

The Disruptive Growth of Digital Marketing in the Eyes of Metcalfe and Moore's Law

*Prof.Rajendra JP

*Assistant Professor, Acharya School of Management, Bangalore

Abstract:

Marketing as a field of business management has seen many dimensions. The latest addition to this is the current sensation in the name of Digital Marketing. Digital marketing wins over other forms of marketing due to its sheer capacity of being the most dynamic with the increased efficiency which is most inclusive in nature. With the splendid growth of technology where electronic gadgets have become the most common and necessary possessions of human being tech services like e-mail, cloud computing, Google earth, IOS etc have made the digital marketing the most exciting one. All these technological growth have been rightly proved and defended by two very important laws presented by two luminaries like Robert Metcalfe(Metcalfe's law) and Gordon Moore (Moore's law). Here in this article an attempt is being made to explain the disruptive growth of digital marketing which is substantiated by two critically acclaimed laws mentioned above.

Keywords: *digital marketing, social media, e-commerce, Metcalfe's law, Moore's law.*

I. Introduction:

The human experience of storytelling is timeless. A caveman trying to sell a rock to another caveman could be attributed to the first instance of marketing on the earth. The history of marketing is very fascinating. **Marketing** is all about selling of goods and services with a storytelling in the form of advertisements. The term **Marketing** comes from Latin word *Mercatus* meaning a marketplace. The ancient meaning of **marketing** is buying and selling at a market. The contemporary definition is "marketing is a process of moving goods from producer to consumer with an emphasis on sales and advertising". Of late the most cited definition of marketing is given by Philip Kotler (2010) who says "Marketing is a process by which companies create value for customers and build strong customer relationship in order to capture value from customer in return." It is a known fact that the marketing emerged as a younger discipline compared to economics, production, operations etc. As a concept marketing started in 1900s and before to this most of the issues of marketing like selling, pricing etc were considered as parts of applied economics. In the earlier days marketing was "Selling as much as possible" by appeasing the customer. But later on with the increased competition among the sellers the needs and wants of customers got all the importance and this forced sellers to market products by targeting these attributes of the customers. So a mere selling using strategies and tactics before 1950s later got transformed into understanding the customer sentiments. This redesigned approach of marketers led to the process of getting to know customer first and then develop the products as per their needs & wants and then marketing them to win over their competitors.

With the evolving of the barter system the glory of marketing started making its presence felt. People of the past and present are marketing their goods & services by various means like word of mouth, newspaper advertisements, radio promotions and television commercials. But the latest sensation in the field of marketing is one through digital platforms like e-mails, SMS, social media sites and e-commerce companies. These digital platforms are taking the marketing to every nook and corner of the world by sidelining socio-economic and political conditions of the world. Today the presence of social media & e-commerce sites even in the under developed/developing countries of the world is a standing example to their success. The biggest strength of this digital marketing lies in its exceptional qualities like real time bi-directional communication, most customized approach and above all its beauty lies in its power of building network. The power of network is being explained in this article using Metcalfe's law. Metcalfe's statement about the increase in the strength of a network to the

power of square with the addition of every user shows the credit worthiness of digital platforms in the field of marketing. Added to the benefit of network strength the power of digital world in the eyes of Moore's law is another big thing. Moore was so precise in saying the effective growth of digital world lies in doubling of its capacity for every two years while the device size is being reduced to half. Thus in this article the growth and strength of digital marketing is being analyzed using Metcalfe and Moore's law.

II. Review of literature:

- "*Principles of Marketing*" by Philip Kotler(2010) considered to be the guiding document of marketing. This book was very helpful in framing introductory concepts of this article
- "*Innovators Dilemma*" Clayton M. Christensen(1997) is a bath breaking book which explains how difficult it was for every new stage of digital marketing growth to establish itself – Metcalfe's law & Moore's law are being extensively used here to depict the growth of digital marketing
- "*Network Structure, Diffusion and Growth Over Time in a Facebook*" by Hung Truong is an fantastic narration of how Facebook won over its competitors in having massive user base
- *ondigitalmarketing.com* is the most comprehensive website to explain about the phenomenal growth of digital marketing over period of few decades. It brings out the link between the traditional marketing and the latest digital marketing. Thus making a solid basis for this article

III. Path of digital marketing:

Traditionally marketing started with *word of mouth*. Surprisingly even today this is the strongest means of marketing except for the fact that the media of this word of mouth is being shifted from mere spoken words to tech based platforms like mobile communication & internet. With the invention of printing press by Gutenberg newspaper emerged as a medium to advertise and promote a product/service. Similarly with the invention of some path breaking devices on earth like radio, television and internet the concept of marketing has become better and better. And with the invention of every new medium of marketing the previous media have got serious blows. Radio with its real time delivery of message affected the saga of newspapers. Taking cue from newspaper industry companies started paying radio for marketing their goods & services with the ever famous line "*This message brought to you by...*"

