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“5G Technology and its Impact on Marketing”



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ABSTRACT

The study aims to discover the relationship between advancement in technology, specifically 5G technology and marketing. It also intends to identify the strength and nature of relationship between these two variables and how can marketer use technology for their benefit. For this purpose, secondary data was obtained from various papers and journals to highlight the important variables that will become reality due to successful implementation of 5G technology. These variables are “Infrastructure”, “Digital Marketing Tools”, “Content of Marketing Message”, “New Opportunities in IoT Induced World” and “Big Data”. Primary data is obtained through survey. The research will also identify which of the variables are more relevant than others. The researcher has adopted qualitative data analysis techniques in order to find variable relevance which can be used for future researchers. Majority of the variables fitted well with the regression equation. The research includes the results from quantitative analysis as well as two interviews with the people who played a significant role in the development of 5G technology. These interviews, though insignificant at this level, can be used in future for further research in this domain. The researcher has highlighted how marketer can be aware of the technological changes and adapt themselves to the new technology so change adaptive companies can have an endless life.

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CHAPTER 1: INTRODUCTION

Background

The marketing techniques have changed drastically since the “Made Man” days of traditional marketing. Today, marketing is a blend a creativity and data, lots and lots of data. Marketing is no longer restricted to big tall flashy billboards but its more about creating an experience for the customer. Technological improvements have allowed marketer to develop individual relations with every customer, leading them towards bespoke solutions. With another technological advancement (5G technology) on the horizon, the researcher aims to investigate the new possibilities that will become possible with implementation of this technology and study their impact on marketing.

Marketing

“Marketing is the science and art of exploring, creating, and delivering value to satisfy the needs of a target market at a profit. Marketing identifies unfulfilled needs and desires. It defines, measures and quantifies the size of the identified market and the profit potential. It pinpoints which segments the company is capable of serving best and it designs and promotes the appropriate products and services.”

-Dr. Philip Kotler

Business; in any social environment; is inevitable. And one of the major components for the success of any business is customers. Business exist to earn profits and profits are earned when you have customers. So, any business today has only two, and only these two, basic functions: marketing and innovation (Silk.A.J). Beside few occurrences, customer satisfaction is vital to secure customer loyalty and generate long term financial benefit for company (Sasser, 1995). There are many ways to achieve customer satisfaction and they all involve marketing techniques. Marketing involves what organizations must do in order to create value for their customers (Silk). Value is created by meeting customer’s needs. Thus, a company define itself not by what they sell but, by what benefit they provide (Silk.A.J). Simon Oliver Sinek believes that the secret behind a successful sale, be it a product, service or an idea, is belief. People who believe what you believe will come and follow you. They will buy the products or services you are selling, and they will

stand for your cause only because they believe in what you believed (K.Gardner, 2017). It means that a success or failure of an organization, firm or company depends upon marketing. If they tell; the right people, the right way; what they believe, they can successfully make them loyal, profitable customers.

Philip Kotler has made marketing easy for everyone. In his opinion, the shortest definition of marketing is “meeting needs profitably”. Marketing is about recognizing, finding and classifying human and social needs (P.Kotler, 2017). And in order to stand against the tides of time, firms develop some strategies they can follow. The aim here is to create sustainable strategies that will help the business remain viable for its customers (Silk.A.J). Businesses are not in the position to satisfy all customers, every time. One of the biggest reasons for failure of a business is not targeting a very large and indifferent customer base. Since the recipe for success was to serve to people who believe what you believe (K.Gardner, 2017), many businesses adopt a strategy that is known as target marketing (M.A.Camilleri).

For target marketing strategies, businesses divided the potential market into different segments. These market segments have similar needs and even if they don't, they need a similar solution for indifferent needs. The most profitable market segment is selected, and a marketing mix is developed for said segment (M.A.Camilleri). The three phases of target marketing are;

- Market segmentation
- Market targeting
- Market positioning

Markets are segmented based on various bases and key factors. Traditionally, marketer used following basis (since they are widely used and accepted):

- Demographics: age, income, gender, occupation etc
- Geographic: nation, region of country
- Lifestyle: hedonistic vs value oriented (Silk.A.J).

From Traditional to Digital Marketing Era

With the increase of involvement and dependency of technology in our lives; many processes; even industries; changed. In the beginning of this era, technology was used to facilitate the marketing process. Same principles were followed but the task that took days and weeks to finish,

was done in merely an hour or so. Principles and strategies did not change because the variables in the marketing equation i.e marketer and customer, did not change.

In the age of digitization, marketing practices and norms evolved drastically. Each generation of cellular innovation has brought incredible advances that just lived in our minds 20 years back. The rapidly evolving digital world is challenging the significance of existing traditional marketing practices in the marketplace. For existence, businesses need to evolve and adapt to the new environment (Wymbs.C, 2011). We moved from product driven marketing strategies to customer driven strategies. And now, to digital marketing (P.Kotler, 2017).

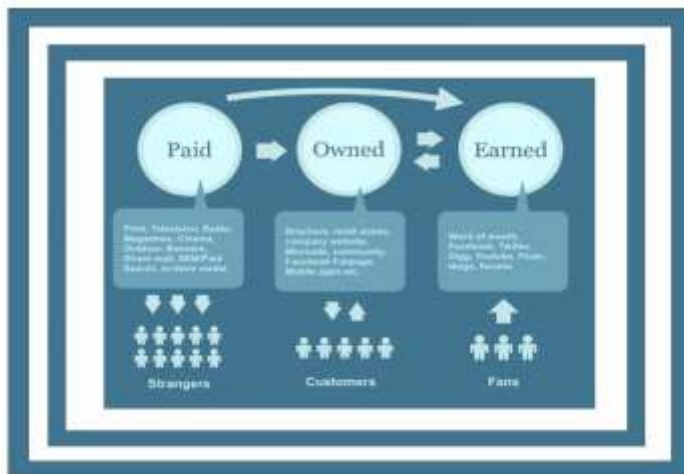
Digital Marketing

Digital marketing allows us to use all the possible forms of channels; may it be digital or non-digital; to create value for our customer (Dania, 2016). Besides other things, digital medium is also used to promote products, services and brands. It is a comprehensive term for “the targeted, measurable, and interactive marketing of goods or services using digital technologies in order to reach and convert leads into customers and preserve them”.

In the beginning of the age of digital marketing, only digital medium was used to communicate with target audience. According to Kotler and Keller (Simirnova.M, 2019),

“Modern digital media and its constant development gives marketers various ways to interact with consumers and existing customers”

These communications ways are grouped into three main categories that are earned, owned and paid media.



(Matt, What is 5G and how will it impact digital marketing?, 2019)

Paid media

Be it push of technology by making it available for masses or pull of ease of digitization, we live in a digital world today. As per online marketing institute, marketer communicate with their

customers through paid, owned and earned media. Paid media is everything the firm, business or company had paid a fee for. The media creator of such content charge fee and then the company`s product, service or even ideology is advertised against a fee. the medium for such media display can be TV, magazines, paid search, sponsorships, social media posts, sponsored advertising and others. Such type of content and its channels are used when firms are introducing their brands. Such content is perfectly suited to create brand awareness and attract conversions (Simirnova.M, 2019). When brand awareness campaigns are conducted on online medium, they not only require minimum physical effort but also, provide a detailed analysis regarding return on money invested.

Owned media

In digital world of dot com and application, companies create their online presence. And in order to sustain and continue with the concepts of “uniqueness and differentiation”, companies purchase or own (by developing it themselves) websites and social media presence at various other platforms. Companies independently (by hiring resources that work of the company) develop content that is displayed on these digital platforms. Companies use this media to communicate with their present and potential customers (Simirnova.M, 2019).

Earned Media

Digitation has revolutionized the world. Today, everyone owning a cellphone, or any other medium for online presence, can communicate with the rest of the world; for FREE. This pattern created a new category of content that marketer use to send their message to their customers i.e Earned media.

Earned media is the content what customers (be it new or old) voluntary share with the rest of the world. It includes reviews, reposts, comments and word of mouth. The best feature about this type of content is that people get the message from people who they trust i.e not the company selling the product but an independent user with whom they can relate and hence trust.

Problem Statement

From the literature, the researcher has identified that technology has drastically changed the way many industries worked. It has even demolished major industries. Ice harvesting used to be a major industry but with advancement in technology, people moved towards ice factories and with more research and development, ice factories were no more, and the refrigerators started to grab the

market share. Companies and brands that do not prepare themselves for the next big thing fail to exist when the next big thing hits the marketplace. Literature shows that many other industries collapsed due to technological advancements. The literature, however, does not show how marketer should prepare themselves to take advantage of the upcoming technological advancements.

“Marketers are unaware how to use technology for their benefit. And how to prepare themselves for the next big thing. There is no research on what components of 5G technology (that will become reality through successful implementation of 5G) will be more relevant for marketer than others.”

