent Variable: Possibility to consider a green concern in future purchases						

Source: Compiled from SPSS Output

The regression analysis reveals that Possibility to consider a green concern in future purchases

= Constant (Individual's Considering "Green" as sacrificing)

= 1.167 + (0.315) Individual's Considering "Green" as sacrificing

Possibility to consider a green concern in future purchases is positively correlated to Individual's Considering "Green" as sacrificing. It is evident that respondents who are given a chance to or if there are products related to 'Green' they would purchase and they also do not mind the sacrificing certain benefits that come from products that are not green.

Kaiser – Meyer - Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity

KMO is the measure of Sampling Adequacy and Bartlett's test of sphericity was used to examine the appropriateness of Factor Analysis. KMO value usually varies between 0 and 1. The Bartlett's Test of Sphericity is the test for null hypothesis that the correlation matrix has an identity matrix. These analyses helped to ensure the measurement is consistent across time and various items in the instrument. These tests provide the maximum standard to proceed for Factor Analysis.

Table XII - Kaiser – Meyer - Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.638
Bartlett's Test of Sphericity	Approx. Chi-Square	311.092
	df	78
	Sig.	.000

Source: Compiled from SPSS Output

From the table XII, it is inferred that, if the values closer to 1 are better and Kaiser – Meyer - Olkin Measure of Sampling Adequacy value is 0.8 is suggested maximum which closer to 1. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test of sphericity was used to examine the appropriateness of Factor Analysis. The approximate of Chi-Square Value is 311.092 is significant at 5% level of significant. Hence Factor Analysis is considered as an appropriate technique for further analysis of the data.

Factor Analysis

Factor analysis is a way to condense the data in many variables into a just a few variables so it is also called as "dimension reduction". Factor Analysis reduces the "dimensions" of data into one or more "super-variables." The most common technique is known as Principal Component Analysis (PCA). The data used for the analysis is Metric data, which the basic requirement for the Factor Analysis and it was fulfilled because of the Likert-Scale that was used in the Instrument/Questionnaire. Table XIII depicts the various factors and it's loading.

Table XIII - Factor Analysis with its Loading

Factors	**Factor Loading**			
ECONOMICALLY EFFECTIVE ALTERNATIVES				
I buy enough food for the meals to avoid waste	0.787			
I handle food before cooking (thawing)	0.705			
I waited for the food to cool and put it in the refrigerator	0.702			
I prefer to cook by myself	0.689			
I stored the food that was not finished in one meal and continued eating in another one	0.637			
ENVIRONMENTAL AWARENSS AND EFFECTS				
I avoid eating convenience food because of plastic waste		0.812		
I cook in an energy-efficient way (gas, water, electricity)		0.766		
I use containers instead of plastic wraps/ bags		0.689		
I sort the inorganic or organic waste before throwing into the trash		0.623		
SUSTAINABLE CONSUMPTION BEHAVIOUR				
I care and follow the trend of sustainable consumption for eating purpose			0.701	
I consciously eat and drink to protect the environment			0.656	
I consume food sparingly and effectively			0.621	
I buy the food that is hygienic and nutritious			0.601	
SUSTAINABLE BUYING ALTERNATIVES				
I prefer to buy food that have clear origin, certified clean / organic				0.712
I process dishes from fresh, raw food				0.698
I use food grown in my hometown				0.771
I have a healthy diet (restricting alcoholic beverages)				0.566

Source: Compiled from SPSS Output

From the Table XIII, the factor analysis was done and it was divided into four factors. The factors are Economical and effective options, Environmental awareness and action, Sustainable consumption behaviour in food and Sustainable buying options. The value above 0.5 is considered for the factor analysis.

V. CONCLUSION

The study revealed that if the young consumers are given a chance or if there was a way to purchase product that are sustainable to environment. They prefer to adapt and be responsible to conceive the environment for their future generations. The present generation can be informed the sustainable consumption and the ways of disposing the waste in a sustainable method by creating campaigns. The students at the colleges and schools must be taught about the how to economically use non-renewable resources such as gas and water, the need to limit the use of plastic bags and plastic products, it can be done by creating and promoting the use of cloth and re-cyclable material bags. In addition to raising your awareness of sustainable consumption, you can participate in volunteer programs for the environment. They can be taught to be conscious in choosing the products while they are purchasing which are economical, recyclable and reusable.

REFERENCES

[1] Chan, R. Y. (2001). Determinants of Chinese consumers' green purchase behavior. Psychology & Marketing, 18(4), 389-413.

[2] Chan, R. Y., & Lau, L. B. (2000). Antecedents of green purchases: a survey in China. Journal of consumer marketing, 17(4), 338-357.

[3] Ramayah, T., Lee, J. W. C., & Mohamad, O. (2010). Green product purchase intention: Some insights from a developing country. Resources, Conservation and Recycling, 54(12), 1419-1427.

[4] Moisander, J. (2007). Motivational complexity of green consumerism. International Journal of Consumer Studies, 31(4), 404-409

[5] Veleva, V., & Ellenbecker, M. (2001). Indicators of sustainable production: framework and methodology. Journal of Cleaner Production, 9(6), 519-549.

[6] Young, W., Hwang, K., McDonald, S., & Oates, C. J. (2010). Sustainable consumption: green consumer behaviour when purchasing products. Sustainable Development, 18(1), 20-31.

[7] Zhao, H. H., Gao, Q., Wu, Y. P., Wang, Y., & Zhu, X. D. (2014). What affects green consumer behavior in China? A case study from Qingdao. Journal of Cleaner Production, 63, 143-151.

[8] Zhu, Q., Li, Y., Geng, Y., & Qi, Y. (2013). Green food consumption intention, behaviors and influencing factors among Chinese consumers. Food Quality and Preference, 28(1), 279-286.

SIGNLINK: REAL-TIME ASL HAND GESTURE TO TEXT INTERPRETER

Mr. Dhanush Eashwar
North Creek High School
Bothell, State of Washington, USA-98012

Abstract

Approximately 11.5 million Americans have measurable hearing impairment impacting them in their daily lives. One problem that all of these people are facing is the inability to accurately communicate and exchange their ideas with hearing people around them. The objective of my project, SignLink, is to solve this issue by developing a vision-based mobile application that has the capability to interpret the sophisticated and natural signs that a member of the deaf community would use to exchange their thoughts, via American Sign Language (ASL). This application will primarily be employed by the general public in the hearing community who need to communicate with deaf or mute people. The core idea is a mobile application that will make use of computer vision technology and (efficient) real-time hand-pose classification that will enable sign recognition to occur in less than a second. The app will transcribe the accurate machine-learning predictions into comprehensible English sentences that will be displayed on the screen. This transcription is performed using a language processing model that has the ability to convert ASL's French-based grammar into the English grammar structure.

Index Terms - American Sign Language, hand gesture recognition, computer vision, machine-learning, real-time

I. INTRODUCTION

With SignLink, anyone who needs to efficiently communicate with a deaf or mute person will have a portable and reliable solution in their pocket. Even though there are a couple of existing hand pose classification systems, most of them only support static/still hand-pose recognition and they are often limited in accuracy and require expensive specialized hardware. An example of specialized hardware are Sign Language Gloves, electronic wearable devices (gloves) that connect to a smartphone. It works by sending hand position data to the iPhone and making the prediction there, which is not a convenient solution [1] because it requires another dependency in addition to the smartphone. Additionally, none of the current implementations take advantage of prosody that signers express (facial expressions) while asking questions. SignLink aims to innovate upon these existing systems by utilizing machine learning algorithms and a user-friendly interface, making it a more accessible and accurate solution for communication with deaf or mute individuals.

II. BACKGROUND

Sign language is the primary tool for communication in the deaf community. It is a complete language with its own grammatical structure and emotional expression through facial expression and sophisticated gestural movement. Most of the general public are unaware of the lack of innovation contributing to constructing a communication system between deaf and hearing people.

Machine learning is rapidly advancing in a multitude of ways, and being implemented to solve the world's leading problems. One area that has received a lot of attention but not enough radical implementation, is the use of computer vision technology to help to communicate with and assist deaf communities. As a solution is developed, it is important to ask the question, is it accessible, practical, and simple. The idea of capturing a hand-sign (essentially an image or frame from a stream), processing its unique features, and producing text output is not a novel idea. In fact, it is an impractical solution in a real-world context. Sign language communication is not limited to comprehending static hand positions, but more about hand-gesture and action [1], along with prosody (facial expressions). If you sign the word "quiet" with an emphasized facial expression, you are conveying the message to your audience to be "very quiet." This revolutionary idea brings a completely new dimension to hand gesture recognition, but once it is solved, it will be an accessible, practical, and simple solution that will forever change interaction with the deaf community.

III. RELATED WORK

When it comes to sign language recognition technology, the two main catogiries of methods are vision based and hardware based. Predicting hand action through a camera input source, is the vision-based approach (discussed in this paper) and typically requires machine learning. Hardware based gesture recognition includes technologies such as data-gloves which collect hand position data at a specific moment to make a prediction. The issue with the latter, is that it is not sufficient to examine a specific instance of hand-position in order to make a prediction of the hand-sign in the context. This is because sign language is filled with signs that contain hand movement, therefore, a static image of a sign is not enough. The solution to this problem is discussed in this paper, through hand action recognition.

IV. METHODOLOGY

My approach to developing SignLink, consists of three important phases. Namely, information gathering and analysis, model training, and mobile implementation.

Phase One - organized and extensive data compilation

The first phase is most pivotal in order for this project to beneficial and practical to use. I will need to gather thousands of samples of short video recordings for individual signs, and group them accordingly. For purposes of this project, I have collected 100 samples of short video recordings for various signs. The dataset is diverse, including a range of sign styles, background and lighting conditions, and ages of signers. Clips from the dataset were captured on both iPhone and Andriod devices, in both landscape and portrait orientations for the model to make accurate predictions regardless of the specific camera system. Additionally, I compiled a separate dataset that will be used to predict the emotion the signer is conveying through their eyebrows, smile, and shoulder movement. For more information regarding the limitations of the datasets compiled for research purposes, please refer to *Limitations of Study*.

