Impact of Disruptive Technologies on Marketing

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Abstract

Disruptive technologies are extensively utilized for numerous business processes. Various benefits of technology inclusion are business models improvement, enhanced global reach, competitive advantage, concentration on innovative ideas, increase in productivity and efficiency of business operations. Digital marketing is one of the major tools using which radical changes are achieved in marketing operations like product marketing, promotions, target marketing, awareness creation, advertisements etc. Efficiency of digital marketing depends mainly on various factors such as dependency of online purchase on social media account, occupation, gender, search engine page etc. Identifying the important factors and concentrating on the most contributing factor is essential to gain optimal benefits of technology inclusion in business. This paper is based on the research conducted to identify the factors responsible for improving the impact of disruptive technologies on digital marketing. Section 1 of the paper has introduction to various disruptive technologies and their business benefits. Section 2 holds literature review. Section 3 deals with case study and research methodology followed by data collection and result discussion. Section 4 deals with the conclusion and future scope of the research.

Keywords *:* Digital marketing, disruptive technologies, regression, contingency table, competitive advantage

Introduction

Disruptive technology is the innovation that uproots the established technology, product or service that spawns a new industry. Disruptive technology can be simultaneously destructive and creative because old products are replaced by new products created using technology advancements. It has the power to change the way we work, think, live and behave. The term disruptive technology is mostly used to describe gadgets and electronics, but it can also be applied to the concept of services. Twenty year ago, the world had never heard about online shopping or digital marketing but today they play a vital role in many organizations. Online penetration has completely altered the way businesses or the entire industry operates. Harvard Business School professor Clayton M. Christensen was the first person who coined this term in his 1997 best-selling book "The Innovator's Dilemma". He separated the new technology into two categories: sustaining and disruptive and defined it as a new technology which appeals to a limited audience (Rouse, 2016).
Few examples of disruptive technologies are:

i. The personal computer displaced the typewriter and forever changed the way we work and communicate.
ii. The windows operating system's which has combination of affordability and user friendly interface which was instrumental in the rapid development of the personal computing industry in 1990s
iii. Emails which transformed the way we communicate displacing letter-writing and disrupted the postal industries
iv. Smartphones largely replace cell phones and PDAs because of the availability of apps. And these applications disrupted: pocket cameras, MP3 players, calculators among many other possibilities.

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    v.   Digital marketing which has changed the advertising and promotion world by segmenting the market by doing affiliate marketing.

Some of the technologies which produce great disruption in business and global economy are: (Forbes Technology Council, 2018)

Wireless sensor network – These are spatially autonomous sensors which monitor and captures physical environment condition like temperature, pressure, sound etc. The data is then sent through network to main location for controlling. These sensors can be used in healthcare monitoring, defense, air pollution, landslide detection and water quality control. These sensors have significant added value in the economics, people and business models.

Cloud – The use of computer hardware & software resources to deliver convenient on-demand network access and services over the internet to share the pool of configurable computer devices. Cloud can prove to be immense help in the big data analytics and mobile computing as compared to other traditional alternative of information technology infrastructure. Other uses of the cloud are file storage, disaster recovery, potential use of technology in IT, cloud bases backup, banking and education.

Commoditized Artificial Intelligence – Advanced artificial intelligence and machine learning techniques can be developed in few hours using open source frameworks. AI is becoming more pervasive and ubiquitous than before. Software is becoming smarter and is capable to do multiple tasks such as natural language processing, computer vision and recommender system. These tasks are carried out with ease like developing a Content Management System.

Internet of things – IOT is the system of identifiable objects and their virtual representations like- gadgets, structure, and different things which are inserted with the electronics, sensors, software and network connectivity, which empowers in the gathering and exchange of information.

Automation of knowledge work – This means the utilization of computers to perform activities that depend on the complex analysis and creative problem solving. This not only extent computing into new domains but also make new connections between knowledge workers and machines. Through this a manager could simply ask to provide the information and this help them potentially to provide them quick access to information and raise the quality, decision and performance.

Chatbots, augmented reality, augmented analytics, Blockchain technology, voice assistant tech integration, 3-D printing etc. are various other trends of technology disruptions.