Research Questions

The researcher aims to study the impact or the effect that the technology will bring on the marketing experts in different industries. Prominent possibilities of 5G technology like greater internet speed, no latency and huge database seems relevant for a marketer. Researcher aims to study all the possibilities of 5G and investigate if there is any relation between these opportunities and marketing. The researcher plans to ask the opinion of educated and relevant people (through descriptive research questions) about the potential influence the technology could have in the field of marketing. Researcher also plans to identify which opportunity is significant for marketer and which opportunity is insignificant for marketer.

In order to do so, different elements are taken that will be implemented due to the presence of 5G technology. The dependent variable for the study is marketing(Ozturkcan, 2018). The independent variables are, as mentioned before, the variables that will come into existence or will become more relevant due to the implementation of 5G technology in the market. These variables are marketing infrastructure (L.Kimixay, 2019) (Oleg.V.Pavlon, 2007), search engine optimization (M.P.Evans, 2007), new opportunities (L.Huang, 2012) (E.M.David, 2017), big data (Sunil Erevelles.N) and content of message (Jarvinen, 2015).

1. Does there exist any relation between marketing and technology?
2. Can marketer use technology for their benefit?
3. What components from technology will help marketers?
4. What can marketers do to take benefit of these technologies?

5. How can marketer prepare themselves to take advantage of technological advancements in future?

Research Objective

Reports conclude that 81% customer do an online research before making an actual purchase. And 61% people read the online reviews of customers before making an actual purchase decision (Tortorice.M, 2017). In today's digital world, existence is impossible without online presence. Due to such significance of online research on the purchase decision, the researcher aims to identify the new possible opportunities, in a 5G technological environment, that could become reality for marketers. 5G promises to bring a lot of automation and a lot of data in the palm of our hand. Research aims to identify how marketer use this data and other remarkable features of 5G technology to make marketing more effective.

- The objective of this research is to find the relationship between independent and dependent variable. It means that the researcher will identify if there exist a positive or negative relationship between different variables.
- The researcher also aims to investigate the strength of relationship between different variables. The objective of this research is to identify the impact that 5G technology will have on marketing, especially digital marketing.
- The research will also prepare marketer to take advantage of the next big thing in the market.
- The research will allow marketers an opportunity to gain market share as literature shows that a lot of customers (potential and present) do online research before making an actual purchase.
- The research will also act as a stepping stone for future research as it will identify the key opportunities from 5G technology that are relevant for marketer (as shown by Cronbach's Alpha Reliability Test).

Aim of the Study

The aim of this applied research (Niiniluoto.I, 1993) is to prepare marketer to take advantage of the 5G technology. The study aims to identify variables that (would come into existence or would

become more important due to implementation of 5G) could affect the future of marketing. It will also identify the variables which will have, more effect than the others, on marketing. So, that the marketer could easily prioritize variables and their effect on his work.

CHAPTER 2: LITERATURE REVIEW

Digital Marketing	Traditional Marketing
Looks for value by using content marketing	Looks for increasing sales without increasing value for customers
Encourages seamless two-way communication and develop trust by communicating to customers vis “earned media/content”	Provides a platform of one-way communication at the discretion of the company. Communication is done by forcing target audience with the company`s indented message/believe
Works on data-driven ideology. Customers are given a wide array of reviews; not chosen by the company; which helps them make informed decision	Works on giving customer only limited data i.e what company wants them to know, not what other customers want them to know("THE DIFFERENCE BETWEEN DIGITAL MARKETING & TRADITIONAL ADVERTISING," 2018).

Benefits of Using Digital medium for marketing

Any form of communication done via traditional methods costs money. Digital marketing has enabled free of cost (financial cost) medium for communicating with the target audience. This channel of communication gives the control to customers. Content marketing makes information available for customers and they use that information when, and however they wish to. The modern digital world has empowered masses. It is said that “internet can extent market reach and operational efficiency of small and medium enterprises (SMEs). Digital world is not confounded by the geographical and physical boundaries of the world. People living in different countries can contact each other just as people sitting next to each other. So, the number and the location of audience in digital marketing is unlimited.

The online medium of marketing has coined the term “earned media”. In digital marketing, earned media helps businesses to make record breaking sales. The traditional marketing talks about reference group and similar concepts that usually help customers make the sale. But message received via earned media has proven to be even more profitable for businesses than the reference

groups. The content available online can be changed and updated easily. And then that updated message can be communicated to masses easily too (Varbanova.L, 2013). Paid content uploaded through platforms like “google ad word” allows customers to keep a detailed record of what is happening with their marketing budget and if it is producing desired results or not. And all of this; record keeping and generating cost benefit analysis; is free of cost. So, they allow measuring of impact of the marketing effort much easier than traditional marketing techniques.

Techniques like content marketing allows firms to target “right customer at the right time”. Systems like Content marketing funnel allows firms to identify where a person; from them target audience; is in the funnel and what kind of content will be best suited for the said person. It helps marketer create more personalized and customized message for each member of the audience (Dania, 2016).

Issues/Problems of Using Digital medium for marketing

- Since a lot of information is freely available for masses to use, the digital world has a big problem of copyrights issue.
- Difficulties arise when there is some issue or blockage with the medium of communication i.e internet. Today, internet is widely available all over the world but there are still some places where internet connectivity is not so seamless. In such said areas, whole message of the marketer cannot be transferred to the audience (as the whole content is not always shown) and hence it cannot generate desired results. Sometimes, the issue is not the availability of internet, but it is of the weight of content that is to be downloaded. For example, sometimes there are way too many videos and graphics on the website that need time and add on the time require to load the whole website. Customer retention is lost in that lag time or if the content isn't loaded, marketers' message is lost.
- These rapid progressions in technologies began just few decades ago and the subject of digital marketing came to the surface. A noticeable portion of target market of majority of brands lies in the age bracket of 60 years and above. They did not grow up with technology and are not that comfortable with it. In digital marketing, still a prominent number of customers complain about not being able to touch and feel the product before making the purchase. They are also hesitant to insert and save their personal information, like bank account details, into these “unknown and uncertain electronic devices”.

- From the business's perspective, the sale is said to be made when customer places an order; be it through a traditional channel or online one. When the sale is done through online channel, there exist an element of uncertainty. Customers who agree to pay "cash on deliver" pose a great threat of default; in context of payment; for business. The use of digital media marketing strategies can take some time to obtain measurable success (Steimle.J).

Content Marketing

As we established earlier, the secret recipe to a successful marketing campaign is to sell to people with similar believes. But what if the customers do not understand what the company is trying to tell them? In traditional marketing approach, marketer develop a message for customers (content of the message) and then communicates with them when the company wants to. This approach is also applicable to digital marketing. For example, pop up adds, the marketer gives his message to the audience whenever he wants to, not when customer wants to. This realization gave birth to another concept called content marketing.

"Content marketing is a strategic marketing technique of creating and distributing valuable and consistent content to attract and acquire a clearly defined audience"

(Steimle.J)

This approach believes that in order to generate long term profits, companies should communicate with customers when customers need to communicate with them. It starts by making information available for potential customers that triggers their interest in the topic and eventually convert that interest into profitable sales. Regular relevant publication of content increase loyalty of the target audience and customers (potential and current). Many frameworks are available to apply content marketing strategies to a business. One of the famous one is "The content marketing pyramid". It helps the firm to maximize its audience engagement by helping them understand what kind of content should be available for audience. It also guides you regarding the frequency on which you should make your content available for the intended audience.



As per the pyramid, social media post and curated content need should be posted most frequently. This kind of content requires least effort and hence most posts. Next comes the content

in the form of blog posts and contributed content. The nature of this content requires more effort than that of the first one and hence the frequency upon which it should be made available for the audience is less.

Then comes the turn for infographics. Their rate of effort; for developing such content; is higher than that of blogs. Hence more blog posts and less infographic material will pave the way for successful marketing plan. The nature content which requires most of the company`s effort comes at the top of the pyramid in the form of long-term blog posts and books. Since it is on the top of the pyramid, it will require high rate of effort from the content developer and the frequency of such content on the online platform will be low (Simirnova.M, 2019).

Cellular Technologies and Marketing

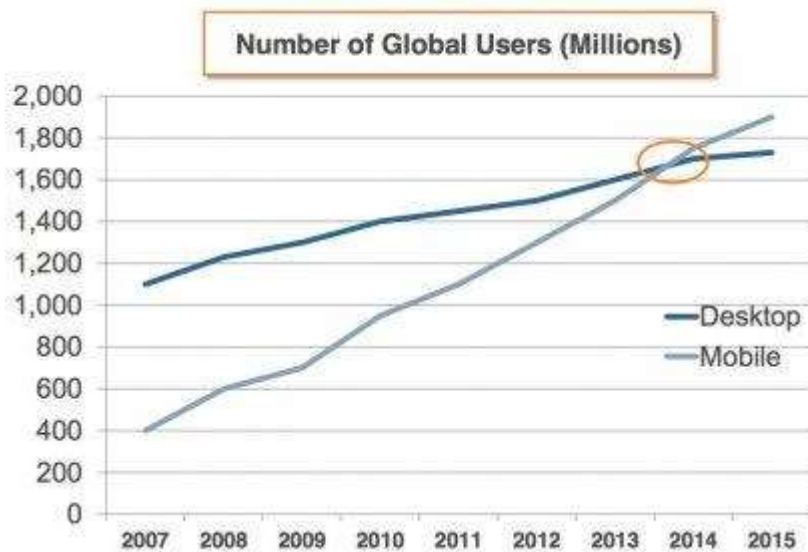
“Cellular technology has dramatically changed our society and the way we communicate. First it impacted voice telephony, and then has been making inroads into data access, applications, and services. However, today potential capabilities of the Internet have not yet been fully exploited by cellular systems. With the advent of 5G we will have the opportunity to leapfrog beyond current Internet capabilities.”

