



COMPETITIVE POSITIONING IN STRATEGIC MANAGEMENT- THE ROLE OF INTERNET OF THINGS (IoT)

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Abstract

The research aims to find out how Internet of Things (IoT) makes a difference to the competitive positioning in an organization. A detailed assessment of the model of Technology, Organization and Environment (TOE) and the model of the Five Forces of Competitive Positioning was made. The framework of Technology, Organization and Environment (TOE) was assessed, as the three elements in the framework, that explain opportunities and constraints, that organizations face in innovations of technology. Hence these three elements affect the way an organization views the requirement, makes a thorough search, and then choose to use a new technology. The research is exploratory in nature, and chooses to utilize the theoretical analyses of the relevant studies. The analyses of the study brought forth the fact of the necessary ability of Internet of Things (IoT) to augment the global corporate profits by 25% in 2023; the exponential advancement of Internet of Things (IoT) to make its capability of usage beyond the reach of speculation; the promise of Internet of Things (IoT) to make the lives of the consumers more convenient, more enjoyable and more efficient; and the capability of Internet of Things (IoT) to cause transformation of industries by introduction of new services, innovative business experiences, and strategic business models, thus giving the organizations a finer edge in competitive positioning. The capability of competitive advantage augments the practices of security and strong data privacy. The most fundamental data-security best practice is encryption. The decision to use symmetric or asymmetric encryption depends on whether the same key is used for encryption and decryption.

Keywords : competitive positioning, innovations, exploratory, competitive advantage, and encryption

Introduction

The advantage of competitive positioning is a function of either the performance of activities, that creates more buyer value than competitors at comparable costs and unique ways, utilizing the method of premium pricing; or provision of low cost, that is provision of comparable value for buyers, with higher efficiency than competitors. The win of the organization is achieved either by being different or by being cheaper (perception of the customers as better or more relevant).

An organization is involved in a series of activities that link together into a number of value chains. Every link of the chains adds value, that a customer is ready to pay for. If the objective of the organization is to be a leader in the industry, then the emerging technology that caters to the organizations to help to maintain efficient services and quality products at low costs is Internet of Things (IoT), thus providing the organization an edge in the industry.

The Internet of Things (IoT) comprises of a large network of smart devices and sensors, that is combined with cloud services and advanced analytics that make usage of all the available data. There is disruption and augmentation of services and products across industries, that lead to the conclusion that Internet of Things (IoT) is the next frontier in the digital revolution. It helps the organizations deploy new business models, cut costs, increase productivity, offer new products and services, that augment the competitive advantage of the organization.

Research Objectives

The main objectives of the research include:

- a) Study of the effect of Big Data on competitive advantage
- b) Study of the effect of Privacy on competitive advantage
- c) Study of the effect of Information Security on competitive advantage
- d) Study of the effect of connectivity on customer experience

Data Collection and Research Methodology

It is established from the global research magazines that there would be nearly thirty billion devices on the Internet of Things (IoT) by 2025. The attribution of this growth could be made to the fact that devices of everyday usage are becoming connected entities with operational technologies, in a global manner. The world is now on interconnected things, where there is interaction of humans

with machines, and there is interaction of machines with other machines (M2M). The survey made by us in the field, and the subsequent study indicate that around 90% of the Internet users and technology experts are convinced that Internet of Things (IoT), as well as wearable and embedded computing devices, would have large-scale beneficial effects by 2025. The objects are controlled and sensed remotely by the Internet of Things (IoT) across the infrastructure of the global network, and augment the facilities for improved direct integration of the physical world into digital systems, that further augment the accuracy, economy and efficiency. There is exponential advancement of the Internet of Things (IoT) and the capability of its uses is beyond the reach of speculation. Figure 1 shows the graphical representation of Progress of Technology and the Period of Progress.