Phase Two - training an efficient model

In phase two of this project, all of the accumulated information is used as the input training data source that a model will use to make predictions. The model's training process will happen using Apple's CreateML auto machine learning technology, which is pre-trained to recognize patterns in action classification. One of the performance specifications of SignLink will be to make a prediction within 0.3 seconds after completion of the sign which will make it practical to use. This can be achieved by implementing multiple hyperparameter optimization techniques in CreateML.

After the model has been successfully trained and tested, it is implemented in a mobile application (in phase three), making it an affordable, portable, and practical solution to use in a real-world scenario.

Phase Three - constructing a minimal and convenient mobile application

A. Application Experience and Flow Diagram

The user experience for SignLink is outlined in the flow chart below. To summarize, the application will present an authentication screen upon entrance, if the user is not already securely authenticated. Upon completion of authentication, the user will be presented with the camera recognition screen which they can use to immediately communicate with the deaf person via real-time classification. On this screen, there will be a camera view (that spans to 80% of the screen's height), and an expandable drawer at the bottom which shows the English transcription of the signs. The user will also be able to contribute the accuracy and diversity of the model by voluntarily sharing short video clips of signs and their respective names, which will be uploaded to a server for consideration from the development team.

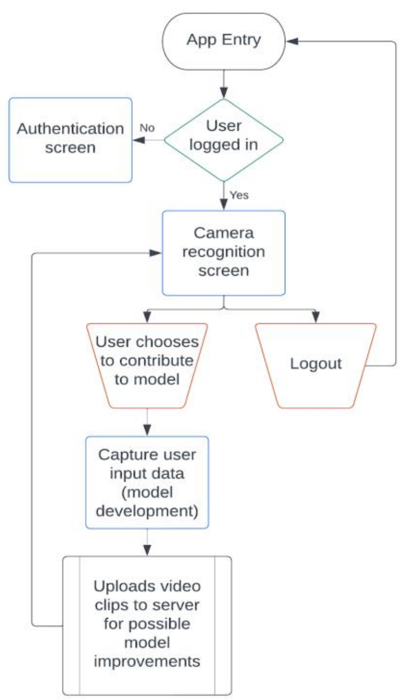


Figure 1, Application Experience System/Outline

B. Technology Stack

SwiftUI is an excellent choice for developing an effective mobile interface to users that enables machine learning classification in real time. SwiftUI has a modern and elegant syntax that can be used to design and develop beautiful interfaces with simple implementation. Selecting a BaaS (backend as a service) is also an important because it enables data management, file storage, and API (application programming interface) support. A great BaaS for this project is Firebase, an infrastructure management solution for both web and mobile applications. SignLink requires both the Cloud Firestore, and Cloud Storage products, for storing user specific information as well as video clips. Additionally, Firebase provides effective APIs to integrate well with SwiftUI, which incentivizes its utility.

Selecting a machine learning framework/platform is pivotal as well. One of the most powerful machine learning technologies available for mobile is Vision. Vision allows developers to detect landmarks on human hands in images and video, which is ideal for this project. This (landmark/positional) data will be provided as the input to the trained machine learning model. An advantage of using Vision is that it performs on-device machine learning, therefore network connection is not a necessity required for real-time transcription to occur.

C. Sign Language Interpretation

In order to train an accurate and diverse sign language model, it is necessary to compile an effective dataset. For research purposes, I will be using 100 manually collected data samples, where each clip's duration spans approximately two seconds (after trimming). There are 20 clips for each sign of the five gestures present in the dataset. For more information regarding present and future data collection efforts, please refer to the *Limitations of Study*. These video samples are divided into training, testing and validation datasets. An ideal training and testing data folder structure will be composed of subfolders titled to represent each hand gesture, where the data clips will be located within each subfolder.

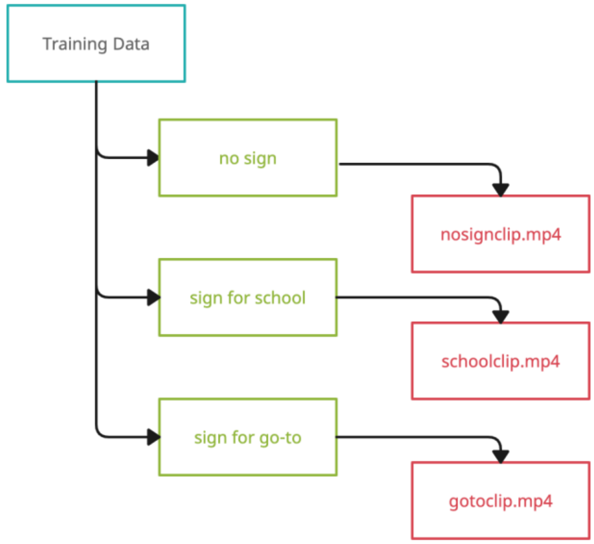


Figure 2, Training/Testing Data Structure Outline

Apple's CreateML technology is a convenient and efficient tool that allows developers to train and test machine learning models by providing the structured dataset. It has features such as iteration, frame rate, and duration adjustion. After training the model using 100 samples of gesture clips in CreateML, the training accuracy was 100% and the testing accuracy was 92% - 97%.

The final step of the project is the development of the user interface incorporating the machine learning model created in CreateML

V. Limitations of Study

For this project to be successful, the hand action classification system must be capable of supporting/recognizing thousands of hand signs, which requires a substantial of short data samples in order to predict efficiently and accurately [2]. The current system has been trained with only 100 samples of video clips for 5 different hand gestures (20 clips per sign). There are approximately 10,000 commonly used American Sign Language gestures, which implies the necessity of at least 200,000 video clips. For many gestures in ASL, the difference between signs is very nuanced, implying that many signs will require to be represented in a larger percentage of the dataset in order to for the model to differentiate those signs from other similar to it. In the future, in order to gather the necessary data for this project, I will work with members of the deaf community to record short video samples of individual signs. These recordings will be collected through partnerships with deaf schools and organizations, as well as through online submissions from volunteers [3]. I will also utilize existing datasets and resources on ASL to supplement my own data collection efforts.

VI. Results

There are four criterion that will evaluate the success of this project. Namely, the ability for the model to comprehensively interpret natural signing, a user-friendly mobile application that provides an effective and real-time interface, a robust and reliable system to expand the predictive functionality of the mobile application. So far, throughout testing in various environments, the application has been predicting the correct sign consistently and accurately, but results can vary in other environments, which highlights the necessity of a more diverse data set. Additionally, the application prediction duration is around 0.5 seconds on average making it practical to use for moderately fast signers, although this number may increase relative to the complexity and diversity of the model in the future.

Figure three illustrates a working model implemented into a iOS mobile application which is predicting the "Go-To" sign in real-time, as it appends the string to the complete transcription.

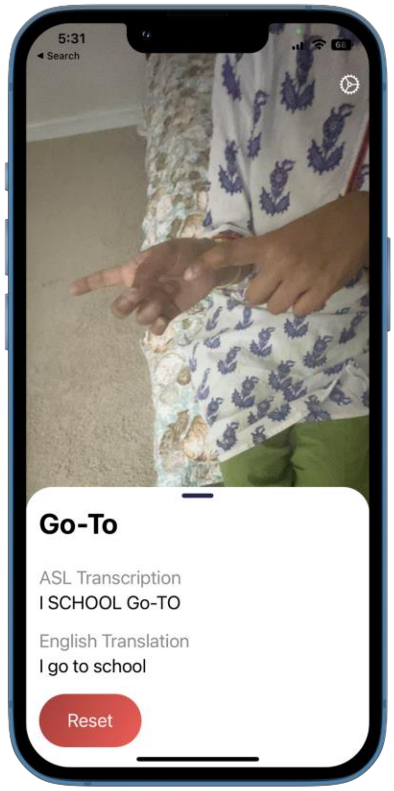


Figure 3, Functional Application Demonstration

VII. Conclusion and Prospect

This paper outlines the development process of building mobile application that recognizes sign language in real-time enabled by machine learning. The model's translation accuracy in foreign environments was 92% - 97%. Another concern is the speed of hand-recognition. Currently it takes anywhere from 0.5 to 1.5 seconds to recognize, which is adequate for slow to moderate speed signers, but may not be quick enough for fast signers. This research shows promising possibilities in the field of sign language recognition because it can not only predict static hand positions, but also predict complete hand-signs in context. To leverage the potential of this idea, the machine learning model needs to be trained on larger corpus of data samples, which will enable this to be practical and deployable solution in the real-world.

REFERENCES

[1] P. Garg, N. Agrawal, S. Sofat, “Vision based Hand Gesture Recognition”, Proceedings of world Academy of Science, Engineering and Technology, Vol.37, 2009, pp. 1024-1029.

[2] M. K. Bhuyan, D. Ghoah, P. Bora, “A Framework for Hand Gesture Recognition with Application to sign language”, India Conference, IEEE, Sept. 2006, pp. 1-6.10.1109/INDCON.2006.302823

[3] A. Braffort, “Research on Computer Science and Sign Language; Ethical Aspect” LNAI 2298, Springer, LANI-2298, GW-2001, pp. 1-8.10.1007/3-540-47873-6_1

A STUDY ON TRENDS OF DIGITAL SECURITY AND THE ROLE OF SOCIAL MEDIA IN DIGITAL SECURITY

Ms. Minhaju Malik. M[1], Dr. Sripriya Arunachalam[2]
[1]Research Scholar, [2]Asst Professor
[1,2] Vels Institute of Science Technology & Advanced Studies, Chennai

ABSTRACT Digital Security accepts a vigorous role in the area of information technology. Safeguarding the information has become an enormous problem in the current day. The Digital security the main thing that originates in mind is 'cyber crimes' which are aggregate colossally daily. Different governments and organizations are taking numerous measures to keep these cyber wrongdoings. Other than different measures Digital security is as yet a significant worry to many. This paper mostly emphases on Digital security and cyber terrorism. The significant trends of Digital security and the consequence of Digital security discuss in it. The cyber-terrorism could make associations lose billions of dollars in the region of organizations. The paper also explains the components of cyber terrorism and motivation of it. Two case studies related to Digital security also provide in this paper. Some solution about Digital security and cyber terrorism also explain in it.