Gerhard Fettweis, TU Dresden, Siavash Alamouti

Mobile Marketing

The era of smart mobiles brought many new avenues for businesses to explore. One of them is mobile marketing. In simple terms, Mobile marketing is marketing your offering (be it a product, service or a brand) to your target audience (audience who see your product via mobile device) using mobile channels (Marrs.M, 2019). Mobile marketing was studied under digital marketing umbrella but with the developments in mobile phones/smart phone, a new category; mobile marketing; was introduced.

As per a recent study, the number of people who access internet via mobile phone exceeded the number of people who access internet via desktop back in 2014 and there has been 200% increase in number of mobile searches year after year in 2012 (Marrs.M, 2019). Today, if a business does not have mobile marketing strategy, they are left significantly behind as compared with other players in the market.



(Marrs, 2019)

Mobile Marketing is The New Up Coming Thing

Mobile marketing is taking over the world. Its spreading like a wildfire and there is no place to hide. A firm needs to have online presence, especially on a mobile device if it wished to be profitable and make sales. Mobile marketing got 9.4% budget of U.S Businesses in August-2018 (Guttmann). It is reported that customers devote more than 5 hours out of 24 hours per day on their mobile phones or other smart devices (McLeod.B, 2019). Online sales have been growing at unprecedented speed for the last decade (Yehia, 2018). And majority of these online sales; 80% to

be precise; comes from customers who own smart phones (Chaffey, 2018). Also, total internet traffic has a whopping 52.2% share of web internet traffic (Clement, 2019).

Facebook, one of the “big Five” of the world (Muhammad.Z, 2019) earns more than 92% of its ad revenue from mobile advertising (A.Freier, 2018). Technology intensive brands have grown on the backbone of 3G and 4G technology. With 5G being a work in progress, we can only imagine what future will look like.

The Era of 5G

Every new generation of wireless technology conveys us faster speeds and additional functionality. 1G brought us the first cellphones(the magical device that allowed seamless wireless communication) , 2G allowed the user to send text messages (another transformational step of sharing text data remotely), 3G increased the online presence of users by giving better and faster connectivity to the internet, while, 4G greatly improved the connections speeds as compared with the speed being offered by previous generations of wireless technology (Ullah.H.A, 2015).

But as more and more users start to use the 4G network, the 4G network is reaching the limits of what it can deliver in terms of speed to the consumers. This is a huge problem as users are increasingly demanding unprecedented and vast data and speed for their smartphones and devices. There is a persistent demand of “making everything better” in the market. If one technology can transmit “x” amount of data, the consumers will be amazed for a small period of time and then demand “x²” amount of data transmission on their devices. Yes, it is true that this is the right path to continues improvement and innovation and staying stagnant means you`re dead. But the attention span of market in generally has decreased drastically.

This continues demand of improvement bring us closer to the next generation of wireless technology. 5G is the fifth generation of wireless technology. The 5G network is designed to increase speed, connectivity and decreasing latency. The higher speeds are made possible by the small latency time of the 5G technology (Shankland, 2018). Latency is the time that passes from the moment information is sent from a device until it can be used by the receiver.

4G became available to the masses in the late 2000s and it was almost 500 times faster than its predecessor 3G. The development of 4G was instrumental in the development of smartphones as it allowed high quality video calls and fast mobile browsing. With continues improvement and

progresses in technology, today we have a new generation of wireless technology that can reach speeds of up to 100 GB per second. Furthermore, 5G is capable of handling 10 times more traffic than existing technologies.

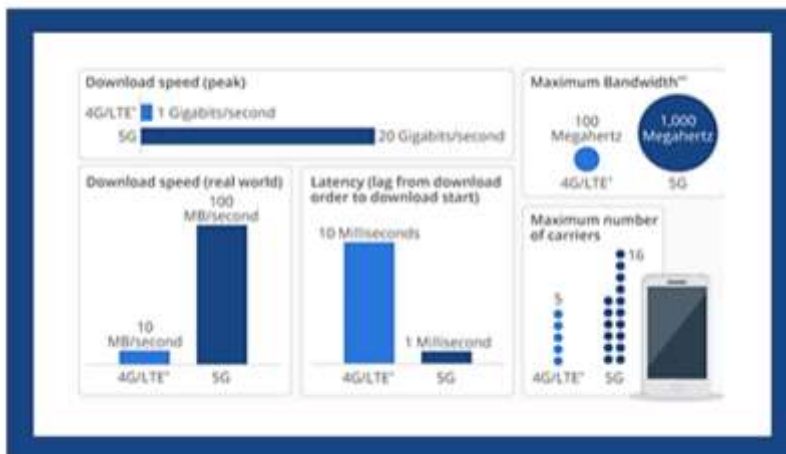
5G and Marketing

Cellular technologies began from 1G and now we are at 5G. Each of these generations brought advancements that only lived in our imaginations before they became reality. Even if we look at only current 4G technology and the infrastructure around it, we can see that such advancements we shown in movies with aliens and not humans. Or they showed us world as taken by aliens in 2020. The first generation of cellphone came with big clunky and expensive hardware. But the features they provided were remarkable in its time.

One feature consistent in each of the next cellular technology was speed. The speed of 2G was remarkably better than that of 1G. same goes with 3G and 4G. Now the next generation of cellular technology is on the horizon and there are many promises that 5G has made. It promises to be a big game changer with attractive features like low latency, increased speed, practical implication of Internet of things and many more. As per Ignacio Contreras, Qualcomm director of marketing, “The adoption of 5G will be even faster than what we saw on 4G, which was already fairly fast,”. Therefore, marketers need to be ready to take advantage of what 5g will bring to the table.

Greater Speed

5G promises to move data faster than 4G or any other present technology. It promises to remove the difference between a broadband and mobile network by providing high uniform speed through any access point.



As compared with 4G, 5G has the potential to download high quality content in minimum time. The picture shows a comparison between the speed of 4G and 5G cellular technology. With faster connection, 5G will allow more people to enter into the

magical land of online market. More people will enter the marketplace which will increase the demand and allow online markets to further expand and grow. With more people, there will be more data, marketer will be able to better segment their customer base. They will also be able to discover newly found market niches. 4G has accustomed consumers with customization in each aspect of life (since technology has a direct or indirect control/impact of almost all aspects of our lives). 5G will bridge the gap (where there is a gap) to create more personalized experience for customers what more marketers will be able to do with the technology is as limited as your imagination.

High Definition Content

“Video” is already an important pillar of digital marketing and 4G has made it as important as it ever could be. Most of the application now a days have a live video option and it is expected that by 2021, 80% of the content online will be in form of videos (Matt, What is 5G and how will it impact digital marketing?, 2019). 5G is going to further enhance the process of videos become more relevant than ever in digital marketing . With 4G, it is reported that roughly 60% (Desmond, 2017) of tablet or video viewing is done over broadbands. Greater speed will allow marketer to develop HD videos which could be viewed by their customers at any time and at any place. Faster speed will bring a lot of benefits for the marketers and we are still unsure what they could be, but undeniable advancements will be made in video marketing industry.

Low latency

One of the most remarkable features of 5G is low latency. Latency is “the time interval between the simulation and response”. Low latency means that there would be no lag. Lag is “the time difference a performed task and its result”. 5G, with its greater speed and low latency allows real time operations like self-driving cars, remote or distant medical procedures and much more. In marketing context, low latency will decline the use of ad blockers. 36% people say that they use ad blockers since the heavy ads make their experience too slow. It means that more than 30% people are not viewing your ad. With the reduction in the use of ads blockers, marketer will be able to serve more audience and create brand awareness and eventually make sales.

INTERNET OF THINGS

ANY BUSINESS



ANY TIME

ANYBODY



ANY NETWORK

ANY DEVICE



ANYWHERE

Experts say that “5G will be the final push that will allow the IoT to finally live up to its long-promised potential”. IoT (internet of things) is the concept that any electronic device will be connected to the other one. The fast speed and low latency of 5G will enable seamless electronic environment where all devices will communicate with one another with minimum human intervention. Augmented Reality and Virtual Reality (discussed later) will be more important than ever. They will allow marketer to customize the experience. Besides marketing, IoT will open an endless avenue for its users. People will be able to turn on their oven while travelling in their self-driving cars, ready to prepare dinner with a recipe that their virtual assistant has selected online, using the ingredients that were ordered to their homes by their virtual assistant ahead of time. Marketers will be able to monitor every move of their customers and then predict what they need and respond accordingly.