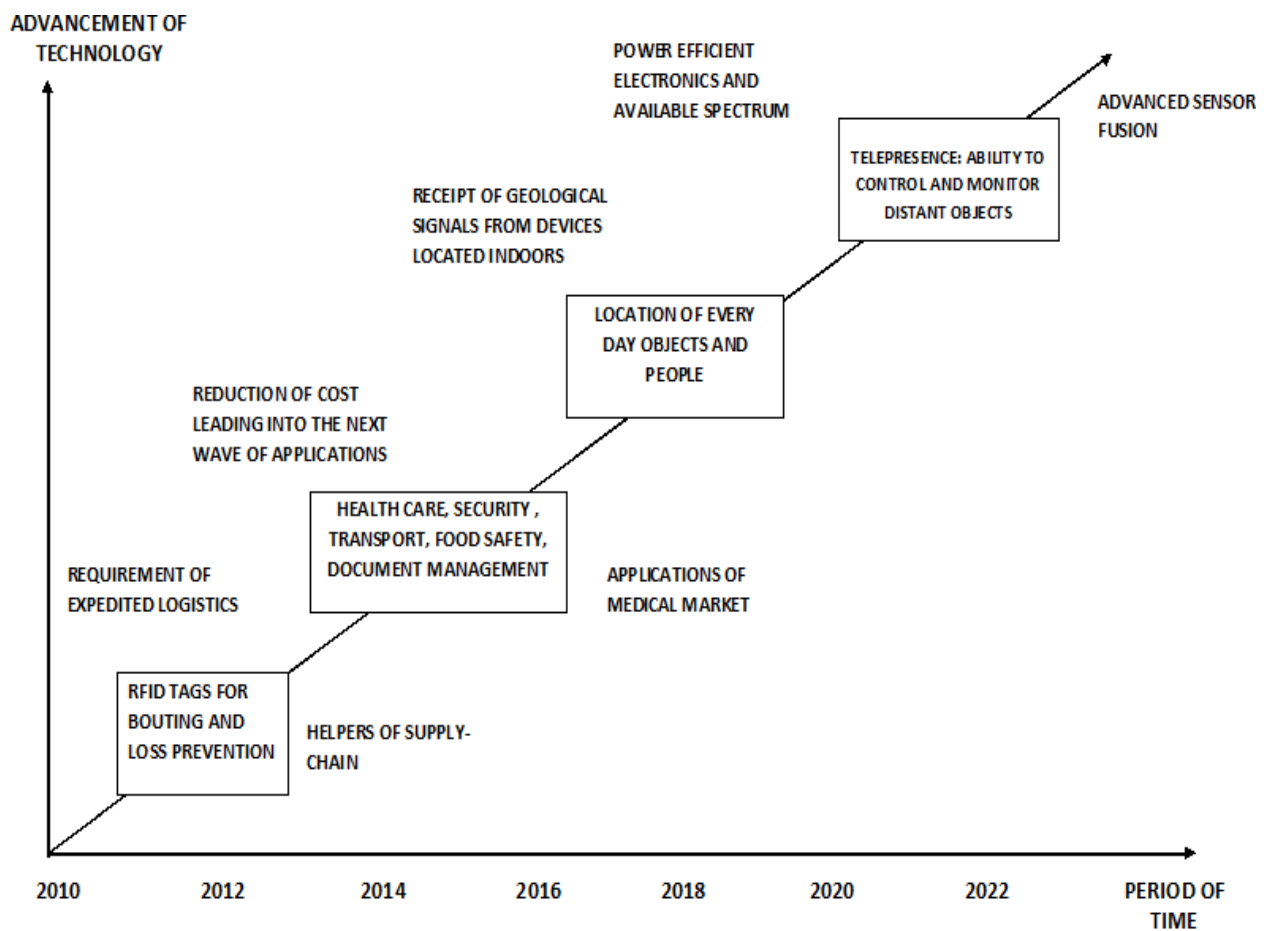


Fig. 1: PROGRESS OF TECHNOLOGY – IoT

It is established from the research that the fundamental component of welfare and economic growth is knowledge. It is observed that a number of countries in the world are unable to create the dynamic environment for the challenges involved, as these countries have scarce resource- dynamic export industries that are capable of generating the dynamism that the resource sector is unable to.

The Internet of Things (IoT) is perfectly capable of augmenting global corporate profits, and contribute to accelerate changes and adopt new challenges, that require innovative strategies to address the changing view of risk and customer behavior. The investment in Internet of Things (IoT) is augmented by organizations that wish to improve techniques for assessment of clients' risk levels, reduce expenditure and improve the practices in digital business. There is growing market demand that the various devices under use, sync seamlessly and connect in every possible way, from any device to another device under use.