Keywords: Digital security, cyberspace, cyber terrorism, Information security.

I. INTRODUCTION

Today an individual can receive and send any information may be video, or an email or only through the click of a button but did s/he ever ponder how safe this information transmitted to another individual strongly with no spillage of data? The proper response lies in Digital security. Today more than 61% of full industry exchanges are done on the internet, so this area prerequisite high quality of security for direct and best exchanges. Thus, Digital security has become a mostrecent issue (Dervojeda, et. all., 2014). The extent of Digital security does not merely restrict to verifying the data in IT industry yet also to different fields like cyberspace and so forth. Improving Digital security and ensuring that necessary data systems are vital to each country's security and financial prosperity.

Creating the Internet safer (and safeguarding Internet clients) has become to be essential to the improvement of new management just as a legislative strategy. The encounter against cybercrime needs an extensive and more secure practice (Gross, Canetti & Vashdi, 2017). The particular estimates alone cannot keep any crime; it is essential that law authorization offices are allowable to investigation and indict cybercrime efficiently. Nowadays numerous countries andadministrations are compelling strict rules on cyber safeties to keep the loss of some vital data. Each should be equipped on this Digital security and save themselves from these increasing cybercrimes.

Digital-security is both about the insecurity made by and through this new space and about the practices or procedures to make it (progressively) secure (Kumar, & Somani, 2018). It alludes to a lot of exercises and measures, both specialized and non-specialized, expected to ensure the bioelectrical condition and the information it contains and transports from all possible threats. This research aims to gather all the information and overview related to cyber-crime and provide the historical facts and perform reports on the analyzed data of different attacks reported everywhere in the last five years. Based on the analyzedinformation, we would like to provide all the countermeasures that organizationsmay undertake in order to ensure improved security that would support in defending the organizations from being attacked by the hackers and provide a Digital-security to avoid all risks.

II. PURPOSE

The paper provides information about Digital security and cyberterrorism. It covers various information about these topics in its subsections. Trends of Digital security and the role of social media in Digital security define in thispaper. The paper provides some necessary information about cyber terrorism. The components of “cyber terrorism” and the consequences of this terrorism also explain in this paper. There are some examples of case studies those related to Digital security. The paper also provides some solutions regarding Digital security and cyber terrorism. It provides some techniques for preventing cyber terrorism. The future study and scope of Digital security define in it.

Digital security has become a major concern over the last 10 year in the IT world. In the present world, everybody is facing a lot of problems with cyber- crime. As hackers are hacking major sensitive information from government and some enterprise organizations the individuals are very much worried as Digital- security assault can bring about everything from wholesale fraud, to blackmail big companies. They are many varieties of cyber-crimes emerging where everyone needs to be aware of the scams and they are different measures and tools which can be used for avoiding the cyber-crimes. Every organization wants to secure their confidential data from getting hacked. Getting hacked is not just about losingthe confidential data but losing the relationship with customers in the market (Bendovschi, 2015).

The Internet is today's fastest growing infrastructure. In today's technical environment many new technologies are changing mankind. But due to these emerging technologies, we are unable to protect our private information in an efficient way, so the cyber-crimes are drastically increasing on daily basis. Majority of the transactions both commercial and personal are done using the means online transaction, so it is important to have an expertise who require a high quality of security maintaining a better transparency to everyone and having safer transactions. So Digital security is the latest issue. Advanced technologies like cloud services, mobiles, E-commerce, internet banking and many more they require a high standards and safer process of security. All the tools and technologies involved for these transactions hold the most sensitive and cruicial user information. So providing the necessary security to them is very important. Improving the Digital security and safeguarding the sensitive data and infrastructures are important to every countries top priority security (Panchanatham, 2015).

III. TRENDS OF DIGITAL SECURITY

Digital Security assumes a critical role in the area of data technology. Safeguarding the data have become the greatest difficulty in the current day. The Digital security the main thing that raids a chord is cybercrimes which are increasing tremendously step by step (Samuel, & Osman, 2014). Different administrations and organizations are taking many measures to keep these cybercrimes. Additional the different measures Digital security is as yet an enormous worry to numerous. Some main trends that are changing Digital security give as follows:

a. Web servers

The risk of assaults on web applications to separate information or tocirculate malicious code perseveres. Cybercriminals convey their code using good web servers they have traded off. In any case, information taking attacks, a considerable lot of which get the deliberation of media, are also a significant risk. Currently, individuals need a more unusual accentuation on securing web servers as well as web applications (Bendovschi, 2015). Web servers are mainly the pre- eminent stage for these cybercriminals to take the information. Thus, one shouldreliably utilize an additional secure program, mainly amid vital exchanges all together not to fall as a quarry for these defilements.

b. Mobile Networks

The risk of assaults on web applications to separate information or tocirculate malicious code perseveres. Cybercriminals convey their code using good web servers they have traded off. In any case, information taking attacks, a considerable lot of which get the deliberation of media, are also a significant risk. Currently, individuals need a more unusual accentuation on securing web serversas well as web applications (Bendovschi, 2015). Web servers are mainly the pre- eminent stage for these cybercriminals to take the information. Thus, one shouldreliably utilize an additional secure program, mainly amid vital exchanges all together not to fall as a quarry for these defilements.

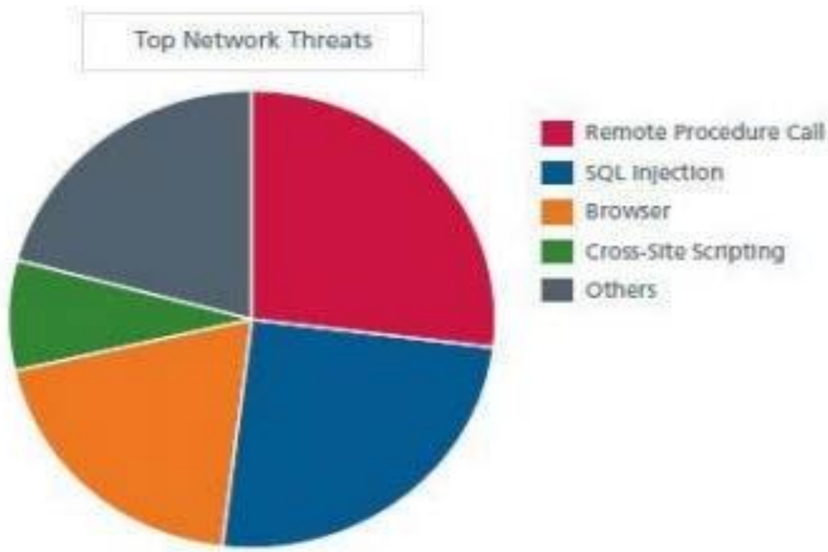
c. Encryption

It is the method toward encoding messages so programmers cannot scrutinize it. In encryption, the message is encoded by encryption, changing it intoa stirred-up figure content. It commonly completes with the use of an "encryptionkey," that demonstrates how the message is to encode. Encryption at the earliestreference point level secures information protection and its respectability (Sharma, 2012). Additional use of encryption obtains more problems in Digital security. Encryption is used to ensure the information in travel, for instance, the information being exchanged using systems (for example the Internet, online business), mobile phones, wireless radios and so on.

d. ADP's and targeted attacks

Advanced Persistent Threat (APT) is a whole of the dimension of cybercrime ware. For quite a long time network security capacities. For example, IPS or web filtering have had a key influence in distinguishing such focused-on assaults (Bendovschi, 2015). As attackers become bolder and utilize increasingly dubious methods, network security must incorporate with other security benefits to identify assaults. Thus, one must recover our security procedures to counteract more dangers coming later on. Subsequently the above is a portion of the patterns changing the essence of Digital security on the planet. The top network threats are showing in figure 1.

Figure 1. Threats for Cyber Security



IV. ROLE OF SOCIAL MEDIA IN DIGITAL SECURITY

Social media has turned into a lifestyle for some individuals. We use it to stay in contact, plan occasions, share our photographs and comment on recent developments. It has replaced email and telephone requires a ton of us. However, similarly as with whatever else on the web, it is imperative to know about the dangers. PCs, cell phones, and different gadgets are priceless assets that furnish people of any age with the extraordinary capacity to connect and collaborate with whatever remains of the world. Individuals can do this in various ways, including the utilization of social media or networking sites.

Courtesy of social media, people can share musings, pictures, exercises, or any part of their lives (Gross, Canetti & Vashdi, 2017). They can bring an unknown look into the lives of others, regardless of whether they live nearby or over the globe. Unfortunately, these networks additionally represent security toward one's PC, protection, and even their security. Social media collection among faculty is soaring as is the risk of assault (Sharma, 2012). Since social media sites are nearly utilized by the majority of them reliably, it has become an excellent stage for cybercriminals for hacking private data and taking significant data.