Disruptive technology has created a big uproar in the marketing world. The rapid evaluation of the technology has sifted the consumer behavior and expectation with it. This has led to an exponential growth and relative cost reduction for the organization. Disruptive technologies have forced even the well established brands to come out of their comfort zone and to reinvent business for gaining competitive advantage (Culclasure, 2016). Different ways by which inclusion of disruptive technologies enhances marketing are:

Customer Relationship: Disruptive technology help brands in tailoring their message across all media. This enhances the reach of marketing to wide consumer base. Marketing team acknowledge that consumers are now looking for a meaningful and personalized experience at the brand awareness stage and throughout the entire brand journey. Brands clearly define customer journey and use of appropriate marketing automation tools for each steps in the process is sure to promise wide and global consumer base.

Informed decision making : Companies are leveraging the benefits of data analytics, using both unstructured and structured data to uncover valuable trends, opportunities, and consumer insights. New analytics tools make it possible to analyze sophisticated text based data, which can include anything from online reviews to emails. Advantages of investment on analytics results includes easy capturing of customer behavioral trends, identifying areas for improvement in products and services, glean insights about customer needs etc.

This research paper has analyzed and identified important contributors for lead generation and conversion. The research work was carried out in an organization that is using digital marketing which is one of the disruptive methods in marketing.

Literature Review

Digital marketing is the technique of marketing which involves the use of electronic medium like internet, social media, websites etc. in order to carry out marketing activities. Digitization and digitalization has led to the growth of digital marketing. The customers prefer to buy products and services online and the organizations try to get more number of customers by attracting them through different techniques of digital marketing such as:

- Email marketing
- Social media marketing
- Search engine optimization
- Content marketing
- Pay per click advertising

It is a myth that adoption of digital marketing will increase customer base and sales. Detailed pre-adoption analysis is a must to identify the suitability of digital marketing for business operations. Online purchase of goods and services by customers depends on various parameters like occupation, gender, possession of social media account, preference of landing pages for information retrieval etc. The need of adoption of digital marketing technique and the need for the parameter identification is also discussed by various journals articles. Brand advocacy and brand bonding is considered as new parameter in consumer purchase decision in the digital world. It also has impact on the various industries like Automobile, Retail & Clothing, mobile and handset etc. (Guptaet.al., 2017). Social media marketing (SMM) techniques is becoming increasingly important as the organisations are increasing their investment in this section. A 6-stage model of SMM analysis includes setting evaluation objectives, identifying key performance indicator, identifying matrices, data collection and analysis, report generation and management decision making (Keegan & Rowley, 2017). The banking sector is the one of the most benefitted sector of disruption. E-banking environment is rapidly spreading. E-client is well educated and their needs are constantly changing. They have access to lots of information and have the power of choice. A model to create target group of clients or segmentation with likelihood to increase their relationship with banks along with identification of crucial factor in marketing decision making is provided (Sanaderet.al.,2017).

Reconceptualization of internal marketing (IM) using multi-stakeholder perspectives by exploring experiences and opinions of those directly affected by internal marketing are essential. Exploration of dyadic perspectives within IM and access the applicability of key concept of channel management, transposing them from the supply chain into an internal marketing context is required for the understanding the digital inclusion in marketing processes (Brown, 2017). The advancement of technology and the utilization of information and communication technology changed the way by which market research is conducted. The scientific technology contribution helps on the focused identification of innovative research methodology and techniques, which will be highly acceptable in the process of market research in future.Prediction of changes that are going to affect the

development of market research in the near future and analysis based on the current status is essential to make smooth transition into digital world (Žák, Š, 2015). The use of digital marketing techniques in food sector is also analyzed. The research is based on number, reach, nature of energy-dense and nutrient-poor food and beverage marketing on Facebook. Content analysis of promoting techniques employed by 27 most popular food and beverages brand in Australia, and 19 marketing contents and data were collected from the day each pages launched.The result also stated that all the food and beverages brand pages in the final sample were classified as high in calories dietary choices, which are high in calories but low in nutritional value. Findings also suggested that web pages are most commonly liked by those who are aged between18 and 24 (Freeman, et.al.,2014))