Security and privacy are the two major challenges that surround Internet of Things (IoT), in organizations, that are connected to networks. Any solution of Internet of Things (IoT) needs to centralize end-to-end physical security, and network-aware intelligence for all networked sensors and videos. The research survey shows that there is a huge demand for an extensive range of new skills and technologies, for the complete utilization of Internet of Things (IoT), that is lacking in many organizations, and is posing to be a major challenge.

Analyses and Results

In our research for the augmentation of competitive positioning advantage, we have made a review of the model of Technology, Organization and Environment (TOE), and the model of Five Forces of Competitive Positioning Analyses.

a) The Model of Technology, Organization and Environment (TOE)

In this analysis, three aspects of an organization's context are identified that influence the process by which implementation and adoption of a technological innovation are made. These aspects comprise of the context of technology, context of organization and context of environment.

In the context of technology, the external and internal technologies of the firm, are included along with both processes and equipment.

In the context of organization, we first make a discussion on the internal environment. The formalization, the centralization, the availability of slack resources, the quality of human resources, the complexity of managerial structure, informal and formal linkages outside and within the organization, boundary spanning mechanisms for communication, and communication as well as decision-making methods, with the external environment. The hallmarks of an organic system are active networking both outside and within the organization, control and leadership decentralization, and usage of lateral communication frequently. The need of electronic coordination linkages to enable the partnerships of supply chain require the inter organization collaboration mechanisms, that are absolutely fundamental. It has been proved from our research that several factors could energize the major organizational changes. These include transmission of consistent signals both outside and within the organization about the creation of a team responsible for the crafting of visions, that are relevant to the innovation; gross value of the innovation both outside and inside the organization; as well as communication and development of the clear images of the organization's strategies, along with the requirements of meeting these strategies, like roles of technologies and core values.

In the context of environment, the research considers that an organization consists of multiple stakeholders, as customers, the government, suppliers, industry members, the community, competitors, etc. The capability of the organization for interpretation of the need of innovation, the mobilization of the resources for the pursue of innovation, and the expertise for deploying it, is influenced by the arena surrounding an organization. The competitive conditions and the changing market block or support technological innovation, and might also encourage organizations to use forms of innovation. The powerful tools for restraining an organization's operations are specified mandatory criteria, and Government regulations, that increase costs of production, and encourage the scrutiny of technologies. To comply with the requirements of more productive organizations, the suppliers might need to modify their business processes and production activities.

The opportunities and constraints of technological innovation have now been highlighted. The model of Technology, Organization and Environment (TOE) exerts the authority on the organization to recognize and understand the requirement, seek for and take up a new technology. The model of Technology, Organization and Environment (TOE) is taken up for studies in taking up Information Technology (IT), and is responsible for projecting useful analytical frameworks, that are utilized for studies of different types of innovation of Information Technology (IT), for the purposes of assimilation and adoption.

b) The Model of Five Forces of Competitive Positioning Analyses

In the analyses, the competitive positioning and strength of an organization are evaluated and assessed. The model is based on the concept that five forces determine the attractiveness and the intensity of competitive positioning in the market. Identification is made by the five forces, about the point of centralization of power in a business situation. The strength of the position that is targeted by the organization and the strength of the organization's current competitive position, are identified. By identifying the point of centralization of power, the model is used to make the identification of the areas of strength, for avoiding mistakes and improving weaknesses.

Power of the buyer is the theory of assessment of the easiness faced by the buyer to bring down the prices. It is assessed by the importance of each individual buyer to the organization, the gross number of buyers in the market, and the cost involved for switching from one supplier to another, for the buyer. The research shows that just a few powerful buyers in the market, are readily able to dictate terms.

Power of the supplier is the theory of assessment of the easiness faced by the supplier to bring up the prices. It is assessed by the singleness and the uniqueness of the service or product, the gross number of suppliers of each essential input, the cost involved for switching from one supplier to another, and the relative strength and size of the supplier.