The organizations need to assure they are likewise as fast in recognizing dangers, reacting increasingly, and keeping away from a rupture of any sort. Subsequently, individuals must take suitable measures particularly in managing social media to keep the loss of their data. The capacity of persons to impart datato a group of persons of millions is at the core of the exact test that social media offerings to organizations (Cabaj, Kotulski, Księżopolski, & Mazurczyk, 2018). Nevertheless, enabling anyone to disperse financially delicate data, social media additionally gives a comparable ability to range false data. It can be merely being as harming. The rapid spread of incorrect information by social media is among the growing dangers. Though social media can utilize for cybercrimes, these organizations cannot stand to quit utilizing social media as it assumes an essential role in the attention of an organization. In its place, they should have arrangements that will inform them of the risk to fix it before any actual harm is done Dervojeda, Verzijl, Nagtegaal, Lengton, & Rouwmaat, 2014). Anyway, organizations should understand this and observe the meaning of breaking downthe data chiefly in social deliberations and give good security plans to avoid dangers. One must contract with social media by using specific plans and the righttechnologies.

V. CYBER TERRORISM

The term “terrorism” can allude to the illegal utilization of power or viciousness against people in order to threaten an administration or its residents and associations which might be to accomplish a political or a malicious site [10]. Terrorism has transformed from the conventional structure to the cyber type of innovation supported terrorism recognized as cyber terrorism. It stays vital issuesof the present society. Not just that the battle against terrorism is falling behind, current cybercrime assaults are ending up progressively forceful and confrontational (Sharma, 2012). This terrorism is the utilization of cyber word to dispatch an assault to the essential foundations that the presence of associationsand countries entirely depended after that can prompt its shut down.

a. Components of Cyber Terrorism

A few attacks as cyber terrorism have a few parts which have been distinguished by numerous observational researchers in the exploration network.As indicated by Samuel and Osman (2014) in their hypothetical model recognize the five sections that a “cyber-terrorism” classified they are; the objective of the violence, inspiration and dedication towards the mission to be accomplished when such incident takes place, impact, instruments are utilized to dispatch such assault and attacking's, area which is nature just as the strategy for activity. It can confidently know by knowing the profile of activities that drive the actions of the culprits (Kumar, & Somani, 2018).

The critical issue in "cyber terrorism" is the motivation to complete such an action on the Internet, that outcomes in savagery/damage to people and their property Dervojeda, Verzijl, Nagtegaal, Lengton, & Rouwmaat, 2014). It is by a portion of the segments. The terrorists of the world proceed the upside of the cyber world with solid incentive as a stage with which they can use to dispatch more unusual outbreak. Yunos and Ahmad (2014) said that with the utilization of Information and correspondence innovation, a terrorist could present more noteworthy harms or exact the republic with troublesome conditions because of the interruption of necessary administrations that the "cyberspace terrorist"causes more damage and devastation by the cyberspace than done the conventional strategy for terrorism.

b. MOTIVATING FACTOR OF CYBER TERRORISM

The motivating factors of cyber terrorism give as follows:

i. Websites' Supportive Nature:

The internet has viewed as a medium that is exceptionally tremendous, and that can in the meantime draw in light of a legitimate concern for some individualsto join some group of interest. The cyberterrorist prefers the utilization of the website as a result of its robust nature in that it can refer a message to a great many individuals inside a twinkle of an eye; they consider it to be a stage that is anything but difficult to select absorbed individuals.

ii. Anonymity Nature of the internet:

Anonymity is the pivotal element that each evil culprit leans towards with the goal that their character could not be recognizable after playing out their devilish act. The Internet is a sheltered domain just as concealing stage for the terrorist as they can stay unknown so that their personality cannot be known.

iii. Hacking:

The overall term of all kinds of unapproved access to any "computer system" network organize is hacking that can occur in any structure all things measured as "cyber murder." A large number of these hackers make use of a "brute force" which is the combinations of every single imaginable letter just as numbers and images till they get the password Sreenu, & Krishna, 2017).

iv. Computer Viruses:

These viruses are here and there scattered on a system to in other to do hurtful exercises. These may be to fill in as an administrative agent, create information or even split down the system.

v. Password Sniffing:

The “Cyber terrorist” may use one of the technique such as password sniff as procedures to complete their “cyber-attack” on different countries and many big organizations to see their downfall and have control over their systems. The password sniffer is programming which uses to screen organize and in the meantime catch all the password that passes the system connector.

c. “CONSEQUENCES OF “CYBER TERRORISM”

Cyber terrorism is an original type of cyber danger and attack that has many outcomes connected to it when propelled against any countries and associations. Some consequences of cyber terrorism define as follows:

i. Data Intrusion:

The cyber terrorism can annihilate information honesty with the goal that the information could never again be trusted, pulverizing its classification as intruding on its accessibility. The expanding rate of this cyber terrorism in encroaching associations and country's information has produced a ton of difficulties which has come about in loss of vitals and critical information that is typically difficult to recover (Sutton, 2017).

ii. The attack on Businesses:

The cyber-terrorism could make associations lose billions of dollars in the region of organizations. The data arrangement of a bank can be attacked or hack through the terrorists who will prompt unapproved access to such financial balance and make them lose gigantic millions of dollars which can create such bank to keep running into bankruptcy (Gade, & Reddy, 2014).

iii. Loss of Life:

Cyber terrorism has guaranteed many acquitted lives and in the meantime render numerous homes to a condition of the problem that is occasionally coming about to mental injury to the influenced families. The “cyber-terrorism” can in one method or alternate prompts the death toll just as causing severe harms. It has shown in an attack on the PCs utilization, networks’ as well as attacks that have come about to the different types of blasts of a few plane accidents issues everywhere throughout the world which that has asserted numerous life (Cabaj, Kotulski, Księżopolski, & Mazurczyk, 2018).

iv. Consumer Trust in Doubt:

The development of any organizations and its support relies upon the trust that its purchaser has on such association as trust can see tools that fortify association and certainty among associations and clients.

VI. CASE STUDY EXAMPLES

a. Digital Security in E-Governance case study

E-Governance is the extension of the efforts completed through the governments to recover relations with their nationals. With its instilled straightforwardness and receptiveness, given the standards of the Internet, E-Governance conveys governments all the more near their residents. Existing and potential dangers in the circle of Digital security are among the most genuine difficulties of the 21st century. To ensure E-Governance extends there is a requirement for data security best practices (Hua, & Bapna, 2013). Security policies, practices, and techniques must be set up just as the use of security technology. It helps to ensure e-Government systems against attack, recognizes great exercises administrations and to have a demonstrated alternate course of action set up. An open private organization is a vital part of Digital security in E-Governance. These associations can conveniently go up against coordinationissues. Powerful cyber-crime prevention and arraignment activities in all the ICT appropriate conditions.

b. Kaspersky Kidnapping Case

The “highest-profile” cyber surveillance, stalking, and kidnapping case included Ivan Kaspersky, child of the administrator and CEO of Russia-based Kaspersky Lab, a standout amongst the most unmistakable Digital security firms on the planet. Ivan Kaspersky was abducted for payoff in 2011 while strolling to work from his Moscow loft. As indicated by Russian media sources, beginners – a more seasoned obligated couple – organized the plot and enrolled their child and two of his companions as "muscle" for the plot (Cabaj, Kotulski, Księżopolski, & Mazurczyk, 2018). The abductors stalked Kaspersky and his sweetheart for a while preceding the seizing, deciding his conduct standards and finding that he did not have a protective security detail. The hijackers supposedly acquired all the required data from Kaspersky's client profile on Vkontakte, a famous Russian social systems administration site. Kaspersky was compelled to call his dad to transfer the payoff requests (Gade, & Reddy, 2014). The abductors may have utilized similar wireless to make food deliveries or had geolocation administrationsempowered.

c. UBER CASE STUDY

Data breaches happen every day, in too many places, but the risk of data breach doesn't necessarily depend on the number, it may also depend on the riskand damage it causes the company's revenue and impact on the users or accountholders, one of the biggest recent data breaches is Uber.

i. Impact:

One of the recent major cyber-attack is data breach of personal informationof around 57million Uber users and 600,000 Uber drivers got revealed.

ii. Details:

The worst part of this attack is how the Uber handled the issue, this is a lesson to most companies what not to do. In late 2016 just two hackers were ableto steel the Users personal data with includes names, phone numbers and email addresses. They were able to steal the 600,000 driver's license information. Hackers got access to the Uber's GitHub account through a third-party cloud- based service. With the details found from the GitHub, Hackers found a way to access Uber user data in AWS. Ubers paid those two hackers $100, 000 to permanently destroy the whole data they obtained and not letting the users or the regulators about stolen information.

But also, Uber confirmed that data was destroyed with the assurance they received from the hackers. According to US Law enforcement, any breach should be reported to the authorities and not pay hackers. And this kind of approach from Uber led other hackers to blackmail Netflix, where Hackers frightened to release TV shows unless the company paid the money hackers requested. Almost 49 states have this law enforcement where a security breach should be notified, after the court hearings Uber agreed to pay 20million to settle FTC charges. Not only the USbut also other major countries like UK, Italy, and the Philippines reacted on this issue. Uber's breach is different from the regular breaches, the company tried to cover up the breach and not alert the authorities and the users.

iii. Uber's plan after the breach:

Khrosrowshabi the new CEO of Uber received few disputed problems only with respect to its legal issue also criticism for sexual harassment, underpaying the drivers and few more.

iv. Solutions

Some solutions regarding Digital security and cyber terrorism describe here:

- Digital Security Techniques

Some techniques can use to improve Digital security.