"The Radios craze will die out in time."-Thomas Edison, American Inventor, 1922

After the Second World War people needed a sort of settled and peaceful life with the element of fun and relaxation. This is what led to the rapid growth of television from 1946 to 1962 during which ownership of televisions in USA grew by 90%. Watching television was nothing short of mesmerizing thing for people and very quickly TV became a medium to shape the culture and social interactions. When the world was coming out of the world war nations were witnessing increase in population (baby boom) and even the consumerism also started gaining all the importance. And at this point of time the idea of a marketer to lure the customer with images and sound started.

"Television won't last because people will soon get tired of staring at a plywood box every night."-Darryl Zanuck, movie producer, 20th Century Fox, 1946

These newspapers, radio and television were to fade out of marketers' attention due to their limited one way communication. It is in this point of time came a bidirectional communication medium in the form of Web Internet. As the name itself indicates Web is a network of interconnected elements. Unlike newspaper, radio and television the web is a network and it has a potential to grow in quadratic manner. i.e. with the linear increase of each user of a network the network started growing in non-linear manner at a higher rate. Unlike the case of

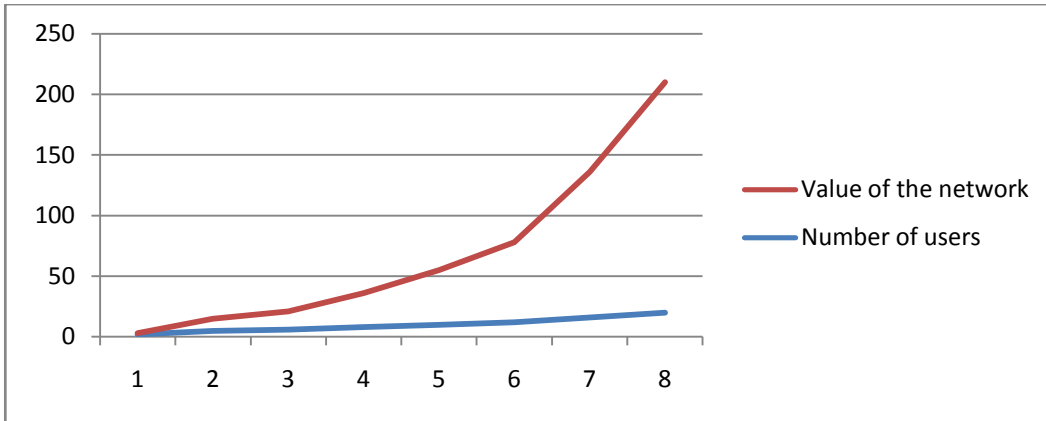
a television where with the increase of each television box the size and the value of television users grew linearly here there is a web network which grows at the rate of 'n²' with the addition of 'n' users.

1. Social Network Theory and Metcalfe's law:

Though telephone was invented in 1876 by Alexander Graham Bell it was put to intended use only in 1935. With the coming up of telephone network its strength got increased as per Metcalfe's law which states that "the value of telecommunication network is proportional to the square of number of connected users of the system". A single phone would not have done anything great, but a network of telephones adds value to itself and this value increases with the addition of each telephone to the network. Imagine how difficult it would have been to sell the first telephone for the reason that explaining the experience or feel of being in a network was a tedious job then. But as more and more people started buying the telephone it was realized that the feel of being connected to a set of people through a network was the real drive behind the success of this social network. So it was for the reasons like being connected to loved ones or attending to emergencies or to handle business the strength of telephone network started growing and there is no other law than the Metcalfe's which can explain it better. Robert Metcalfe, an electric engineer by profession, co-inventor of Ethernet and founder of 3Com company proposed law which says "the value of a telecommunication network is proportional the square of the number of connected users of the system (n²)".