Massive Datasets

In IoT induced world, millions and trillions of customer data is gathered on daily basis.

Softwares require this data to learn and predict the next action of humans. A partner from a huge marketing firm, Ruth Yomtoubian, believes that with 5G in action, huge customer datasets can be made available on seller’s demand. She explains the concept so beautifully by stating how a shoe brand can collaborate with hotels. And when any traveler forgets his shoes or needs a new one, he can be shown advertisement of the (collaborated) shoe brand (Levine, 2019).

The same concept can be applied to any industry. Many telecom companies are now collaborating with financial institutions. They have even given birth to a new term called “financial technology

or fintech”. Besides other things, fintech will eventually remove the lines between telecom and financial sector. The source of emergence of this new terminology is data. Financial institutions use data from telecom sector and telecom sector has figured out how to use their own data and build their own financial services to cater the unmet demand in market.

Marketers can collaborate with different industries. They can use their own data and the data collected by others (as explained in the example above) to build customer profiles and provide another level of unexperienced customization.

Real Time Analytics

With fast internet speed and seamless communication between devices, 5G allows marketer to have real time access to data analytics. It means that when a customer will make a purchase online, the website or the online platform will show that customer all the complementary products, accessories and upgrades (and add on to the same product) that can be used with the main product. So, the marketer will be able to tweak and optimize marketing campaigns in real time.

Network Management

Besides increase in speed, capacity and latency; 5G allows a new feature called “Network Management”. Within network management, there is a concept called network slicing. Network slicing allows mobile operator to create an array of networks under one network (Stanley, 2019) .

This concept is applicable with 5G. The reason being, its nature. 5G allows real time online presence. This presence is useful if you`re operating from another corner of the World or if you`re in a self-driving car. But not when you need a connection for all your home appliances. So, for the times where users do not require fast internet connection, 5G allows mobile operators to move them down to the speed they need. This opens an opportunity for the marketers to use 5G but at a lower cost. Not all the content of a marketer is in HD videos or heavy files that require 5G for transmission of data. For such light data, marketer can opt to advertise on the platforms that have “lower slice” from the network and use the “higher slices” for advertising heavy content.

Augmented Reality

Augmented reality started becoming “reality” for everyone to enjoy when people started hunting for “Pokémon’s”. But the issue with augmented reality before 5G is lag time. The break in the fictitious world reduces the level of engagement or interest from it (Stanley, 2019). 5G will help

in the creation of seamless experience through augmented reality program/software and marketers can use such platforms for their benefit. They will be able to let customers experience the service before making a purchase or even at the initial stage of getting to know about the service provider. 5G induced environment has the potential (or we can even say ability) to perform all this intensive processing through cloud. So, as like network slicing, there is another feature that will further reduce the price of this technology.

Voice Assistant

In the digital world that we all live in, shopping bots and auto bots does not ignite or excite users anymore. It is reported that 77% of customers have amended their perception of the business after having a conversation with a bot (Wertz, 2019). Bots opens doors for brands to connect with their customers (potential or present) any time anywhere and during any point of their purchase or after purchased experience (Orendorff, 2019). 5G, with its no lag time and unimaginable speed, will give marketer an opportunity to have actual conversations with the customers. The bots will be equipped with advanced artificial intelligence and marketers will tap into the land of voice-based advertising (Stanley, 2019).

Artificial Intelligence

Today, in the world controlled by “Alexa and Siri”, most of the purchase decision are made by these smart softwares. Many of the purchase decision are now taken based on what “Siri” or “Alexa” advices. These artificially simulated devices/software are not taking over our daily lives. For instance, it is estimated that Amazon alone has sold around 25Million Echo smart speakers, through which customers interact with Alexa. This number is expected to grow double in number by 2020 (Dawar, 2018). In 2019, the international reports stated that online sales, all over the world, amounted to 3.53 Trillion US Dollar (Clement, 2019). Majority of sales are made by playing with different features of the customers. One of such key features is “Human Nature”. Customization and digitization have created a seamless customized process for customers which enhances customer loyalty.

Artificial intelligence has transformed how companies interact with their customers. They are the primary and most authentic source for getting insight into customers orientation towards a brand. Our market today is overflowing with countless choices and variations for satisfying a demand (Dawar, 2018). AI help users make informed decisions based on facts and figures. Most of

routine tasks like paying for utility bills are automated. The same way, our weekly groceries and other routine tasks (and whatever we want) can also be automated through successful implementation of 5G technology. This process not only convinces for customers but also saves them money. This process creates brand value and trust for customer. And value and trust lead to brand loyalty. It is said that “Consumers’ allegiance will shift from trusted brands to a trusted AI assistant”. So, theoretically, in future marketer must be in the good books of AI rather than being in the good books of consumers. And the focus will shift on “making good with AIs”. The marketing concepts like “SEO” will become more relevant and traditional concepts like “demographics” will be of no use (Dawar, 2018).

Amazon go is another example of artificial intelligence. The company have opened 18 cashier-less stores. The customer walks in the shop, swipe their phones for entry, picks up what they want and just walks out (Amazon, 2019). The store is jam-packed with sensors and cameras that record every move of the customer and decode what products they are buying and what products they are putting back on shelves. From all the data gathered through AI, marketer can better understand their customers and predict their needs. Through their buying patterns, marketer can also get insight about their family and their needs. With AI, virtual assistants could also show you products and complimentary services that you might be interested to purchase for yourself or your family.

No more Cables

5G will change the current infrastructure of internet and cable service provider industry. With fast data delivery, 5G will remove the difference (or at least minimize it to ignorable level) between broadband and mobile network. The ad-buying and serving infrastructure build around the current system will also change. This will open gates for marketer to use any medium for communication with customers (Levine, 2019).

Any Surface can Become an Interactive Marketing Medium

South Korean are the most hardworking nation in the world. They have the long working hours (M Petit de Meurville, 2019) and the weekly shopping for groceries is an appalling task for them. Tesco entered the South Korean market with a new approach. After studying the dynamics of local market, they introduced virtual stores. The concept entails that if customers are too tired to go shopping at the end of the week, let the shop come to you. Tesco, named as “Home plus”,

introduced virtual stores in the subway stations of South Korea. This way, the waiting time of customers was changed into the shopping time. They were able to make purchase, using their phones to scan barcode of the products. The images shown on the screen were same as the products on the aisle. More than 900,000 app downloads were recorded in less than a year and it made Home plus most popular shopping app in South Korea. This practice increased the online sales to 130% and registered app users increased by 76% (M Petit de Meurville, 2019).

Tesco was able to unlock this secret of online marketing back in 2012. With constant innovation in technology and now the emergence of 5G, there are unlimited opportunities for the marketer to use these platforms for their benefit. It is essential (Matt, What is 5G and how will it impact digital marketing?, 2019) to customize content in order to reach the target audience and with artificial intelligence, virtual and augmented reality, the future seems to bring endless opportunities for marketers.

Conceptual Framework

The conceptual framework for this study represents the researchers understanding of how the researcher will address the gap in the literature. It also identifies the variables which will be required to address the research questions and it represents a graphical picture through which the researcher plans to provide and answer to research questions.



The framework shows that the researcher aims to study the relationship between 5G technology and digital marketing. Since digital marketing is dependent variable, the research will investigate

if 5G technology could have any impact on digital marketing. if there is any impact, the research will identify the nature of that impact, be it a positive or negative impact. Furthermore, the researcher will also identify the strength of that impact. The variables that will determine the practical implementation of 5G technology are shown in the framework as Infrastructure, digital marketing tools, content of marketing message, new opportunities in IoT induced environment and big data.

Hypothesis

Hypothesis is an educated statement that demonstrates what the researcher believes to be the truth. And to prove that truth, the researcher investigates into the variables (mentioned into hypothesis). A hypothesis is a statement which includes the variables under observation, their relationship with each other and the target population (V. Krejcie).

The hypothesis forecasts what researcher assumes to obtain as the result of the research. But, in many cases, the researcher may find that the result of the experimentation does not support researcher`s hypothesis (V. Krejcie). For the purpose of this study, the researcher is required to study the impact of 5G technology on digital marketing.

H₁: 5G technology will have an impact on marketing industry.

CHAPTER 3: RESEARCH METHODOLOGY

The purpose of this research was to determine if there exist any relationship between marketing and technology (Specifically 5G). and if there is any such relation, what is the strength of that such relationship. The research was conducted so that; if there is any relationship between these two; the marketing industry can better equip itself with the chances that will need to be made for using the latest technology to its full extent.

For the purpose of this research, the researcher must choose an appropriate research design that justifies the research questions and the variables used for the purpose of research (Brotherton, 2019). Choosing a wrong research type astray the researcher from the right path. Research methodology includes the research type, research design and sampling. Every element in the research methodology relates to the other. For instance, the research type identifies which research design will be used by the researcher and what sampling techniques could be used.