- Access control and “password security”: The idea of password and user name has a primary method for ensuring data. It may be the principal measures concerning Digital security.
- Data’s Authentication: The documents that we get should dependably be validated be before transferring. It should check if it has begun from a critical and dependable source and that they are not modified (Gade, & Reddy, 2014). Verifying of these records is typically done by the “anti-virus” software present in the gadgets. Subsequently, a decent “anti- virus” software is likewise necessary to shield the gadgets from viruses.
- Anti-virus software: It is a PC program that classifies, avoids, and makes a move to harm or evacuate noxious software programs, for instance, viruses as well as worms. Most "antivirus programs" comprise an "auto- update" feature that authorizes the program to download profiles of newviruses with the objective that it can chequer for the new viruses when they find.
- Malware scanners: This is software that typically filters each of the records and archives current in the framework for vindictive code or destructive viruses [10]. Viruses, worms, as well as Trojan horses, are instances of “malicious software” that regularly assemble and alluded toas malware.
- Firewall: A “software program” or an equipment that helps monitor hackers, infections, and all types of worms which endeavour to achieve PC over the Internet. All data which is transmitting to and fro over the web go through the firewall contemporary, which looks at every

individual message and hinders which do not meet the security requirements and classify them as threat and try to block from the system and monitor the activities. Henceforth firewalls assume an essential job in recognizing the malware.

d. PREVENTION OF CYBER TERRORISM

The capacity to prevent cyber terrorism lies with the capacity to securely verify cyberspace. Digital security has an intriguing parallel to terrorism. Both are lopsided. Guaranteeing the security of information, data, and correspondence is impressively harder than hacking into a framework. The attacker has an inalienable preferred standpoint in both regular terrorism and cyber-attacks. On account of state-supported attacks, the difficulties are of a lot higher greatness (Cabaj, Kotulski, Księżopolski, & Mazurczyk, 2018). Governments should guaranteethat their rules smear to cybercrimes and be wholly actualized and hold fast to; itis essential that the countries of the biosphere take measures to guarantee that its punitive and technical law is satisfactory to address the difficulties presented by cybercrimes (Kumar, & Somani, 2018).

The availability, confidentiality and the integrity of information in any associations are essential which endeavors must be set up to guarantee that theyare exceptionally secure because it is the significant cyber resource that makes each association stand and in the meantime depended upon. The information hasentered by the “cyber-terrorist” is something beyond records which may incorporate messages, web applications, web pages, and just as some indispensable operating systems. (Kumar, & Somani, 2018)

VII. FUTURE STUDY AND SCOPE

This paper will help to advance the scientific interests in the exploration of Digital security, particularly to respond to the procedural questions of the prediction of future data and actions significant to security patterns. This study sets the background to begin executing rules for all intentions as indicated throughthe usual security issues and answers for data systems. This paper consolidates many procedures connected and may be improved to serve Digital security regarding anticipating the operational legitimacy of the methodologies of assessment benchmarks. Finally, the emphasis on limiting, recouping, and disposing of weakness is the primary, basic patterns, and reactions to the constant expanding progress (Panchanatham, 2015).

Over the next five years, cyber-crime may create severe damage in information technology. According to the researchers they have estimated an approximate close to 6 trillion dollars loss. So, there would be a very bright scope for people who work and resolve the issues related to cyber-crime and provide all the necessary security measures. Big organizations like CISCO which is completely related to networking technology which is one of the top organization has approximately millions of openings related to Digital security because which is the future for the safety of Information technology. They are also wide opportunitiesin government-related fields and also defence field to save the countries secure data from cyber attackers.

VIII. CONCLUSION

Digital-security is both about the insecurity made by and through this new space and about the practices or procedures to make it (progressively) secure. Exertion to verify the cyberspace should give a definitive need else the "information technology" will not be viably used by clients. The terrorist of things to come will win the wars without discharging a shot just by crushing the country'snecessary substructure if steps are not taken to handle the pervasiveness of the expansion in such a cyber-attack. They can bring an unknown look into the lives ofothers, regardless of whether they live nearby or over the globe.

The "cyber-terrorism" can in one method or alternate prompts the deathtoll just as causing severe harms. Though social media can utilize for cybercrimes,these organizations cannot stand to quit utilizing social media as it assumes an essential role in the attention of an organization. Cyber terrorism has guaranteednumerous innocent lives and in the meantime render numerous homes to a condition of the problem that is occasionally coming about to mental injury to the influenced families. Cyber terrorism stays vital issues of the present society. Not just that the battle against Cyber terrorism is falling behind, current cybercrime assaults are ending up progressively forceful and confrontational. Digital security has an intriguing parallel to terrorism. Guaranteeing the security of information, data, and correspondence is impressively harder than hacking into a system.

IX. REFERENCES

[1] Bendovschi, A. (2015). Cyber-Attacks – Trends, Patterns and Security Countermeasures. *Procedia Economics and Finance*, 24-31. doi:10.1016/S2212-5671(15)01077-

[2] Cabaj, K., Kotulski, Z., Księżopolski, B., & Mazurczyk, W. (2018). Digitalsecurity: trends, issues, and challenges. *EURASIP Journal on Information Security*. doi:10.1186/s13635-018-0080-0

[3] Dervojeda, K., Verzijl, D., Nagtegaal, F., Lengton, M., & Rouwmaat, E. (2014). Innovative Business Models: Supply chain finance. Netherlands: *Business Innovation Observatory*; European Union.

[4] Gade, N. R., & Reddy, U. G. (2014). A Study Of Digital Security Challenges And Its EmergingTrends On Latest Technologies. Retrieved from https://www.researchgate.net/publication/260126665_A_Study_Of_Digital_Security_Challenges_And_Its_Emerging_Trends_On_Latest_Technologies

[5] Gross, M. L., Canetti, D., & Vashdi, D. R. (2017). Cyberterrorism: its effects on psychological well-being, public confidence and political attitudes. Journal of Digital security, 3(1), 49–58. doi:10.1093/cybsec/tyw018

[6] Hua, J., & Bapna, S. (2013). The economic impact of cyber terrorism. *The Journal of Strategic Information Systems*, 22(2), pp. 175-186.

[7] Kumar, S., & Somani, V. (2018). Social Media Security Risks, Cyber Threats And Risks Prevention And Mitigation Techniques. *International Journal of Advance Research in Computer Science and Management*, 4(4), pp. 125-129.

[8] Panchanatham, D. N. (2015). A case study on Digital Security in E-Governance. *International Research Journal of Engineering and Technology*.

[9] Samuel, K. O., & Osman, W. R. (2014). Cyber Terrorism Attack of The Contemporary Information Technology Age: Issues, Consequences and Panacea. *International Journal of Computer Science and Mobile Computing*, 3(5), pp. 1082-1090.

[10] Sharma, R. (2012). Study of Latest Emerging Trends on Digital Security and its challenges to Society. *International Journal of Scientific & Engineering Research*, 3(6).

[11] Sreenu, M., & Krishna, D. V. (2017). A General Study on Cyber-Attacks on Social Networks. *IOSR Journal of Computer Engineering (IOSR-JCE)*, 19(5), pp. 01-04.

[12] Sutton, D. (2017). *Digital Security : A Practitioner's Guide. Swindon, UK*: BCS, the CharteredInstitute for IT.

DIGITAL ANALYTICS – A STUDY WITH SPECIFIC REFERENCE TO HOW YOU CAN MEASURE YOUR REACH IN SOCIAL MEDIA

Ms A KAMALIKA KRISHMY
Research Scholar
M.O.P. Vaishnav College for Women (Autonomous), Chennai

ABSTRACT:

Web analytics groups together the measurement, collection, analysis and presentation of data from the Internet in order to understand and optimise how websites are used. Web analytics lets you precisely study user behaviour on your websites (and mobile sites, and mobile applications, which is more largely called digital analytics). Today, web analytics (also known as digital analytics) is a key element in digital marketing and website optimisation. In case of Digital Analytics, less is always more. I would like to touch upon certain key factors that will help ascertain the Digital Strategy for any product or service or individual.

One Strategy, less than 5 KPIs. If you need more than 5 KPIs to describe your growth or progress, you lack clarity in strategy. Tag Everything… use moderation. When you write a content, about something you purchased or a place you have experienced or a session that you have attended... Tag them…. This is a win win situation for both of you. But again, tend a little moderation as well. Data and its Quality There is Data and there is Data, what makes the most sensible data stand out is the quality of it and how well we can interpret it. Start with baby steps Baby first crawls, then sits, and then walks… adapt the same mindset for your accounts. This helps in the way you look at the data available Facts tell, stories sell A well driven account will have the right mix of data and stories… viewers do look for proof to support what we say, but again they also need that emotional quotient to relate to you. An image is worth a thousand words Find the golden duck Find that one activity, that works for you… it is not necessary to follow the trend but just find that one which works for you.

Lets look into how we can implement it with an elaborate explanation.

Key Words : Digital Analytics, golden rules, strategy , plan, performance indicator

I. INTRODUCTION

The world is being transformed a lot to digitalize all the things in every field as the data is been freely flowing on the internet and it helps in making things easier. Data has now become a hot cake which helped many companies to get through and make use of huge data to improve their businesses. **Digital Transformation**, the term itself explains that "migrating from general instance to Digital World". To understand this we have to know some simple transformations that are usually seen in daily life.

- From filling paper applications by hand to online registrations.
- Going to the bank for opening an account to open an account within a few minutes
- Collecting books in the library to reading e-books in Kindle or internet articles
- Asking a person about the route for a particular place to asking Google Map to get a route map

- Reading newspapers to listening to Podcasts

Everything is been moving to the digital world and to understand how to make use of this data, first, we must **collect data** and then we have to **extract some insights** by doing some analysis. And thereby using smart strategies we can thrive our business.

II. LITERATURE REVIEW

This paper is based on Secondary data available via various papers and research on the parameters of success for digital marketing. Also there was some detailed analysis on the advantages and disadvantages of Digital Analytics. Some of them for your eyes

ADVANTAGES OF DIGITAL ANALYTICS

The process of gathering, gauging, analyzing, and interpreting data from digital sources like websites, mobile apps, social media, and other digital platforms is known as "digital analytics." The following are a few benefits of digital analytics:

- **Improved Understanding of Customer Behavior:** A deeper insight into client behavior can be gained from digital analytics, which can show how users engage with digital platforms. Businesses may learn what customers are looking for, what they like, and what they don't like by monitoring user activity and interaction. Businesses can utilize this data to make data-driven decisions that will enhance user experience and raise engagement.