Sentiment analysis is the task of finding the opinions of authors about the specific entities. When a person wants to buy a product online, his decision-making process is generally affected by the opinions formed by thoughts leaders and ordinary people The research also discussed several algorithms that aim to solve the research problems within the field of sentimental analysis and also found that many of the commercial sentimental analysis system still use simplistic techniques in order to avoid the challenges related to this area (Feldman, 2013). Most of the businesses, organizations and brands are adopting social media marketing techniques to create news, make friends, connections, followers and build communities in the virtual space. This research showsthat social media is still new but some organizations are using it as a platform to enjoy the benefits of social media campaigns. Findings have also concluded that South African businesses are using social media for basically three things like digital promotion, customer care and content distribution (Dateling& Bick, 2013).

Research Methodology

The research is conducted on the marketing techniques of an IT company which provides ERP solutions, SAP services, mobility services, oracle retail solution, Business Intelligence services, cloud services. Various business process of the company are:

- SAP - Consulting administrations from process counseling, usage to help and facilitate.
- Mobility – Consulting administrations incorporate Mobile innovation methodology, Business and Technical design, Project Implementation, Implementation administration.
- Oracle Retail – As a confided in Oracle gold accomplice, they give counseling administrations identified with usage and support to retail clients.
- IT Infrastructure – Consulting administrations range incorporates IT procedure and plan,
- System Management Server (SMS), IT benefits administration, Program administration.
- Business Intelligence – Consulting under Business Intelligence (BI) incorporates DW and BI
- Strategy Consulting, Enterprise Data Architecture, Corporate Performance

The survey for the research was conducted based on data collected from social media platforms like LinkedIn, Facebook, Whatsapp, Instagram and also through emails. An online questionnaire was made and floated on to different social media platforms. Various parameters collected are user name, age, gender, occupation, possession of social media account, preferred social media, preferred search engine, online purchase behavior, review before purchase, knowledge of digital marketing techniques, email usage etc. Another set of data is also gathered about page views, impressions and conversion from leads to customer.

I. The research is carried out by using chi-square test in order to identify the dependency of online purchase on gender, occupation, social media account, and search pages.
- Type of Data used: Primary data
- Data collection Instrument: Online questionnaire

- Sampling Technique: Convenience sampling
- Sample size: 193 responses
- Data Analysis tool: Excel analytics –chi-square test

II. Regression is also used to identify the model to predict the page views based on impressions for different social media platforms.
- Type of Data used: Secondary data
- Data collection Instrument: Data is collected using the online analytics tools for Facebook, Twitter and LinkedIn.
- Period of data collection: 1 month
- Data Analysis tool: Excel analytics –Regression

III. The data is also analyzed by calculating the conversion rate of visits to lead for different digital marketing techniques.
- Type of Data used: Secondary data
- Data collection Instrument: Data is collected using the online analytics tools for direct traffic, Social media, Organic search, email marketing, paid search, referrals.
- Period of data collection: 6 months consolidated data
- Data Analysis tool: Excel

Data Analysis and Results

I. Identification of parameters for target marketing

Identification of the dependency of online purchase on different parameters like gender, occupation, customers having social media account and landing page of the search engine is carried out first. This will help to extract important areas on which marketing needs to be targeted. Chi-Square test is conducted on the data collection. As the values are categorical, contingency table is created and the test is conducted. The compiled data of online purchase based on gender is given in table 1. The other tables 2, 3 and 4 show the compiled data of occupation, social media account and search engine pages.

Hypothesis is framed as

H_0 there is no relation that exists between online purchase and other parameters
H_a there is existence of relation between them.
Depending on the p-value of the chi-square tests with α level as 0.05, the null hypothesis is either accepted or rejected.