Research Type

As per Bob Brotherton, there are three categories in research type. These categories identify what we aim to do with our research. The three categories are

- Exploratory research
- Descriptive research
- Explanatory research

In exploratory research, the researcher aims to explore different options related to the subject at hand. Researchers who conduct exploratory research are investigating into an issue which is still unknown and there is not much importation available on it. Therefore, the researcher will “explore” the topic.

In descriptive research, the researcher aims to study the relationship between different variables. In this type of research, the information is already available on the variables but there exists some gap in the literature. Or the information available does not clearly states some questions that could be addressed by research. In descriptive research, the researcher understands the topic but want to know more about it. Hence, they conduct descriptive research.

For this study, the researcher has the option to conduct both exploratory and descriptive research. Exploratory research because the variables that measure the implementation of 5G are still not

present in the market. No other researcher has done any research on these variables exclusively. So, researcher must explore the potential impacts of 5G technology in marketing. Descriptive because there are studies and cases available that show that new advancement in technology will bring an impact on marketing. But they do not clearly state what would be the nature and strength of the said relationship. For example, there are various documents confirming the impact of 4G technology on marketing or there are various studies that predicts what could happen to another industry if 5G technology come into existence. So, from another point of view, the researcher has the option to go for descriptive research.

Research Design

In research, the research design explains the variables for research and what will be the relationship between those two variables. The research design is dependent upon the type of research researcher is conducting. Following are few types of research designs:

- Experimental
- Survey
- Comparative
- Case study
- Observational
- Action research
- Mixed method

The experimental designs are used where the researcher has selected to investigate into cause and effect relationship between two variables. Surveys are used where researcher aims to use a standard instrument to gather standard data. Survey usually contain close ended questions, but some researchers have allowed to add open ended questions to be added in the survey. It gives researcher an option to explore any new dimension of the topic under observation. In comparative research design, the researcher compares two or more variables. Usually this research design is used where researcher has selected descriptive research as research type.

In case study design, the researcher takes a case, usually of an organization, and conduct research on it. The research type for case study design can be both exploratory and descriptive. In observational design, the researcher simply observes the sample under observation and collects data. The observations then collected can be either covert or overt, qualitative or quantitative and

collected as observer or as a participant. In the next research design, action research, the researcher builds up research problem and then act (as what could be solution of that problem) and then study the results of that action. The research design can be applied at both exploratory and descriptive research types. In mixed design, the research has the option to mix any of the research designs mentioned above. But caution is required while selecting mixed research design for your study (as it could further complicate variables and their relationship with each other). It is recommended that a researcher should first study the variables in two or more different research designs and then, if required, go for mixed research design.

For the purpose of this research, the researcher has selected survey for data collection. The survey selected has a blend of both close and open-ended questions (since the researcher used exploratory and descriptive research type).

The Data Collecting Instruments

The researcher requires a set of tools to collect data from the variables identifies in research design. As per Bob Brotherton, there are four instruments/tools that could be used to collect data from respondents. The section of tool for a specific research is contingent upon research design and the type of research selected by researcher. Following are four data collecting instruments:

- Survey
- Interviewing
- Observation
- Projective techniques

For the purpose of the research, the researcher adopted survey to collect data from the target audience.

Sampling

Population

The researcher must define the population, as the target audience who could be selected for research. These individuals in the population have similar characteristics which are important for the researcher.

Since the 5G technology is still the talk of future (It is being tested in various parts of the world like US, Japan, China etc but not in Pakistan, India or countries with similar marketing dynamics.

Therefore, it is the talk of future for the geographical area under observation), the researcher has used different approaches to research to conduct a holistic analysis of the potential opportunities that will present itself in the market.

In order to study the impact of 5G technology on marketing, the researcher had the option to study the industries which are affected by marketing at most and then study the impact that the technology will bring in those industries. Another option available was not to bifurcate population industry wise but to take marketing and technology experts from different industries. The reason for not adopting the first approach was simple. The geographical area where the research was conducted is Pakistan. Here, the penetration and importance of marketing, especially digital marketing, in different industries is not different due to the use or value addition that digital marketing adds to the industry. In fact, it is different because of the level of advancement of people in the said industry. For example, digitization and automation has penetrated in the construction industry in most of the world. But in Pakistan, conventional and non-technological methods are used in the construction industry. An interview with a wholesaler in the busy markets of Rawalpindi further showed that majority of industries in Pakistan are not incorporating technology in their businesses since they are able to sell whatever they produce, and they are using their production facilities at maximum capacity. Lack of education and lack penetration of internet in masses can be one of the reasons why they do not understand how technology can revamp an industry and bring long term profits.

Sampling and Sample

Sample refers to individuals selected for research. Out of the total population, this is a group of individuals or observations who, as per researcher, are representative of the whole population. And conducting research operations on the sample is same as conducting research on the whole population. Also, the result obtained from the sample research are assumed to be the research obtained from the whole population. In simple words, sample refers to the number of individuals selected for the research study and sampling refers to the process and selection of those individuals. The sample is drawn out after determining the number of individuals/observations in the population. But in some cases, the population number is unknown. In those cases, the researcher can estimate the minimum number of people in population and with the help of table provided by “Krejcie and Morgan”, researcher can select the number of people in sample. As per

the study of Krejcie and Morgan, as the population increases, the sample size increases as diminishing rate, as shown in the graph below.

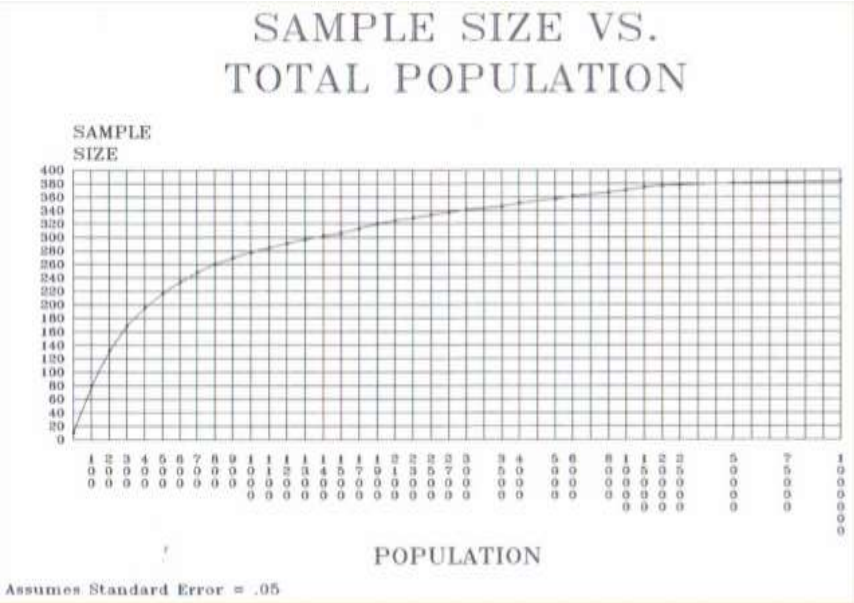


TABLE 1
Table for Determining Sample Size from a Given Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
S is sample size.

For the purpose of this research, the researcher assumed that the number of people in population are 15000. So, the relevant sample size is 375.

As per Bob Brotherton, there are two methods for sampling. They are probability sampling and non-probability sampling. In probability sampling, the researcher assures that each member of the sample has equal probability of getting selected for sample. Whereas in non-probability sample, there is no such assurance. In non-probability sampling, there are three techniques for drawing out

the sample i-e Convenience sampling, judgmental sampling and snowball sampling. In convenience sampling, the researcher selects the sample as per his own convince. In judgmental sampling, it is up to researcher's judgment who he thinks is best for the representation of population. In snowball sampling, the researcher asks one person for his input on the research questions and then that one respondent ask another one, all by himself, and the process goes on.

For the purpose of this research, the researcher used judgmental sampling to conduct the research. In some cases, where the respondent was educated enough for the problem under observation, the research adopted snowball sampling too (Zhang, 2016).

CHAPTER 4: ANALYSIS

The objective of research was to find the relation between independent and dependent variable. The researcher investigated into the impact of 5G technology on marketing, especially digital marketing. For this research, the researcher performed inductive analysis. For that purpose, the researcher contacted experts from various industries who were aware about 5G and how it could influence the market. Set of questions were developed for qualitative analysis. From the literature, five main themes were identified which were important to the implication of 5G in the market. These areas were of importance for marketer and the market. Besides that, opinion of experts was also taken about the successful implementation of the technology and how it could affect the marketing industry. These experts were asked to share their opinion on the major five themes of the study.