- **Optimization of Digital Marketing Campaigns:** Digital analytics can shed light on how to improve digital marketing strategies by revealing their efficacy. Businesses may improve the performance of their marketing campaigns by examining indicators like click-through rates, conversion rates, and engagement.
- **Identification of Trends and Opportunities:** Digital analytics can assist companies in identifying emerging trends and opportunities. Businesses can detect new trends, client requirements, and market gaps by evaluating data from a variety of sources. The creation of new goods, services, or advertising campaigns may benefit from the information provided.

- **Cost-effectiveness:** Digital analytics are frequently more affordable than conventional market research techniques. Businesses can make decisions more quickly and affordably because to the swift collection and analysis of data.

- **Real-Time Insights:** Digital analytics offers real-time insights into user activity, enabling companies to react swiftly to shifting consumer demands and trends.

- **Competitive Advantage:** By using data-driven decisions to improve user experiences, customer satisfaction, and revenue, businesses that embrace digital analytics can acquire a competitive advantage.

DISADVANTAGES OF DIGITAL ANALYTICS

While digital analytics has many benefits, there are also some possible drawbacks. The following are some drawbacks:

- **Data that is insufficient:** Digital analytics rely on data gathered from digital platforms. Incomplete or erroneous data can result in incorrect analysis and judgment. Ad-blocking software, user privacy settings, or device restrictions can all have an influence on data.

- **Complexity:** Digital analytics can be complicated, and understanding and using them successfully requires knowledge. Utilizing the tools and technology to collect and analyze data can call for particular skills, and data analysis involves an understanding of statistical analysis and data modeling.

- **Data Overload:** Digital analytics can produce a lot of data, which is known as data overload. This data can become overwhelming and challenging to analyze if not properly maintained. The overwhelming amount of data available can also result in confusion and decision paralysis when organizations find it difficult to make judgments.

- **Privacy Concerns:** Digital analytics rely on gathering and analyzing user data, which raises privacy concerns. Both privacy issues and ethical questions can be raised by this. Businesses must make sure that they are gathering and using data in an ethical and responsible manner.

- **Bias:** Human bias can affect data analysis, resulting in inaccurate judgments or decisions. For instance, if a company just looks at data from a certain area of the world, it can draw the wrong conclusions about a bigger population.

- **Cost:** The tools and technologies used in digital analytics can be pricey. Businesses may need to invest in specialist software, technology, or staff in order to use digital analytics efficiently because data collection and analysis can be expensive.

III. RESEARCH HYPOTHESIS

- Picture Vs Text
- Quality of data Vs Quantity of Data
- Less is more
- Data Vs Stories
- What Works well for one person need not work for another person

IV. RESULTS AND FINDINGS

<u>Picture Vs Text : An Image is worth A Thousand Words</u>

Be mindful in how you structure and lay out your reports and dashboards. Above all else, put yourself in the shoes of the person who will be viewing this data. To make your reporting clear, understandable and easy to interpret, look no further than basic graphic design principles – choose the right colours, fonts, proportions, visuals, and icons. Another key piece of advice: Select graphs that are best adapted to your analyses to facilitate interpretation. 50% of the work is already done if your dashboard's design and UX have been well thought out.

Tag Everything ; In Moderation

All pages on your site, and all screens of your mobile apps – to avoid problems down the line with your data analysis due to missing or insufficient information. But this doesn't mean you need to track the tiniest of events, or clicks on insignificant buttons buried deep in your site. Remember, your needs, objectives and KPIs will be continuously evolving, so nothing is ever set in stone, and you can always adjust your tagging later… especially if your chosen digital analytics solution offers tools enabling you to easily update your tags over time. Poor tagging can result in incoherent data, or a loss of data. As a result, any actions you take post-implementation (such as data analysis) will be questionable, because these actions will have been based on faulty data.

DATA AND QUALITY: ONE IN THE SAME

Above all else, it's the quality of your data that matters most. If your data is lacking in quality, your analyses will be skewed. When starting a new analytics project, focus first and foremost on accurate implementation. Take the necessary time to test your tags and ensure the complete integrity of your data. By guaranteeing the reliability and accuracy of your analytics data, you'll also earn support and trust from other stakeholders within your company: Beyond quality data analysis and accurate decision-making, it's your credibility that's at stake. 84% of organisations plan to make data quality management a priority in 2023

Facts tell, stories sell

You know you must communicate your data in the clearest, most comprehensible way. The problem? Not all your colleagues are analytics specialists. You've got to deal with diverse groups of people with different job roles, objectives, work cultures, and level of savvy... The solution? Build a story around your data.

DATA STORYTELLING TIPS: -

- Paint the context around your analysis
- Adapt your language to your audience
- Use as many visuals as possible
- Build scenarios around the sequence of events,
- Put forth hypotheses about the impact of the numbers

Find your Golden Nugget

Once you have gleaned early learnings from your standard metrics, don't hesitate to look further. When studying a set of data, certain cross-calculations and correlations can generate surprising insights that are completely unexpected but incredibly valuable. Your digital analytics tool doesn't only serve to study past performance – it is also meant to help you discover new business opportunities (think consumer interests and affinities, bottlenecks in conversion funnels, and so much more). Beyond a simple knack for numbers, the digital analyst has a different way of thinking about data that can help us discover new insights, solve problems, and identify new opportunities.

All the above, will help you reach your goal, Infact the KPI s start from Goals of the company.

Below are some example social media marketing goals that businesses of all shapes and sizes can pursue.

Goal example 1: Increase brand awareness

This means getting your name out there. To create authentic and lasting brand awareness, avoid solely publishing promotional messages. Instead, focus on content that emphasizes your personality and values first.

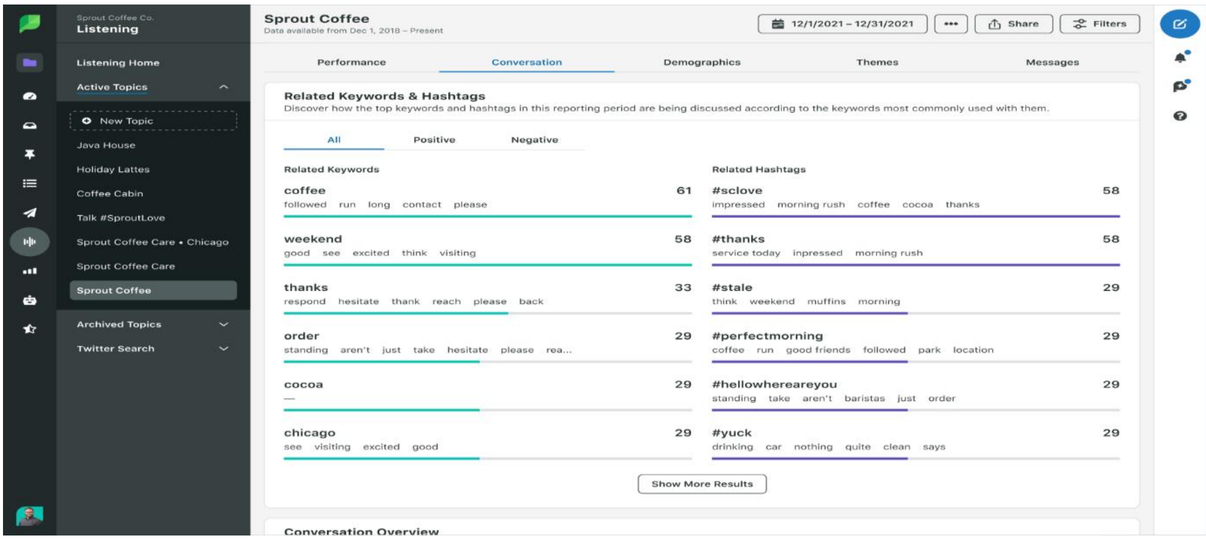
Goal example 2: Generate leads and sales

Whether online, in-store or directly through your social profiles, followers don't make purchases by accident. Social media gives you an avenue to generate revenue. For example, are you alerting customers about new products and promos? Are you integrating your product catalog into your social profiles? Are you running exclusive deals for followers?

Goal example 3: Grow your brand's audience

Bringing new followers into the fold means finding ways to introduce your brand to folks who haven't heard of you before.

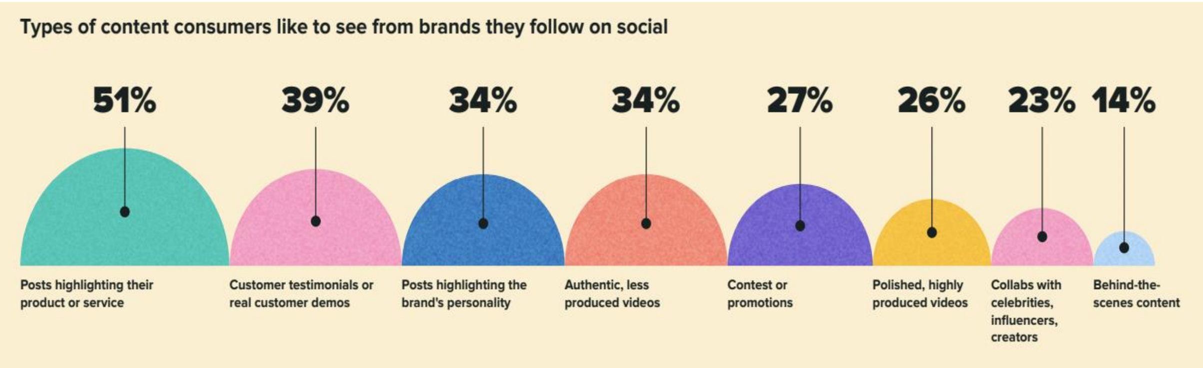
Growing your audience also means discovering conversations around your business and industry that matter the most. Digging through your social channels is nearly impossible without monitoring or listening for specific keywords, phrases or hashtags. Having a pulse on these conversations helps you expand your core audience (and reach adjacent audiences) much faster.