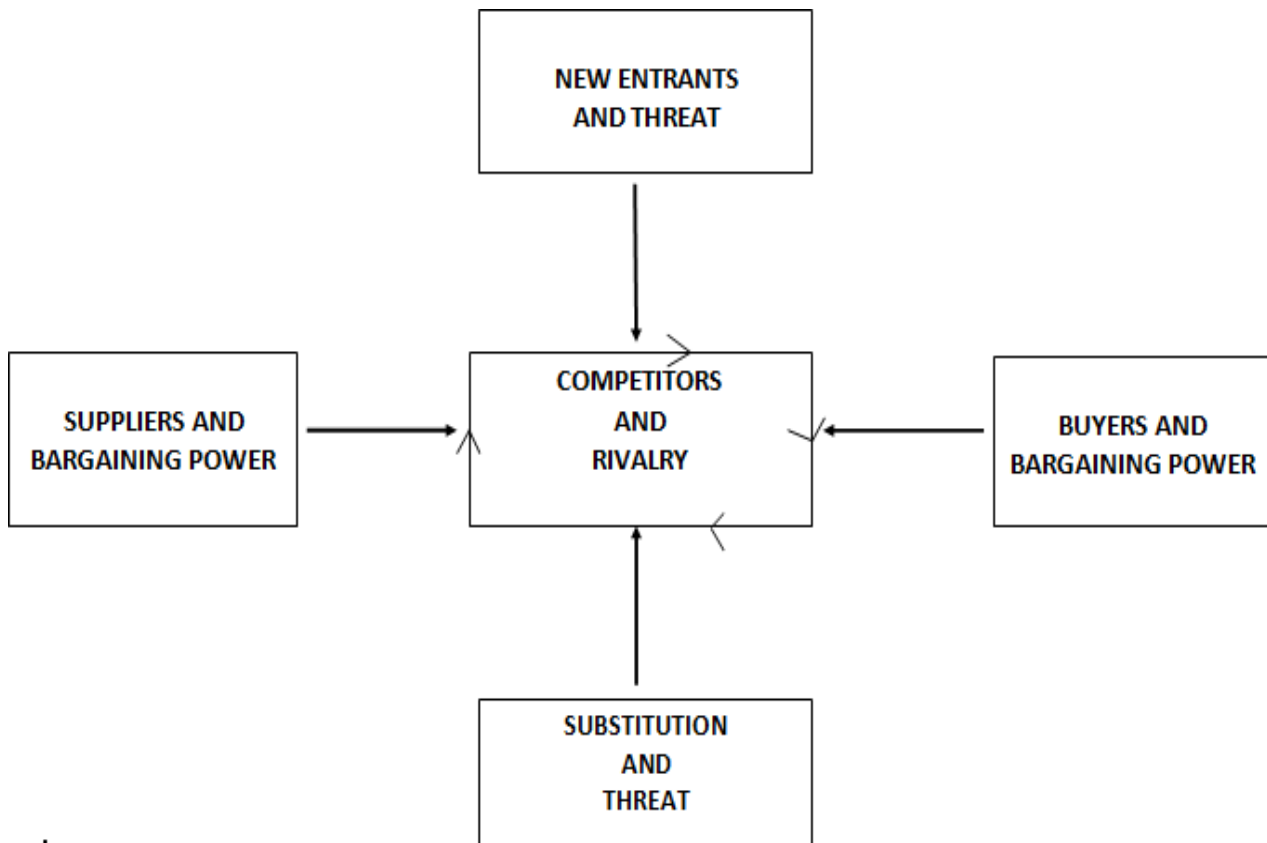


Fig. 2: The Model of Five Forces of Competitive Positioning Analysis

New entrants pose threat due to the attraction of the profitable markets, and this in turn causes

erosion of profitability. Profitability declines to a competitive rate, without strong and durable barriers to entry, like economies of scale, patents, and government policies.

Substitutions pose threat to the organization, if there is existence of products, that are close substitutes, existing in the market. In this case, there is an increase in the likelihood of customers, to switch to alternatives, as part of response to price increase. In such cases, there is reduction of the attraction of the market and the power of the suppliers.

The rivalry of competitors involved the expertise and the number of competitors in the market. The attractiveness of the market is reduced, due to the offering of undifferentiated services and products, by the competitors of the market.

The Model of Five Forces of Competitive Positioning Analyses revealed that factors like lack of infrastructure, and protection of state, prove to be of barriers in India, than in the developed countries, where forces in the market are more powerful. The model was applied for the comparison of emerging businesses and developed markets. The other issues highlighted by the analyses included the comparisons of competition in emerging economies, and the issues prevalent in the developed markets.