Table 1: Online purchase & Gender

Gender	Yes	No
Male	119	6
Female	59	9

Table 2: Online purchase & Occupation

Occupation	Yes	No
Student	106	8
Working	70	5
Business	0	2
Ex- Servicemen	1	0
Home-maker	1	0

Table 3: Online purchase & Social media account

Gender	Yes	No
Male	177	12
Female	1	3

Table 4: Online purchase & Landing Search pages

Landing Page	Yes	No
1st page only	71	5
1-2 pages	72	6
1-3 pages	18	0
1-4 pages	7	0
1-5 pages	10	4

The p-value of the chi-square tests conducted on the above tables are 0.03, 7.56E-05, 3.87E-07, 0.03 respectively. The null hypothesis is thus rejected as all values are less than α value of 0.05 and hence there is dependency of online purchase on gender, occupation, social media account, and search pages. This provides the areas where marketing needs to be targeted.

II. Prediction of page views based on impressions

As the relations between online purchases and various parameters are established there is a need to identify the relationship between impressions on the web pages and page views. The page views can further be converted into leads and customers. Linear regression is used to identify a model to represent the dependency of page views on impression. The same is also used to predict the future page views based on impressions. The work is carried out for various social media sites like Facebook, LinkedIn and Twitter. The statistics given below shows the stability of the model using Multiple R value which also indicates the acceptability of the model.

Table 5:Regression Statistics for Facebook impression					
Multiple R	0.890958521			Co-efficient	P-Value
Observations	30		Intercept	0.282896	
			FB Impression	0.016028	4.176E-11

Table 6:Regression Statistics for LinkedIn impression					
Multiple R	0.97241738			**Co-efficient**	**P-Value**
Observations	30		**Intercept**	-0.299434	
			FB Impression	0.012957	3.053E-19
Table 7:Regression Statistics for Twitter impression					
Multiple R	0.868789445			**Co-efficient**	**P-Value**
Observations	30		**Intercept**	-0.44525	
			FB Impression	0.042610	4.835E-10

From the above statistics result it is evident that the p value is very much less than the alpha level of 0.05 and the model is significant. The residual plots shown in figure 1 indicate that the linear regression model is appropriate as there are no residuals in any model.
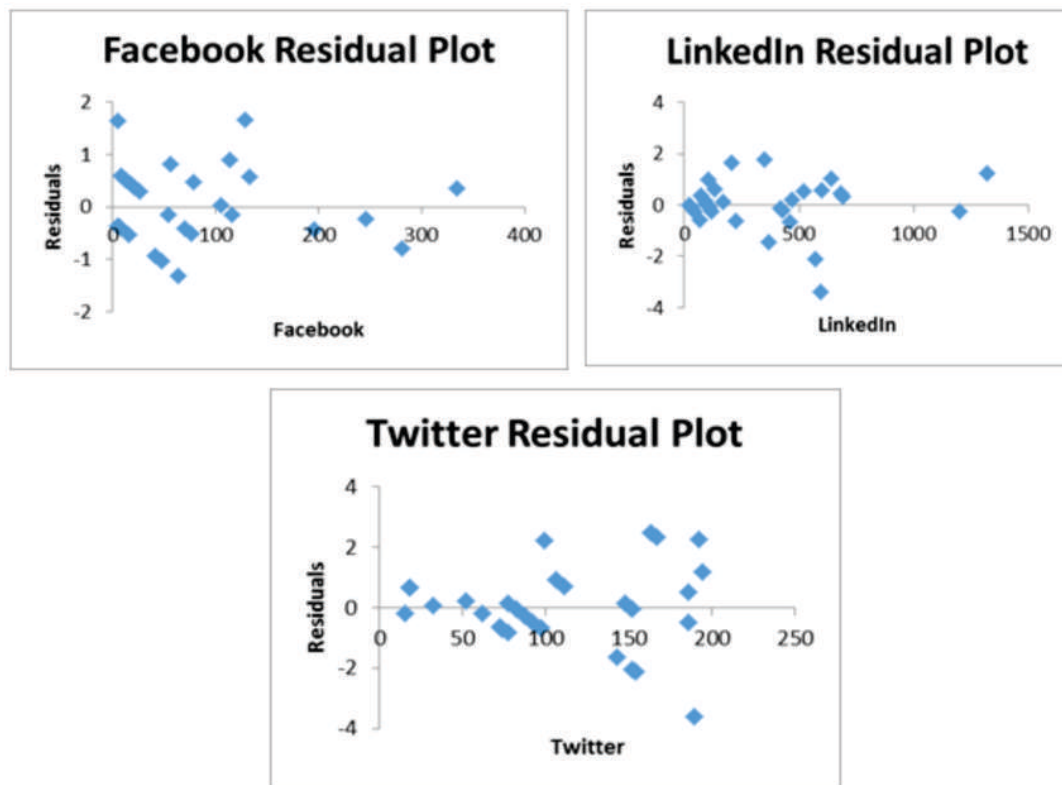