Tests for analysis

For the purpose of this study, the researcher used SPSS software for conducting quantitative analysis. Tests performed on the data set are

- Cronbach's Alpha Reliability Test
- Correlation test
- Regression test

Reliability Test

The first test conducted on the data set is reliability test. In reliability test, the researcher aims to identify if all the elements/items on the test measure the same characteristics or construct. This is important because if all measure the same construct, they all are related to each other. The test ensures the reliability of the tests that will be performed after it as it quantifies the relation of variables with each other (Channel, 2012).

The most important item in the analysis is Cronbach's Alpha's value. The closer that value is to 1, the better the reliability test. Value around 0.7 is considered adequate and the value about 0.8 is optimal.

Results

Case Processing Summary

		N	%
Cases	Valid	376	100.0
	Excluded ^a	0	.0
	Total	376	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.864	.875	22

The results of the test, on the table above, show that the value of Cronbach's Alpha is more than 0.8. It means that the variables under observation are reliable.

Item Statistics

	Mean	Std. Deviation	N
Gender	1.723	.4479	376
Age	2.511	.9825	376
FoW	1.234	.4484	376
Informed_5G	4.247	.8974	376
Online_Platform_3G4G	4.532	.6959	376
Buying_Behv	4.452	.6912	376
Inf_1	4.540	.6641	376
Mrkting_strategies	4.263	.6984	376
Digital_Mrkting_Studies	4.293	.7586	376

Control_over_mrktng_pr ocess	4.194	.9016	376
Nomore_use_Human_Nat ure	3.795	1.2080	376
Mrkting_process_Robotic	2.902	1.4907	376
Develop_Bigdata	4.303	.7856	376
Bigdata_Dec_Mrkt_Rese arch	4.253	.8050	376
Trgt_Customers	4.271	.8979	376
Loyal_Customers	3.904	1.1939	376
Increase_competetion_no _loyal_customer	3.936	1.0589	376
HD_Videos	4.370	.6358	376
HD_Vidoes_Customer_R etention	4.322	.8263	376
Channel_of_Communic ation	4.056	.9519	376
New_Opportunities	4.537	.6643	376
Use_of_Tech	4.386	.7608	376

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
Gender	.873
Age	.872
FoW	.869
Informed_5G	.854
Online_Platform_3G4G	.858
Buying_Behv	.857
Inf_1	.856

Mrkting_strategies	.851
Digital_Mrkting_Studies	.847
Control_over_mrktng_process	.848
Nomore_use_Human_Nature	.846
Mrkting_process_Robotic	.894
Develop_Bigdata	.851
Bigdata_Dec_Mrkt_Research	.856
Trgt_Customers	.855
Loyal_Customers	.855
Increase_competetion_no_loyal_customer	.869
HD_Videos	.855
HD_Vidoes_Customer_Retention	.854
Channel_of_Communication	.848
New_Opportunities	.861
Use_of_Tech	.854

The table above shows the value of Cronbach's Alpha if one variable from the list is deleted. This helps us identify that which variable is of less importance and reliability with respect to other variables.

Correlation Test

The purpose of this study is to identify the impact of 5G technology on digital marketing. For that purpose, the researcher has conducted correlation analysis on the data set. The correlation analysis will determine the nature of the impact that 5G will have on marketing. this impact could be both positive and negative.

The main result obtained from correlation analysis is correlation coefficient (or “r”). The value of r ranges between +1 to -1. The closer r is to +1 means that the variables have positive relationship between them and the closer the value of r is to -1, the more negative relationship they have with each other. It is also called inverse correlation. If the value of r is close to 0, it means that there exists no relationship between the variables.

Researchers use another parameter to determine the relationship between variables under observation. The next parameter is obtained by squaring the correlation coefficient i.e r^2 . This makes the correlation easier to understand. For interpretation of results of r^2 , 0.5 means 25% of the variation is related (0.5 squared = 0.25), 0.7 means 49% of the variation is related (0.7 squared = 0.49).

Correlations

		Digital Market	Infrastructure	Digital Marketing Tools	New Opportunities in IoT induced enviroment	Big Data	Content of Marketing Message
Digital Market	Pearson Correlation	1	.300**	.386**	.343**	.432**	.330**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	376	376	376	376	376	376
Infrastructure	Pearson Correlation	.300**	1	.676**	.430**	.328**	.456**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	376	376	376	376	376	376
New Opportunities in IoT induced enviroment	Pearson Correlation	.386**	.676**	1	.451**	.398**	.675**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	376	376	376	376	376	376
Digital Marketing Tools	Pearson Correlation	.343**	.430**	.451**	1	.468**	.664**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	376	376	376	376	376	376
Big Data	Pearson Correlation	.432**	.328**	.398**	.468**	1	.436**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	376	376	376	376	376	376

Content of Marketing Message	Pearson Correlation	.330**	.456**	.675**	.664**	.436**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	376	376	376	376	376	376

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

The above table shows that there exists significant correlation between Infrastructure, New Opportunities in IoT induced environment, Digital Marketing Tools, Big Data, Content of Marketing Message and Digital Marketing.

Regression Test

In research, regression analysis is used to study the strength of relationship between different variables. So, the nature of relationship is determined by correlation analysis and afterwards, the regression analysis determine how much impact the independent variable has on dependent variables.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.499 ^a	.249	.239	.607

Predictors: (Constant), Infrastructure, New Opportunities in IoT induced environment, Digital Marketing Tools, Big Data, Content of Marketing Message.

In the table above, the coefficient of determination, r^2 signifies how much change in dependent variable (digital marketing) is due to the independent variable (Infrastructure, New Opportunities in IoT induced environment, Digital Marketing Tools, Big Data, Content of Marketing Message). From the table, we can say that the dependent variable changes 0.239 or 23.9% due to independent variable.

ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	45.281	5	9.056	24.578	.000 ^b

Residual	136.336	370	.368	
Total	181.617	375		

a. Dependent Variable: Digital Marketing

b. Predictors: (Constant), Infrastructure, New Opportunities in IoT induced environment, Digital Marketing Tools, Big Data, Content of Marketing Message.

The above table shows the analysis of variable Anova. The column F and its corresponding P value signifies that the data fitted well in the regression equation.

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.885	.291		6.482	.000
Infrastructure	.013	.066	.012	.196	.845
Digital Marketing Tools	.233	.075	.234	3.127	.002
New Opportunities in IoT induced environment	.156	.082	.122	1.909	.057
Big Data	.264	.047	.296	5.628	.000
Content of Marketing Message	-.052	.088	-.044	-.591	.555

a. Dependent Variable: Digital Marketing

The above table explains that the dependent variable (Digital Marketing Tools, New Opportunities in IoT induced Environment and Big Data) have positive impact on Digital Marketing. Whereas the variables, Infrastructure and Content of Marketing Message are inconsistent with the equation.

Qualitative Analysis

As explained before, due to the nature of the topic, the researcher inserted two qualitative questions in the questionnaire. The researcher also invited respondents to share their input on the five themes of 5G that are under observations. Two respondents shared detailed input on the topic under study and showed their interest to further expand the dimensions of the study.

Following are the results of the qualitative questions and the input received by two respondents. (Input was received by these two respondents in the form of audio document and then converted into text)

In your opinion, what kind of ideas will become reality with the help of this technology? How will marketers be able to take advantage of such newly-found realities?

- With the advancement in tech with 5g which will open new avenues for. Marketing with the mixture of IOT and 5g will create possibilities like 5g enabled IOT will be used for marketing and updates about advance in their product as message being displayed on your fridge or your tv or any other equipment
- Bringing new approach like brand ambassador program and acknowledge audience about the product and service.
- By working on Artificial intelligence and 5 G simultaneously, the necessary interaction for business will be minimal. Making the business cost effective and less reliant on labor, adding value in terms of 24/7 online availability and wider outreach. Businesses will be more inclined toward online marketing and sales setups.
- it will enable millions of new connections.
- Ideas like shipping the products through drones (amazon is already doing it). Playing video games, performing surgeries with robots, defense systems, self-driven cars and air traffic control. The advantages of these products will be available, but the competition among marketers will be higher.
- Smart Homes, Smart Cars, Smart Living, Smart Lifestyle
- Technology always saves time and money in longer run. And frankly speaking it's all about time and money.
- By providing more access to their used data resources as well as data records

- Mind controlled machines
- Health, Education, socialization everything will be under one click
- Will be in a better position to utilize artificial intelligence
- 5G is mostly for IOT from where customer usage trends and way of life patterns can be obtained and used for targeting customers with relevant marketing.
- This would be a huge change and this 5G technology takes the market to the very next level as the is changing from normal to online marketing.
- When no one is in competition with ptcl. Wahaj siraj (Nayatel) took initiative to make sure that there is no need to be monopolistic as ptcl. So, in every evolution of new era, there is always a gap right there. You just need to identify and fill that gap.

5G has numerous disadvantages/drawbacks (including low wavelength, harmful radiations, lack of privacy, new infrastructure). Do you think people would accept this technology and look at its advantages instead of disadvantages? If so, how can marketers take advantage of 5G technology?