Discussion and Findings

a) Study of the effect of Big Data on competitive advantage

The advantage of competitive positioning is dependent on the superiority of access to information. The most crucial way of leading organizations, for outperforming the competitors is the usage of Big Data. In the modern age, information serves as the oxygen. The established new entrants and competitors leverage the strategies, that are data-driven, for competition, capturing values and innovation. The promises of Big Data tend to be transformative, and the advancement in the complexity and data size handling, prove to be more beneficial from analytics and Big Data. The research study indicates that more than fifty percent of the organizations, have implemented Big Data or business-intelligence initiatives in the past year. Our studies estimate that more than ninety percent of the top-grade organizations, would implement within a year, at least one Big Data

initiative. The effective use of the same could certainly deliver considerable benefits. The improvement of potential in this area, would not only augment the performance in the traditional functions and segments, but also enable to augment the offerings of service and product, and create further opportunities. The Big Data, that comprises of large pools of data, are analyzed to discern patterns and brought together. This action enables to make better decisions for the organizations, that become the basis of growth and competition of the organizations, that give rise to significant value and improve productivity for the global economy, by enhancing the quality of services and products and diminish the waste. It is essential for the organizations to adopt Big Data and its capabilities to create values of significance in a serious note, if the organizations wish to compete, and augment the margins of operations. The analytics of Big Data make the markets capable to send relevant communication to customers, that are targeted and personalized, in consonance with the modern requirement. The markets acquire knowledge to make optimization of the appeal to individual customers, by utilizing data-driven marketing. Our research survey has revealed that about ninety percent of the organizations are of the opinion, that there could be a shift of the competitive environment, if the Big Data analytics were used in an optimum fashion, and that some organizations believed that failure to take up the strategy of the Big data analytics, would lead to the loss of the momentum and the market share.

The research established five ways that an organization could grip on the Big Data that could include, unlocking of the central value by Big Data, by way of making the information transparent; allowing narrower segmentation of customers by Big Data, that enables precise tailoring of services and products; substantially minimizing risks, discovering valuable insights and augmenting the process of decision-making by sophisticated analytics; and the development of the next generation of services and products, by the utilization of Big Data.

b) Study of the effect of Privacy on competitive advantage

The potential sources of the advantage of competitive positioning are strong data security and Privacy practices. The result of the survey of our research indicated that more than half of the consumers considered security and Privacy of personal information were more important factors for

choosing an online retailer, while the remaining consumers are of the opinion, that purchases need to be made from online retailers, that are believed to protect their personal information. The online retailers need to be increasingly aware of the data of the consumers, and it is expected that the consumers would have more graphical and simpler privacy policies. If there is abuse and misuse of consumer's data, the same would result in lost consumer trust, and it would impact profitability by way of fines and other modes of punishment. The organizations need to believe that Privacy policies of consumers are marketing opportunities and that Privacy is nothing but 'green movement'. The viewing of the Privacy of security and data, need to be considered as capable sources of competitive advantage, that could result as the most significant component of corporate reputation and brand-building. The research strongly indicates that organizations with strong Privacy policies could utilize the same for differentiating themselves, and that could provide maximum competitive edge to businesses.

c) *Study of the effect of Information Security on competitive advantage*

Information Security is a factor of considerable concern in the modern digital environment of high technology. The organizations are becoming increasingly dependent on information systems, as the value of its information controls the value of its business. The basis of the advantage of competitive positioning is information. The most crucial tasks of the modern organization are the protection and valuation of information, as without information, the not-for-profit sector would remain inoperative. The research highlights that the threats to information systems from terrorists and hackers are on the rise, and the consumers need to be more cautious about the proper use of the information. The survey conducted for the research in this section, revealed that consumers are aware that the biggest threat in the adoption of Internet of Things (IoT) for the advantage of competitive positioning, is security, and the cornerstone of the advantage of Internet of Things (IoT) is maintaining and building the trust of the consumers. The organizations that provide the customers with an opportunity to make decision about the usage of their information are most likely to be in an advantageous position, as they could build more trust in this fashion, since the customers are always suspicious about the way their data are being used by the organizations, and if the same pose any threat for them.