Goal example 4: Boost community engagement

Social media is all about engagement, so it pays to explore new ways to grab the attention of your current followers.

Sprout Social's 2022 Index™ report shows consumers want to see content that highlights a brand's products, services and personality, and customer testimonials.



This means companies need to experiment with messaging and content. For example, does your brand promote user-generated content and hashtags?

Even something as simple as asking a question can increase your engagement rate. Your customers can be your best cheerleaders, but only if you're giving them a reason to do so.

Goal example 5: Drive traffic to your site

Simple enough. If you're laser-focused on generating leads or traffic to your website, social media can make it happen. Whether through promotional posts or social ads, keeping an eye on conversions and URL clicks can help you better determine your ROI from social media.

Any combination of these goals is fair game and can help you better understand which networks to tackle, too. When in doubt, keep your social media marketing strategy simple rather than complicating it with too many objectives that might distract you. Pick one or two and rally your team around them.

ROI

What is the Return On Investment (ROI) of social media? And can social media ROI really be measured?

The ROI of a social media marketing campaign stands for return on investment, or the amount of money you can expect to come in after the initial investment amount required to begin or implement your social media marketing efforts.

There is no easy answer when it comes to the ROI of social media. While it can be difficult to quantify the financial benefits of social media, there are a number of ways in which it can create value for businesses:

1. It can be used to build brand awareness, generate leads, and cultivate customer relationships.
2. It can be an effective tool for promoting special offers and driving traffic to your website.
3. Provides valuable insights into customer behavior and preferences.

How do you do ROI on social media?

Calculating ROI in social media can be challenging. There are a number of factors to consider, such as engagement rates, reach, and conversion rates. Additionally, social media can be used for a variety of purposes, from branding to customer service to lead generation. As a result, businesses need to carefully consider their goals before trying to calculate ROI.

What is a good ROI for social media advertising?

As a general rule, businesses should aim for a return on investment (ROI) of at least 3:1 for social media advertising. This means that for every dollar spent on advertising, the business should earn at least three dollars in revenue. While this may seem like a high bar to reach, keep in mind that social media advertising is highly effective and efficient, so it is well worth the investment. With a little planning and effort, any business can easily achieve a strong ROI from social media advertising.

Some data which is a gold mine from the analytics of Social Media

- Funnel by Profile (Social Media Profile)
- Funnel by Content Type (Posts vs. DM vs. Comments)
- Top 10 performing posts
- Funnel by team (if you have multiple team members publishing content)

REFERENCES

[1] https://d1wqtxts1xzle7.cloudfront.net/90185943/ijtsrd23100-libre.pdf?1661336613=&response-content-disposition=inline%3B+filename%3DDigital_Marketing_A_Review.pdf&Expires=1678603801&Signature=AMIPa2dW7b1MK41Uc4dC9WZEoWeaBYmUS--2QdU~VYV-8WmkNPQgLn0n89K5D31MJWVh06C00YPlugAoLUGLYtJhPxIkkjTCAVIw1zHxoBh~F3HuActuUN5G9aKs5szQiGCZ0ing7Jg~VOf~L6zLNZYyZufM8Pmr9XT9HKgLDaGJuircIjUzlTOOLKd8CKYD2nhgOU6Zx6UuI5jJ~ud2ApqKqcDGGDllU8fqQ9qP7RgX10R5rRMTLMckbq-cFLgUcIoO5FOrwlVcz-qtoF48Qpho9j9rfnUNXS5WNqPdSr5gmluomopP2jXszZu9xC2iSoUz9gVOEuqNE5TeTVQZug__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

[2] https://www.mdpi.com/1999-5903/9/4/76

[3] https://books.google.co.in/books?id=ZX1eAQAAQBAJ&lpg=PR7&dq=research%20papers%20on%20digital%20analytics&lr&pg=PP1#v=onepage&q&f=false

[4] https://304927.fs1.hubspotusercontent-na1.net/hubfs/304927/Social%20-%20GWI%20Report%20-%20Website.pdf?utm_medium=email&_hsmi=202821734&_hsenc=p2ANqtz-9fDW2Zu09GtZ66DAaTIE-nr3JJ5Tilxp7U77X4n75MdMjdk8187wftuqw4_2hzBh44QNTARiaS4Q__KaxgMbsPsBNZMA&utm_content=202821734&utm_source=hs_automation

[5] 5. https://sproutsocial.com/insights/social-media-marketing-strategy/

WEBSITE CONTENT ANALYSIS: A DATA ANALYTICS TOOL FOR MINING NEEDLE FROM THE HAYSTACK

Dr. A. Bharathy
Assistant Professor
Department of Management
Pondicherry University Community College

ABSTRACT

As businesses today are present in various forms on the world wide web engaging their audiences to increase their brand value and net worth this paper attempts to investigate the use of content analysis as a tool to mine the voluminous data available on the social media platforms of organizations. This paper necessitates to understand the need to mine and extract gold from the data explosion on the internet else firms will be blind folding their audiences without leveraging on the technology platform that is fast overriding the conventional media forms. Hence this paper is a case study analysis of studies that have used content analysis in order to accentuate its importance in business strategizing and growth and thus contribute to the literature on the use of content analysis tools.

Keywords:* *Content analysis, Management Fashion, Adaptive Structuration

I. INTRODUCTION

"Mine Gold from Data" – True to these words, just as precious metals like gold, silveror any valuable minerals need to be mined in order to extract them, we can get valuable insightsfrom data explosion that we experience in the real world today by mining through it. This will enable us to unearth very valuable information for business. But, unlike minerals which is a finite resource, data is effectively infinitely durable and reusable. The exponential growth of internet has brought along with-it massive data in the virtual space more than the data that printed resources could provide for the miner of data[1]. Businesses today are present in various forms on the world wide web engaging their audiences to increase their brand value and net worth. That goes to say that social media platforms and services have rapidly grown into an important societal phenomenon, lately also with increased impact on business. Businesses see millions of tweets about their brands, thousands of "likes" on Facebook page, hundreds of thousands of check-ins on Foursquare, Pinterest and Instagram are adding even more to social-media data deluge. No wonder, a look into the Twitter feed of their company's brand for just a few hours will help us recognize soon enough that they are heading into a social-media data explosion that will soon be out of control—if it isn't already—at most companies[2].

This then calls for tools that would enable business to cull out useful analytics from themass of raw data present online so that one can generate a pattern to understand behaviour and take right action at the right time to face off competition much before them. This will reap rich rewards in the form of increase in revenue, optimizing expenditure, target new customers, provide better customer service, listen to what others are saying and do competitive intelligence[1].

II. REVIEW OF LITERATURE

A review of literature was undertaken to understand some tools that are useful in decoding the data mine that is available online and the review significantly highlights the use of content analysis as an approach to systematically explain or describe the various forms of communication online/offline. These forms would include verbal, written or visual. However today as far as media is concerned the internet is the largest platform for data and the rest would encompass books, magazines, newspapers, movies etc[3]. Studies by Berelson as early as 1952 defines content/textual analysis as a "research technique for the objective, systematic and quantitative description of the manifest content of communication.". Thus, content analysis consists of categorizing units of texts (i.e. sentences, quasi-sentences, paragraphs, documents, web pages, etc.) according to their substantive characteristics in order to construct a dataset that allows the analyst to interpret texts and draw inferences[5]. Further this tool is very popular among social scientists in order to explore research questions in relation to mass media and media effects[6].

However, tools for content analysis of online data through data mining dates back to 1990 but its foundation can be explained with "three intertwined scientific disciplines: statistics (the numerical study of data relationships), artificial intelligence (human-like intelligence displayed by machines), machine learning (algorithms that can learn from data to make predictions) and business domain knowledge"[1]. Subsequently in 1999, the benefits of culling intelligence from data resulted in CRISP-DM which stand for Cross-Industry Standard Process for Data Mining that comprised of steps like understanding business, data understanding, data preparation, modelling, evaluating with business goal and deployment.

The rise in online content has given birth to automatic content analysis that represents a slight departure from McMillan's online content analysis procedure in that human coders are being supplemented by a computational method, and some of these methods do not require categories to be defined in advance[7]. The much recent advancement in content analysis can be said about the disruptive Artificial Intelligence (AI) based tools like Open AI, Dall E, Chat GPT, Starry AI, Deep AI, Hotpot AI, Night Café that have stormed the market. These tools help a user to design art forms with their ideas, even if they are not professional artists. One can create portraits, landscapes and abstract art just by keying descriptions into it. This Generative AI can churn out new content – thousands of renditions in simple prompts by mining through images, videos, speech, text and product design code. Gartner analysis justifies that by 2025, 30% of messages from larger companies will be synthetically generated. With this backdrop of tools designed to mine data to understand patterns and make predictive judgements, this study will focus on how effective content analysis can be used for connecting the dots and drawing meaningful communication for sustainable growth and revenue maximization.

III. METHODOLOGY OF THE STUDY

In order to explore the effectiveness of content analysis tool on texts, visuals/images on social media platforms, this study would adopt a case study approach on how this tool has been useful in drawing conclusions and thereby add value to theoretical framework for content analysis based studies in the future.

STUDY OBJECTIVES

This study would approach to understand the usage of content analysis as a tool for mining of online data by business. It would envisage to know how content analysis helps to decode the marketing communication strategy of a business and thereby strategize for effective communication and engagement. It also aims to elucidate through content analysis how competitive firms have adopted social media platforms to engage with their audiences. The study findings would enable the researcher to add to the theoretical framework of content analysis based studies as a tool for mining data.

IV. DISCUSSION AND ANALYSIS

Two research articles used by the researcher of the paper in her earlier studies in connection to the adoption of social media by competitive firms based on content analysis of social media platforms and the subsequent understanding of the communication strategies of these brands/firms analyzed would be used as case studies.