- With time we will adapt, the new generation will adapt. young millennials but old one will have some issues as they are more sensitive about privacy.
- In Pakistan, technology is quickly adoption. So, people desire to used new inventions or technology.
- The anticipation being built for the upcoming technology has already enhanced the interest of users. Like every other innovation 5G will take its time and will be requiring more and more up gradations to become user friendly. On the other hand, it will need more from the providers then from customers in terms of infrastructure. Similarly, Marketers will take their time for transition.
- People would take advantage of it regardless of its drawbacks
- It is the biggest here-say and misconception that 5G will be harmful. Initial studies carried out by a group in Bologna said that out of 200 mice which were exposed to 25 Volts/meter, radiation for 18 hours daily, only 1% got cancer. Now this data is not reliable as there are 3 big questions in it:
 1. Isn't it possible that 1% mice had inherited this trait.

2. 5G in Italy will have 6 volts/meter, 25 volts/meter expose in radiation is too much.
3. The base station used was dubious, GSM BS is different than the one used for 5G.

In my humble point of view, 5G will have no adverse effect on the health.

Privacy can be a challenge as with IOT and new technologies, even on social media like Facebook, Instagram are prone to these issues. What we search comes up as an ad or amazon assistant help. Personally, I see that whenever I meet some new people in the places, the very next time I open my FB, same people pop us as "people you may know" category. Why? Because this is a way the technology is being used, technology itself is not bad, it is the way we use it.

Yes, people will accept 5G. People have no choice, remember early 2010s when 4G and 4G LTE was rolled out, everyone adapted to it because what a customer need? Speed, quality and affordability.

Yes, they would accept this technology since masses mostly look at the most obvious advantages that are mainly short term. Disadvantages are not that evident and mostly masses don't foresee their long-term impact!

- I think people will accept the advancement, furthermore every technology has its advantages and disadvantages side by side. We should look on the positive side and negative side can be improved with the passage of time.
- Yes, it will empower people more
- People will accept it at its advantages
- Yes, people always look for advantages regarding technology rather than the disadvantages.
- It will beneficial for customers
- Yes, advantages outweigh the disadvantages

Usman Hadi : PhD in Electronic Engineering, Masters in Electronic Engineering, Microwave Photonics, Electronic Engineering

Theme	Respondent's Response (Audio Converted into Text)
Infrastructure	The first question about the infrastructure with 5G, I think I disagree with the statement because even with the 3G, 4G and now with 5G and even beyond 5G, the system will still require the necessary infrastructure for the fiber to the home.

	<p>Along with wireless, wired will also be required. Because there are certain technologies like Nayatel in Pakistan. You can reach through fiber via these technologies.</p> <p>So, the question is technically wrong that you won't be requiring wires after implementation of 5G. wired systems will be required, and wireless will be important in its own place.</p> <p>For marketer, the competition will increase. The infrastructure we have, we will have to upgrade it. Because with 5G, the infrastructural requirement is not up to the mark. When you'll set up the infrastructure, the market will shift towards telecom operators for the next 2 3 years, after the 5G roll out. And then all the money will go back to marketing. very challenging environment is expected in future. It won't be uncertain. Everything we have will increase in speed and market will have a boom.</p>
<p>Digital marketing Tools</p>	<p>Marketing strategies will be revamped because the loyalty won't be the only issue, but the issue of privacy will be more alarming that will cause the change. Marketer will have to invest a lot of money to get customer take help from automated machine instead of a human.</p>
<p>Content of Message</p>	<p>I think there are trust issues with people. More or less, everyone has it. If conversation is replaced with automated devices, still it won't be a big hit especially for developing countries like Pakistan, India even middles east. People are more comfortable trusting human than machines. Like they do payment offline because of the fear that data will be breached and yea 1 of 100 times data might be breached but mostly the payment is secured. It won't be so much easy I would say.</p>
<p>New Opportunities with IoT</p>	<p>I still think that AI is not on the level to remove human from the equation. The roll out plans that we have now does not ensure that AI will replace human from the equation. The AI will grow, it is the next 10-year technology. it cannot replace humans totally. Maybe from 10 humans it will go to 3 humans, but it will still be required. AI softwares demands will increase but human requirement will not be decreased. The equation will become complicated, but</p>

	<p>human will still be required. Human nature could be played in, AI will grow for next 5 years, but human can't be removed from the equation.</p> <p>With 5G, I think all the companies will grow because of IoT and AI. and somehow with this new avenue, there is another challenge that will come up that is security and privacy issues. For example, whenever you search something on google, you start getting it adds on other social media platforms like Facebook, actually you have given google the consent that you can take our data for your algorithms. Market will benefit but privacy issues will raise. Even now these issues are rising up. With the 10 year challenge some time ago, the application can use it and train its algorism. Now we put our fingerprint, our retina scan, face feature everything on the phone. These types of things will create security breach. I think it can go both ways. Positive and negative.</p>
Big Data	<p>5G will have static IP. Also, 4G had some part of static IP but with 5G it will create a lot of help for all the people who do spoofing or black marketing, whatever you can say. From one point of view, it will expand, the customer share. And the relationship will be very loyal for the customer and also from the company. Marketing I don't think so it would be reduced. I'm not a marketing guy but I think so marketing would become more competitive as there would be more competition within different companies. More the loyalty, the greater will be the marketing. and there is another aspect that I think you missed for customer data base. If 5G rolls over, then all the black marketing, all the spoofing, under the black layer work. IoT security will be expectation and there will be investment in smart security.</p>

Umair Sajid Hashmi : AI, 5G researcher

Theme	Respondent's Response (Audio Converted into Text)
Infrastructure	<p>first of all we need to understand 5G and its basic components of 5G is built upon three basic components the enhanced mobile broadband the eMBP, the URLLC Ultra reliable low latency communication and mMTC massive machine</p>

	<p>type communication. So this all of these combined would enable a lot of use cases which are. Going to be different than its predecessor LTE advanced which was more focused on providing high coverage and high data rate to both the users and cell age at Cell Center. So that is now changed. So any marketing that that is going to happen is going to depend upon the use cases that are going to be there in 5G and. Obviously 5G they have. A lot of different use cases we can talk about potentially. Being. Smart. About. The. Future of the smart cities. Factory Automation that can take place. Vehicle to vehicle communication. So. As expected. Out of the 50 billion devices that are going to be connected in the next decade. A lot of them would be sensors and IoT based devices so. Any sort of marketing would focus on enterprises in these verticals so that is what a how it's going to be different than the current LTE 4G which is focusing on providing high definition videos to the end consumers but now in 5G we are not going to be targeting the end consumers. Rather medium and small than even large enterprises which are going to be working in this this domain, so everyone is going to be your client. your hospitals are going to be your client your Garments factory and industry is going to be your client your IoT. or sensor-based chipsets they're going to be chipset manufacturing companies they're going to be your client. So that is why 5G getting the right marketing to the right vertical is going to be important and the company that takes the lead in advantage in that would obviously have an advantage over the others.</p>
<p>Digital marketing Tools</p>	<p>Smart devices which will enable intelligent marketing decisions. In that regard. It is true no doubt that with the. Additional services new capabilities a lot is about to change. Will have demand for new services which have to be flexible as well as scalable. As for end users. As I said before there are very different the networks itself. There are. Expected to be a lot faster. And. They must be able to connect a lot more devices. But having said that at the end of the day the final decision would have to be made by a person. By a human who is in charge of these verticals. So. The target for any organization would be. To. Make sure the right most cases are targeted. And the message or the marketing is done towards the right segment. And secondly. When it comes about intelligent marketing</p>

	<p>them and that is something that has really been going on. When you get pop ups or advertisements in your email. For no reason I think that is where AI is play a part already playing a part and this will be further refined. But that is sort of a subsidiary of 5G that is already going on. But when it comes to 5G services. The human nature will still be there as is in the form of people who will make the decisions in acquiring 5G services from the operators.</p>
<p>Content of Message</p>	<p>As far as the marketing message and 5G goes. That will have to be changed as well. Because now. There would be personalized services there. The operator will offer goods consumers so personalization or user centricity will increase. And then. A lot of services would be AR and VR based. So, we would see a lot of impressive applications that that will be used. Analytics will also play a big role in marketing. The available data that trends would be analyzed. So, the right message is forwarded. as far as the law of candour goes. Yes, there are definitely at least some. Apprehensions that are associated with 5G but not them. He is getting too much information personal information now even localization is also a big concern than having a lot of devices that are transmitting that. That is another concern. more health-based concern but I think then the business also needs to be shifted and we will also find a lot of IoT based businesses that that will come up with the rolling off 5G and then obviously the marketing will have to adopt. Towards that shift gradually.</p>
<p>New Opportunities with IoT</p>	<p>The new avenues I think it's just a repeat of what I said. Then we can easily have telemedicine firms augmented reality and virtual reality based services of Vehicle to vehicle communication might become a reality by 6G but still we will see some form of it in the 5G so that you do not need to be personally seeing the doctor to get served and in V2V case one might just catch up on his or her sleep provide his or her car picks him or her. To work in the morning so the possibilities are endless and obviously there would be new avenues for the market here.</p> <p>And. As mentioned before. If the right verticals are selected and targeting is focused on that then that would be the approach to go all the way to go.</p>

Big Data

Obviously, there is a lot of information available. with the mobile operators or the different applications that are being run on the phones. And there can be a lot of things there is OK. I mean it's already being done. There can be a lot of cluster analysis based on user trends user locations user behaviors and then focused target date for good focused or targeted marketing could take place based on that information. But one must also be careful of the privacy concerns that are associated with dissemination of this information. Legal implications are there. If user specific information is disclosed. A way work on that is by using anonymized user data. In the form of user trends and that can be used by the agencies to see which segment they have to target and what services what particular 5G services they have to offer to particular customers. These customers once again can vary from end consumers. To small and medium sized enterprises. So. The customers unlike the 4G of which in that case which are just more by the proper users here now we're talking about corporations as well. So, marketing would have to be targeted. In that. In that. Way that we are selling the services not only to the consumers but also for the enterprises.