d) *Study of the effect of connectivity on Customer Experience*

Service providers strive to provide loyalty and manage the Customer Experiences by the process of continuous innovation, and a steady aggression in design. Under such circumstances, the reward is huge, when the emotions of customers get connected with the organizations. In order to achieve the end-to-end optimization of Customer Experience, the organizations opt for major investments for more profitable growth. The organizations closely monitor the Customer Experience by studying the interaction of the customers with the offline and online service offerings, the promotions, the brands, and the products. The organizations need to innovate their ways of responses to Customer Experiences, and methods of value creation, due to the improved advancements and trends in technology. The balance of power is tipping in favor of customers, as far as value creation is concerned. The consumer-centric culture of Internet-of-Things (IoT) lays more emphases on individuality, speed, openness, and the interactivity. These are spreading in the value chain, and rising to great heights. The most essential factor is integration, and without that, the organizations would fail to realize their maximum capability of digital capabilities. The research has further established that digital disruptions may not only be unpredictable and messy, but could be incredibly motivating, inescapable and powerful. The organizations need to have a firm plan to take advantage of digital disruption, for the augmentation of business value as well as competitive advantage, and improvement of the Customer Experience.

The new point of entry for the use of advanced technology in most disciplines is Internet of Things (IoT). Then linkage of information exchange with objects like devices, people, machines, etc (also linkage with each other) is achieved with Internet of Things (IoT). The integration between communication technologies and information, with a specific application is also achieved by Internet of Things (IoT), with a number of sensing tools that help in collection and transfer of data to the cloud. This procedure allows users to understand the effects of the various processes, and assists in appropriate decision-making.

The Internet of things (IoT) signified the Internet-connection to things, by the mode of the technology of identification, that is based on RFID, and is used for identification of radio-waves, technology of recognition, perception of intelligence, pervasive computing, as well as GPS and

infrared waves, that extends further to the field of innovation and business. The identification of intelligent commodity, monitoring, tracking, location and managing the same are achieved by Internet of Things (IoT).

The Internet of Things (IoT), in reality, is a network of physical objects, dealing with various sizes and types, that include home applications, cameras, smartphones, medical tools, games, industrial systems, for achieving competitive positioning in smart organizations, and also acquire the control and monitoring of operations. So we find, that the research establishes that the Internet of Things (IoT) has the function of linking three components together, people to machines, people to people, and the things or machines with machines or things.

The technology of Internet of Things (IoT), is able to monitor the organization's assets inside transport and cargo ships, and allows communication with greater accuracy, that allows better planning and tracking of the path, better support for real-time visibility of the location of the vehicles, thus reducing the loss of time towards improving customer satisfaction by cost savings, and enhancing the utilization of vehicles. The technology of Internet of Things (IoT) further facilitates the safety and augments the security of vehicles. This protects the vehicles from thefts, and also facilitates the tracking and monitoring of movement.

The direct benefits of usage of Internet of Things (IoT) for the purpose of competitive positioning in transportation include the tracking and monitoring of movement, along with safety and health conditions of vehicles, drivers and goods. The indirect benefits of usage of Internet of Things (IoT) for the purpose of competitive positioning in transportation include the augmentation of efficiency of vehicles; reduction of wait time, fuel consumption, operating hours and costs; effective management of scheduling; and thus augment the satisfaction of customers.

The basic concept of competitive positioning refers to the capabilities of organizations, that are unavailable to their competitors' or utilization of certain potential and capabilities, that competitors can never manage. Organizations, that have the potential for making innovations, realize the significance of competitive positioning, that is crucial for improving the image in the market. For a supply chain or process, the dimensions of competitive positioning are time, cost, quality and flexibility. These dimensions ensure the execution of operational dimensions, that are critical in nature, for the satisfaction of external and internal customers, at any point of time. Table 1 illustrates an example of competitive positioning in an organization.