Figure 1: Residual plots of the linear models

III. Conversion Rate

Following the target marketing parameter identification and linear regression model generation to predict page visits based on impression, the conversion rate is calculated. The conversion rate of page visits to leads is calculated for the different techniques of digital marketing such as direct traffic, email marketing, organic search, paid search, referrals and social media. Figure 2 shows the conversion rates of various digital marketing techniques.

Table 8: Conversion rate of digital marketing techniques

Marketing techniques	Visits	Leads	Conversion rate
Direct Traffic	24085	218	1%
Email Marketing	387	108	28%
Organic Search	23602	294	1%
Paid Search	3697	50	1%
Referrals	63	6	10%
Social Media	1701	17	1%

	Direct Traffic	Email Marketing	Organic Search	Paid Search	Referrals	Social Media
■ Conversion rate	1%	28%	1%	1%	10%	1%
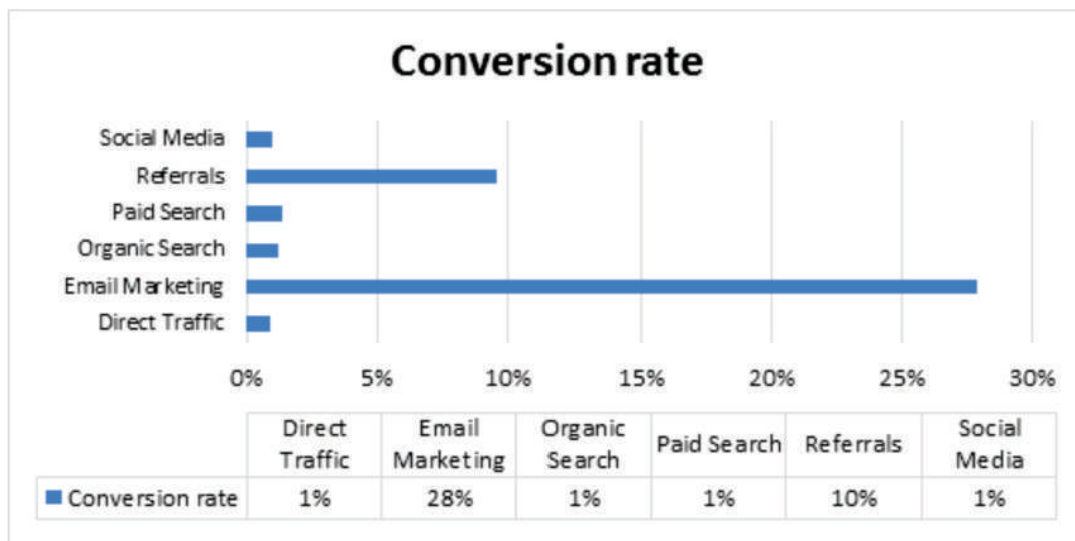
Figure 2: Conversion rate of digital marketing techniques

The conversion rate for email marketing is the highest for the company in comparison to other marketing techniques. Hence it is adjudged as is the most efficient digital marketing technique.

Conclusion & Future Scope

The analysis results show that there is dependency of online purchase of customers on different parameters. Hence before starting digital marketing the companies should focus on these parameters. This will help organizations to get maximum customers by promoting the products to those target marketing. The companies should also focus on getting maximum impressions for their posts on different social media platforms by increasing their reach. Hence the company will be able to get more page views because the analysis results shows that there is a positive relationship between the impressions and page views. The company should prefer email marketing the most because the analysis of 6 months data of visits vs. leads shows that conversion rate of visits to lead is highest for email marketing in comparison to other digital marketing techniques.

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