If there are 'n' users of telephone network then value of it is measured using the formula $n(n-1)/2$. Based on this formula we can analyze the value of network using the below table & graph:

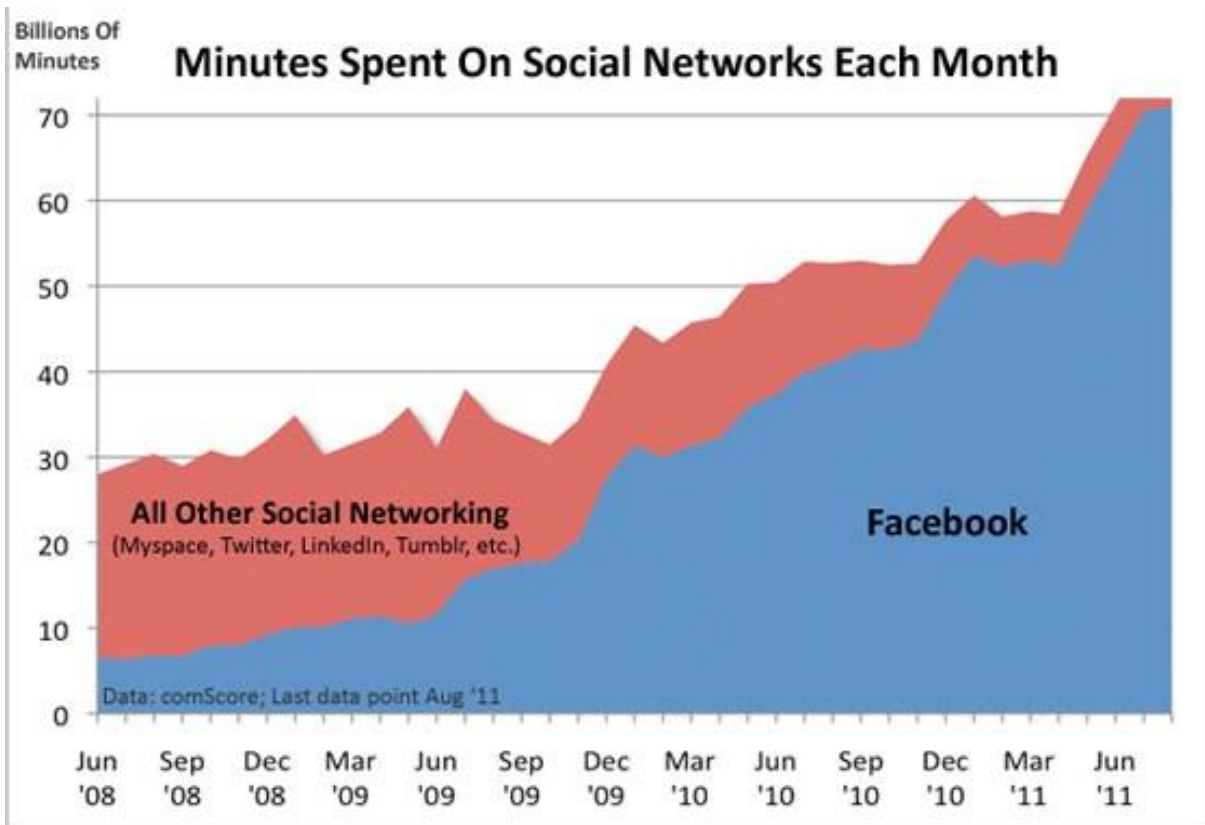
Number of users	Value of the network [= $n(n-1)/2$]
2	1
5	10
6	15
8	28
10	45
12	66
16	120
20	190



From the graph it is easy to say that a network grows as per Metcalfe’s law at a higher rate which is almost exponential in nature.

The growth of Facebook w.r.t other social networking sites is very much similar to the growth of the social network of telephone. Facebook success can be illustrated using Metcalfe’s law as below:

(Here time spent by users of Facebook is taken as proxy to the value of Facebook)



(Source: <https://ondigitalmarketing.com/learn/odm/foundations/social-network-analysis-for-predicting-growth/>)

This beautiful thing of being a part of network is the key point on which today’s digital marketing is making its impact. Today people spend more and more time on these digital platforms. These platforms are the biggest entertainers and attention grabbers to present population. The dynamic nature of digital world makes it possible for digital marketing companies to meet large set of customer base who can be individually targeted with the most customized approach.

The success of both telephone network and Facebook presents a bigger challenge of maintaining the infrastructure of such a big network. The infrastructure is in terms of both the size of the devices and also the capacity of the devices in handling massive amount of data which gets accumulated in such big networks. Here it is in this place we come across another milestone law in the growth of digital world i.e. Moore's law.