Table: 1: Practices of Competitive Positioning

Potentiality	Preferences	Exposition
Time	Delivery on time	Delivery-time promises are met.
	Speed of Delivery	Customer's Request is quickly issued.
	Speed Development	Quick introduction of a new product or service.
Cost	Operations at low-cost	For satisfaction of Customer in supply chain, products are introduced at the lowest possible cost.
Quality	Quality-Consistent	Meeting design specification of products and services on consistent basis.
	Quality-Top Grade	Meeting the highest level of specification of products and services.
Flexibility	Flexibility in variety	Efficient handling of a vastrange of products and services.
	Flexibility in Volume	Large fluctuation in demand are met by decelerating or accelerating the rate of production.
	Flexibility in Customisation	Modifying the design of the product or service for satisfying any odd or strange demand of any customer.

As a modern topic produced by technological advancement, that attracted several sectors, including transportation, to derive benefit from its advantages, and augmenting competitive positioning, Internet of Things (IoT) displayed a significant role in achieving the competitive targets, that depended on the degree of agreement, in a way, that Internet of Things (IoT) could exercise greater flexibility, than time and cost, with efforts to minimize the affecting of quality. It was observed in our research, that Internet of Things (IoT) had certain roles on competitive positioning, like cost, flexibility and time, with slight affecting of quality. However the augmentation of the two quality dimensions, like reduction of errors in transportation, and bringing perfection in the desired product, are the biggest advantages.

In the matter of transportation, the research recommends competitive positioning by paying greater attention towards using Internet of Things (IoT) to improve competitive capabilities, and highlighting the dimensions that affect quality. It was further observed from the study, that if comparisons are made between different countries, in the transportation sector, and considering different fields of transportation, like ships, trains, and airlines, it would be possible to observe the extent of the matching of results, by using Internet of Things (IoT).

Conclusion

The research has established two useful tools to bring to light the deployment of Internet of Things (IoT) in organizations, to gain advantage from competitive positioning. These are the model of Technology, Organization and Environment (TOE), and the model of Five Forces of Competitive Positioning Analyses. The organizations are undergoing a shift to new technology, in which devices and objects, from all industries are becoming intelligently connected. In this fashion, the lives of the customers, are made more convenient, more enjoyable and more efficient, by Internet of Things (IoT), that is leading to the transformation of industries, by introducing new business models, new services, and new customer experiences, that provide a positive competitive edge. The research has further confirmed that Internet of Things (IoT) is driven from a perspective of technology, using small form factor chips, that are more powerful and of low cost. The research confirmed that the improvement of the network is augmented as the square of the increase of the number of nodes. The organizations need to be aware of the fact, that in the context of Internet of Things (IoT), countless

objects and devices would be interconnected in the coming years. The innovation throughout the ecosystem, is extending beyond the limit of the software, due to the tremendous quantum of development in hardware, caused by the limitless opportunities, being created by Internet of Things (IoT). It is necessary that organizations connected to networks are made aware of the importance of the factors, security and privacy, that surround Internet of Things (IoT). A strong awareness of these two factors, would prove to be the potential source of advantage of competitive positioning. The organizations are gifted with the important opportunities of augmenting and strengthening customer base, augmenting profitability, increasing market share and gaining competitive advantage, by Internet of Things (IoT). It is necessary that the organizations strategically unlock the consumer data, that have proved to be the biggest deciding factor in this digital era, to pull off a strategic win in their favor.

Limitation and Further Scope of Research

The research clearly suggests that the main priority for Internet of Things (IoT) is security. It is necessary to pay great attention to the activation of firewalls as well as encryption in the event of the device being stolen or lost, security policies related to Virtual Private Network (VPN), and anti-virus software. Organizations need to be able to ensure that it could wipe out the data, considering the risk of the loss and the value of the data. The implication of reputation involved as well as the compliance issues need to be taken care of. The research also strongly emphasizes the laying of the appropriate policy guidelines, before switching to Internet of Things (IoT). The policy guidelines of the organizations need to include the vertical-specific regulations as well as national data privacy laws. There also needs to be adequate organizational and technical measures, for protection of sensitive personal data, that the organizations might be responsible for processing.

It is necessary for the organizations to provide greater flexibility for streaming the right set of user profile, applications-on-demand and data, in a secure manner and at the right performance level of any device. For this purpose, there needs to be deconstruction of traditional workspaces, utilizing virtualization for the decoupling of dependencies among Operating Systems, hardware, user states as well as applications of desktop configurations. It is necessary to make the general employees aware as well as well-informed of the implications of the adoption of Internet of Things (IoT),

along with the involvement of the risk involved in the adoption of the concept of Internet of Things (IoT). As such, public events and forums need to be organized by both business stakeholders and government (state and central), to ensure the awareness of the business organizations in general.