CHAPTER 5: CONCLUSION

Findings/Discussions

The purpose of this research was to find the impact that 5G technology will have on marketing. For that purpose, the researcher has further identified five dimensions which will help researcher identify the impact of 5G on digital marketing. Following are the five dimensions and the researcher's finding, both qualitative and quantitative, in that regard.

Infrastructure

The reliability test and correlation analysis show that the infrastructure have significant impact on digital marketing. However, it does not fit well in the regression equation. From the qualitative analysis, different opinion was obtained as far as infrastructure is considered. One thing is evident that 5G will require new infrastructure, but the current infrastructure will not be completely useless. So, we can conclude that 5G technology will require new cable network, new devices compatible with the technology but the current infrastructure of broadband and cable wire will not become irrelevant.

Digital Marketing Tools

The world of technology keeps on moving forward all the time. As per the results of quantitative result, the tools required for marketing products and services in the 5G induced environment will be relevant since the variable has showed its significance with digital marketing. The same pattern was observed in the qualitative analysis, where, the respondents discussed the introduction of new methods to sell the products and services due to the presence of, besides other things, augmented and virtual reality. Respondents also shared their input on the human involvement in using these digital marketing tools. As per the results, the human involvement cannot be extracted and ignored from the equation. As always, the technology will reduce the number of people required to perform a task but, foreseeable future, it will not make humans extinct from the digital marketing world.

Content of Message

5G technology will introduce no latency and greater speed on mobile data. Researcher claimed that, due to such factors, the content of message of the marketer will change in 5G induced environment. The results showed that the content of message is significant to digital marketing.

However, it seems that it will not have an impact on digital marketing. The results do conclude that the future of marketing will focus more on customization and targeted advertisement for customer, but marketer does not need 5G technology for such purpose. 5G will enhance these activities but they are already being performed on 4G technology.

New Opportunity with IoT

5G has promised to give life to the world of IoT. The claim of the researcher was that with 5G, IoT would be in action and it would have an impact on marketing. The research concludes that 5G will be a steppingstone for an IoT induced world. Especially for the countries like Pakistan, India and even middle east, people hesitate to skip human interaction and work with machines. So IoT will bring positive significant changes in the marketing dimensions but time is required so the people could get familiarized and acquainted with the IoT environment so that it could be used by the marketer.

Big Data

Researcher investigated the changes that huge data base, that will be possible due to implementation of AI, will bring to marketing. The results concluded that data base is most significant for digital marketing. It also showed that it fits perfectly in the regression equation. So, the researcher concluded that 5G implementation will bring massive datasets and static IP address which will be used by the marketers to make marketing process more efficient and customer centric. It will help in the process of making AI more efficient. It will help marketer to predict customer behavior and as a result, the marketer will be able to design, place and strategize its product/service line beyond the expectation of customer. This will help brands achieve not just brand loyalty but brand love too.

Future Implications

Implications of 5G technology are all assumptions today. But same was the case for 4G technology few years ago. 5G technology could bring an automated world of IoT and AI. Customer experiences that were confined within the ropes of broadband could now be availed on mobile network. Marketer should “reinvent themselves in mobile space”. More opportunities will grow in the field of programming and data analytics since marketer, and other sector specialist, will require to process vast databases. Platforms like billboards, which are already digital, will start working in real time and hence be more responsive towards the target audience. In the world of IoT,

marketer will have more platforms to display their message. This will give them the opportunity to customize message as per device and time. For instance, the food related advertisements will be displayed in home appliances like fridge and microwave. Beauty and skin care products would be advertised on the mirrors. With VR and AR, marketer could also let customers experience the product. In smart homes, electronic closets could let customers see themselves in the newly advertised garments and live the experience through AR and VR. Marketer will also be able to cater vast array of customer base. Since they will have abundant data and with smart cities, industries will overlap with each other. So, for marketer, a lot of new sectors will emerge as their client. Besides other areas, further research could be performed in following domains

- Understand what changes will be required to current infrastructure due to the implementation of 5G technology
- Content of message- how customer would react to fast speed, no latency and AI. And if there is any expected change in customer behavior in response to these features, could it improve the marketing efforts and process.
- Keeping the variables same, more qualitative research could generate fruitful results for marketers.

Challenges and Limitations

5G technology imposes a lot of challenges across the board. But the biggest challenge would be of security. AI softwares, in order to predict customer behavior and needs, will be collecting data through various techniques all the time. A lot of people are uncomfortable with invasion of their privacy. Recent breach of data from Facebook further escalated the audience. The fact that machines are getting smarter than human alarms people. Even if people get comfortable with electronic devices monitoring their every move, the fact that all their actions are store somewhere which could easily be hacked distant them from the benefits of technology.

As evident from the literature and from research, developing countries in the world are still not familiarized with technology. They need time to get familiarized with technology and build trust. For this purpose, many brands are using influencers on social media to ease the process of change. But for complete automation, there is still a long way to go.

In Pakistan, 4G penetration is less than 40%. Customers are not inclined towards taking time out of their busy schedule to change their mobile SIM from 3G to 4G. even if the network provider

develop infrastructure and devices compatible with 5G technology, the market will still remain 4G/5G hybrid for a long period of time. And it will be a challenge for marketer to develop marketing strategies for customers using both technologies. As far as limitations of this research are concerned, the study is done on the dynamic of Pakistani market. It is applicable on markets having similar attributes.

Conclusion

5G technology will bring positive changes for digital marketing. But there is a long way to go for practical implementation of the technology. The market, including people, devices and the network provider, is not ready for 5G roll out in near future. Marketer need to focus on big data and how to use it for their advantage since that will be the most important feature of new technology. They also need to work on understanding and developing different content for different devices in IoT environment. The world is moving towards integration and automation with an increasing trend. The smart thing for marketer to do is to develop new skill set that could be used in the automated world.

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Annexure

Research Questionnaire

Dear Respondent,

I, Hira Nadeem Dar, am a student of MBA (Marketing) at Bahria University, Islamabad, Pakistan. The following survey pertains to whether the marketing strategies of the Telecom sector are impacted by the emergence of new technologies (5G, in particular), and the horizon of change (if it exists). Please be assured that all information collected would be used for academic purposes only, and the utmost degree of confidentiality is hereby guaranteed.

I would request marketing professionals, especially from the Telecom sector, to provide their valuable feedback on the questionnaire that follows, as it would help me fulfill the requirements for my academic research.

1. What is your gender?

- Female
- Male
- Prefer not to say
- Other

2. What is your age?

- 21-25
- 26-30
- 31-45
- 46-50
- 51 and above

3. Where do you work?

- Telecom industry
- Marketing related position at another industry
 - Others

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
You consider yourself well informed about 5G.					
After saturation of 3G/4G technology in Pakistani market, more businesses are using online marketing tools to spread their message across masses.					
In your opinion, consumer buying behavior changes when a product is advertised through online channels in comparison with traditional channels.					
Introduction and implementation of 5G technology will interfere will present marketing strategies (3G/4G centric).					
Concepts that help boost online sales (such as SEO) will become more relevant than ever.					
Introduction and implementation of 5G technology will give marketer more control over marketing processes.					
Companies that make sales by playing with the human nature of customers will not be no more.					
Introduction and implementation of 5G technology will make the marketing processes more robotic in nature.					
This will catalyze the process of developing big data.					
Introduction and implementation of 5G technology will help in the creation of big data which will reduce the efforts of market research.					
This will help them in targeting the customers (present and potential) precisely and/or accurately.					
This practice will result in producing highly loyal customers.					
This practice will result in an increase in competition and remove the concept of customer loyalty.					

Introduction and implementation of 5G technology will allow marketers to use high definition videos in advertisements.					
Introduction and implementation of 5G technology will allow marketers to use high definition videos and attract more customers.					
Introduction and implementation of 5G technology will open new mediums of communication since any surface will allow interaction with customers.					
5G will allow marketers to take advantage of this opportunity and open new avenues for themselves.					
You consider yourself comfortable making purchase decisions online.					