Case Study 1:

The first case study is an exploratory study of the web site content analysis of 20 Automobile Brands rated as top by walkthroughindia.com during the year 2019. The study elucidates the adoption of the popular social media sites in terms of their use and usage patterns and also examines the influence of Management Fashion and Structural Adaptation Theory on them. Extensive literature brings to fore that content analysis is widely used in a variety of research disciplines to explore a range of communication formats including newspaper and print media, television and online sources. The study goes to share that 70% of consumers have visited social media sites to get information; 49% of these consumers have made a purchase decision based on the information they found through the social media sites; 60% said they were likely to use social media sites to pass along information to others online; and 45% of those who searched for information via social media sites engaged in word-of-mouth. Thus, not engaging online will be perceived as being “out of touch” and competition for customers can get very intense through social media[8]. Not surprisingly, the rush to embrace social media platforms has resulted in some consumer adoption too. The paper clearly shows the need for website content analysis for effective use of the communication online. Two important theories have also been identified for adoption of social media platforms by organizations as Management fashion theory & Adaptive structuration theory. The latter points the effective usage of the social media platforms while the former is more of diffusion of fashion in their adoption. Content analysis tools helps to validate these theories and helps strategize therein.

Looking at the top 20 automobile brands wide virtual presence per se the operation of management fashion theory was evinced as suggested by the theory that organizations imitate each other’s adoption of inefficient administrative technology, and that they are influenced by outside fashion setters that lead the diffusion of inefficient innovations or the rejection of efficient innovation[9]. The content analysis research findings identify an engagement framework among the top 20 automobile brands in the 3 categories classified as following the tenets of adaptive structuration theory wherein technology provides opportunities to be used in ways that are unique to an organization[10]. This is evident from category specific engagement levels like passenger car companies were engaging on BS VI complaint vehicles and green environment while the commercial vehicles were reinforcing on vehicle purchases on auspicious occasions and also providing for free service camps. LinkedIn was being used to advocate company innovations and linking it with prospective trainees and employees. However, aspects of bandwagon effects which imply adoption of social media that initially lacks differentiation based on similar formats and similar usage of the media can be observed among the recent adopters like Ashok Leyland, Maruti and Mahindra. The variation in engagement demonstrates differences in the adoption and use of technology as described by adaptive structuration theory among the earlier adopters of social media namely Tata Motors, TAFE and TVS Motors which show a unique company specific adaptation of the technology.

This study has established the adoption of social media by top 20 automobile brands based on their virtual presence on social media as following management fashion theory but has highlighted that engagement using social media varies between categories such that the automobile brands in some categories present a strategic approach whereas in some other category present a tactical or even reactionary approach[11]. However, management fashion theory dominates engagement patterns of top 20 automobile brands within a category while early adopters depict a more structural adaptation to social media.

Case Study 2:

The second case study is based on website content analysis of 41 companies valued as Super Brands by Forbes India in 2015 that was undertaken to examine social media adoption of these organizations in India. Forbes India with the knowledge support of PWC India adopteda robust methodology in listing India’s Super 50 companies after a multi stage process. Further, out of all listed companies on the stock exchanges, they selected those companies with a market capitalization of more than Rs.10, 000 crores as on March 31, 2015. Review of studies exemplifies that despite unique challenges of conducting content analysis of websites, McMillan paper in 2000 suggests it is an appropriate method to explore early stages of an emerging medium or use of a medium and this forms an important initiation for use of content analysis for this paper[13].

Looking at the Super Brands wide virtual presence per se the operation of managementfashion theory is evinced as suggested by the theory that organizations imitate each other’s adoption of inefficient administrative technology, and that they are influenced by outside fashion setters that lead the diffusion of inefficient innovations or the rejection of efficient innovations[13]. The content analysis research findings identifies an engagement framework among the Super Brands in the 7 sectors classified as following the tenets of adaptive structuration theory wherein technology provides opportunities to be used in ways that are unique to an organization[14].This is evident from sector specific engagement levels like pharma sector engaging on diseases highlighting their in house drugs and computers and IT sector engaging on career opportunity with them, However aspects of bandwagon effects which imply adoption of social media that initially lacks differentiation based on similar formats and similar usage of the media can be observed among the recent adopters like FMCG and Financial services brands. The variation in engagement demonstrates differences in the adoption and use of technology as described by adaptive structuration theory[14] among the earlier adopters of social media namely Computer & IT Super Brands, which show a unique company specific adaptation of the technology.

CONTRIBUTION TO LITERATURE

Both the case studies that show case the use of content analysis to elucidate the adoption of social media platforms by businesses within the same category and those in other category highlight the role of management fashion setters namely institutions like consultants, management gurus, business schools and business mass media publications disseminating belief that adoption of certain management techniques is at the forefront of a progressive organization as opined by studies in the past. Those who do not embrace fashion are left behind in the race and are termed as laggards rather than leading management fashion towards progression. We see that, under conditions of uncertainty, organizations that are 'management fashion followers' imitate innovation models promoted by 'fashion-setting organizations' and thus gravitate towards growth[14]. The theory of Bandwagon Diffusion also brings forth the practice of adoption due to increased adoption by others[15]. Contrary to this is the Adaptive Structuration Theory which premises that organisations use new technology in ways that was never conceptualized by the designer/ user of that innovation[10]. This theory also emphasizes that technology will emerge and evolve as it is used by groups. The case study papers demonstrate that content analysis is a very powerful tool for analysis of the massive qualitative data that lies on the online platforms of companies and provides a way for these organizations to break from the clutter if used in a systematic manner rather than for the sake of management fashion.

SCOPE FOR FUTURE STUDY

This paper provides the way to undertake deeper research to seek the opinion of social media administrators, executives and consultants of business organizations regarding how they value this information for actual progress of the organization rather than adoption for management fashion as the theories suggest. An exploration as to how business over a longer period has been able to transform their engagement into very relevant interface with their audience group. This will enable to develop concrete communication strategies that would help to mine “needle out of the haystack”.

V. CONCLUSION

The use of content analysis has helped in explaining the adoption and usage pattern of social media platforms by some big brands and their behavior will guide them to gauge their usage pattern to innovate and break the clutter whilst also providing learning to new comers to not to blind their audience with imitation but to provide a compelling reason to engage and prefer them.

REFERENCES

[1] https://www.baianat.com/articles/mine-gold-in-your-data

[2] https://www.forbes.com/sites/onmarketing/2012/06/28/social-media-and-the-big-data-explosion/?sh=1ac9d2a26a61

[3] https://www.quora.com/What-is-content-analysis-What-is-the-need-of-content-analysis

[4] https://en.wikipedia.org/wiki/Online_content_analysis

[5] McMillan, Sally J. (March 2000). "The Microscope and the Moving Target: The Challenge of Applying Content Analysis to the World Wide Web". *Journalism and Mass Communication Quarterly*. **77** (1): 80–98.

[6] Krippendorff, Klaus (2012). *Content Analysis: An introduction to its methodology*. Thousand Oaks, CA: Sage.

[7] Grimmer, Justin; Stewart, Brandon (2013). "Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts". *Political Analysis*. **21** (3): 267–297.

[8] https://themarketingguy.files.wordpress.com/2008/12/dei-study-engaging-consumers-online-summary.pdf2

[9] Abrahamson, Eric. "Management fashion." Academy of management review21.1 (1996): 254-285

[10] DeSanctis G, Poole MS (1994) Capturing the complexity in advanced technology use: adaptive structuration theory. Organ Sci 5(2):121–147

[11] http://business.mapsofindia.com/automobile/top-automobile-companies.html

[12] McMillan SJ (2000) The microscope and the moving target: the challenge of applying content analysis to the world wide web.J Mass Commun Q 77(1):80–98

[13] Abrahamson, Eric. "Management fashion." Academy of management review21.1 (1996): 254-285

[14] Kaplan, Andreas M., and Michael Haenlein. "Users of the world, unite! The challenges and opportunities of Social Media." Business horizons 53.1 (2010): 59-68.

[15] Rosenkopf L, Abrahamson E (1999) Modeling reputational and informational influences in threshold models of band wagon innovation diffusion. Computational Mathematics and Organization Theory 5(4):361–384.

SYNDICATE: The Journal of Management (SJOM)

ISSN: 2278-8247

[Annual Peer Reviewed International Online Journal]

Call for Papers

Deadline for Submission: 25th January 2024
Notification of Acceptance: 15th February 2024
Manuscript Publication: March 2024

NO PUBLICATION COST

Mode of submission: Submission through E-mail.

Syndicate: The Journal of Management (SJOM) is an Online, Open Access, Peer Reviewed journal published by **M.O.P. Vaishnav College for Women (Autonomous), Chennai, India**; The SJOM International Journal aims to provide an online publishing platform for the academia, management researchers, and management students to publish their original works. Authors are invited to submit original manuscripts that identify, extend, unify, test or apply scientific and multi-disciplinary knowledge concerned to the management field.

The following types of papers are considered for publication:

1. Original research works in the above-mentioned fields
2. Surveys, opinions, abstracts and essays related to Operations research.
3. Few review papers will be published if the author had done considerable work in that area.
4. Case studies related to management domain.

RESEARCH AREAS

We are looking forward for strict compliance to the modern age standards in all fields. The topics recommended by the journal can be considered in term of concepts, research, standards, and implementations etc. unpublished papers, which are not under review and not considered for publication in any other conference or journal in the following, but not limited to, topic areas.

Business Intelligence
Data Science for Business
Deep Learning
Company Management
Financial Management
Human Resources
Accounting
Marketing
Operations Management
Human Resource Management
Statistics
International Business
Data Analytics & Information Technology
Environment
Risk Management
Globalization

Manuscripts should be in Times New Roman with 12pt, Single Spaced not exceeding 10 pages.

Submit your paper to editor.sjom@gmail.com, editor.sjom@mopvc.edu.in

website: www.mopvc.edu.in/sjom

Regards,

Editor-in-Chief
SJOM