Reference

1. Alghamdi, A. Ali. (2016). Market Knowledge, Blue Ocean Strategy and Competitive Advantage (Direct and Indirect Relationships and Impact), *Universal Journal of Management* 4(4) : 141-160, 2016, DOI : 10.13189/ujm.2016.040401
2. Alrifai, M. F., Harum, N., Othman, M.F.I., Roslan, I., & Shyaa. M. A. (2018). Vehicle Detection and Tracking System IoT Based : A Review. *Int. Res. . Eng. Technol*, 1237- 1241
3. Al-Zaidi, Waleed., Shaban, Farsat., Dunay, Anna. (2016). The Extent of Application of the Strategic Dimensions, *Proceedings of the 1st International Conference Contemporary Issues in Theory and Practice of Management 2016*
4. Atzori, L., Iera, A., & Morabito, G. (2010). The Internet of Things : A Survey. *Computer Networks*, 54(15), 2787-2805
5. Bohn, J., et al., 2004. Living in a World of Smart Everyday Objects---Social, Economic, and Ethical Implications. *Journal of Human and Ecological Risk Assessment*, 10(5), 763-786
6. Brown, R., 1992. Managing the 'S' Curve of Innovation, *Journal of Consumer Marketing*, 9 : 61-72
Cowell, D. W., 1984. *The Marketing Service*. Heinemann Professional Publishing London.
7. Cetinkaya. A. S., Niavand. A., Rashid, M. (2019), Organizational Change and Competitive Advantage : Business Size Matters, *BMIJ*, (2019) 7(3): 40-67 DOI : <http://dx.doi.org/10.15295/bmij.v7i3.1230>
8. Chinna Babu D. & Prakash V., 2018, Real Time Tracking and Fuel Monitoring of Truck Using IoT, *International Journal of Pure and Applied Mathematics*, Volume 120 No. 6 2018, 1685-1701, ISSN : 1314-3395. <https://acadpubl.eu/hub/2018-120-6/2/125>
9. Intel, 2016. Why Connecting to the Internet of Things Should Top Your Project List
10. Jeff John Roberts (2013) <http://www.bloomberg.com/news/articles/2013-07-29/the-competitive-advantage-of-data-privacy>
11. Jim Downey, 2007 : Strategic Analysis Tools, Retrieved on 08 October, 2016 from :

http://www.cimaglobal.com/Documents/ImportedDocuments/cid_tg_strategic_analysis_to_ols_nov07.pdf.pdf

12. Kon, Elin (2012). Model of Competitive Advantages in Controlling Concepts. Herald Pnu, 1(24), 207-212
13. KPMG (2015) : East Africa Insurance Fraud Risk Survey 2015, accessed on 22 October, 2016 from <https://www.kpmg.com/eastafrica/en/Documents/East%20Africa%20insurance%20Fraud%20Risk%20Survey%202015%20-%20Kenya.pdf>
14. Kumar, Sachin.,Tiwari, Prayag.& Zymbler, Mikhail. (2019). Internet of Things Is a Revolutionary Approach for Future Technology Enhancement : A Review, Journal of BigData, Vol (6). No. (111)
15. Li, S., Da Xu, L., & Zhao, S. (2015). The Internet of Things : A Survey, Information System Frontiers, 17(2), 243-259.
16. M. Tushman and D. Nadler, "Organizing for Innovation," California Management Review, vol. 28, no. 3, pp. 74-92, Spring 1986
17. Nick Jones, 2016. Gartner Identifies the Top 10 Internet of Things Technologies for 2017 and 2018. Retrieved on 14 October 2016 from <http://www.gartner.com/newsroom/id/3221818>
18. Porter, M., 2008 : Competitive Advantage. <http://www.economist.com/node/11869910>
19. Tim McGuire, James Manyika, and Michael Chui, 2012 : Why Big Data Is the New Competitive Advantage. <http://iveybusinessjournal.com/publication/why-big-data-is-the-new-competitive-advantage>
20. Zebra Technologies., (2015), How the Internet of Things is Improving Transportation and Logistics. <https://www.supplychain247.com/article>