2. Moore's law and its significance:

For a network growing at exponential rate taking care of infrastructure becomes a mammoth task and failing to accomplish such task could lead to disintegration of network. In 1965 the co-founder of Intel Gordon Moore proposed a law stating that from the time of invention of Integrated Circuit Board (IC board) the number of components in it has doubled. Later on he proved the fact that *with the advent of every two years the number of transistors in an IC board doubles with their size reducing to half*. This law was interpreted in the field of business as path breaking because, with the decrease of size and increase of capacity the price of the IC board is going down. This reduced price of building blocks of digital world is being transferred into reduced prices of digital devices and their supporting systems. Thus the technology gets better & cheaper over a period of time and resulting in economic benefit to the society.

When technology is growing at such a higher rate owing to Metcalfe's law and Moore's law sky is the limit for applications of such technology. Companies have changed the way they operate and market themselves. Free e-mails, GPS services, applications of various IOS, Google earth, powerful search engines etc have made provisions for storing mammoth data in most sophisticated manner, which can be effectively utilized for luring the customers worldwide.

Such a disruptive technology brought a shock to the media world with it. A powerful network of digital world which has huge intrinsic potential is being backed by smaller & efficient hand held devices like mobile & tablet phones and other touch sensitive devices has driven people away from all traditional media like newspaper, radio & TV. Today customers are approached one to one basis at their door steps, thanks to Metcalfe & Moore's law.

3. Tying together of Metcalfe and Moore's law:

Overlapping of Metcalfe and Moore's law is a best example of synergy where all the traditional media witnessed sudden and massive revenue loss. The best example to explain this scenario is that of classified ads of traditional print media getting hit by Craig's list. Craig's list is a baby of digital marketing which was born in 1995. A person by name Craig Newmark in the year 1995 started sending e-mails to his friends about the events happening in his place. In the next year he shifted the same job to web based sever. Thanks to Metcalfe's law he could achieve success in building his network though with the initial hardship. As the more people started using the service Carig's network was growing at a faster rate and this was complimented by Moore's law based technological growth which was bringing more efficient and easy to use digital system to the market. Similar kind of things happened to all the traditional media like:

- A local traditional media like newspaper & radio is bypassed and connected to both local and international customers alike at the same time
- The audience can choose the way in which the content can reach them
- There is a instant interaction with the audience/customers
- A lot more cost effective to both the marketer and customers
- Easy recording of very data and a easy access to it whenever needed
- It is a level playing field where internet and digital world treats everyone equally irrespective of the knowledge and wealth
- All the conversation and subsequent results happen on real time basis
- Finally the sensation of something becoming viral is the most fascinating thing of digital marketing

IV. Conclusion:

The growth of digital marketing is a disruptive by the very nature of its dynamic character to do the marketing in most uncommon ways. Digital marketing has erased and rewritten the practice of marketing. There is huge backing for this massive growth of digital marketing in the form of ever expanding network of digital devices which are ever smart in accomplishing the assigned tasks. Like with every big thing come many shortfalls there are quite a few challenges come along the success of digital marketing like maintaining cyber security, retaining the customers who are lured by ever competing rival company and addressing geopolitical issues associated with the digital world. Considering both the pros and cons the digital marketing world backed by Metcalfe and Moore's law is indeed a disruptive in its journey.

References/bibliography:

1. Philip Kotler. (2010). Principles of Marketing, 13th edition. Pearson Prentice Hall. Delhi
2. <https://ondigitalmarketing.com/learn/odm/>
3. <http://www.knowthis.com/what-is-marketing/history-of-marketing>
4. https://en.wikipedia.org/wiki/History_of_marketing
5. <https://www.simplilearn.com/history-and-evolution-of-digital-marketing-article>
6. https://www.youtube.com/watch?v=dBnpr3pkFlk&ab_channel=ContentMarketingInstitute
7. The Growth of Television Ownership in the United Kingdom since the War. by A. D. Bain Edwin Mansfield The Economic Journal, Vol. 75, No. 298. (Jun., 1965), pp. 414-415.
8. Innovator's Dilemma: Introduction: Why Good Companies Fail To Thrive In Fast-Moving Industries. Clayton M. Christensen
9. <https://www.linkedin.com/pulse/digital-marketing-era-its-models-katja-dragojlovic?trk=mp-reader-card>
10. Alfatika Aunuriella Dini. The Current State of Social Media Research for eParticipation in Developing Countries: A Literature Review. (2016) 49th Hawaii International Conference on System Sciences
11. Anthony Wing Kosner, "Facebook Values Itself Based on Metcalfe's Law, But the Market Is Using Zipf's". <https://www.forbes.com/sites/anthonykosner/2012/05/31/facebook-values-itself-based-on-metcalfes-law-but-the-market-is-using-zipfs/#7f0f74e368f5>.
12. <https://www.digitaldoughnut.com/articles/2016/july/digital-marketing-vs-traditional-marketing>