THE IMPACT OF INFORMATION TECHNOLOGY AND BIG DATA IN BUSINESS INTELLIGENCE

Rana Raad Shker[1]   **Mansoor Noori Hussin[2]**

[1,2] College of Education, University of Al-Qadisiyah, Iraq.

Email: rnnaraad1986@gmail.com mnsoor1983@gmail.com

Abstract: The goal of this study was to suggest ideas for improving the information technology IT at business for the purpose of increasing business productivity. Organizations must be knowledgeable in order to properly utilize IT tools and be able to apply that knowledge to create unique competencies in order to gain sustained advantage from IT investments. Information technology in the modern organizations has been proposed as the mechanism to accomplish the productivity in the concerned industries. Existing empirical research demonstrates that IT may indeed act as a mediator for the effect of productivity on modern organizational outcomes. Yet, this study is not consistent in the conceptualizations of the relationships involved, nor in their definitions and measurement of IT investment spending. Thus, they chase numerous creative and innovative procedures and approaches while adding a substantial role of informational technology in the administration of such practice. This study aims to address these concerns in the businesses to compare the effectiveness with respect to measurement of IT as mediating variables in knowledge-intensive organizations. Implications for research and practice are discussed.

1. Introduction

Organizations of all kinds are relying more on data and information processing systems than ever before. Investments in the tools of information technology (IT) infrastructures have been assumed to provide enhanced decision-making capabilities, increased efficiency, and improved productivity, and finally the productivity role in the business organizations from the concerned industries [1]. A prime example for modern business organizations, though not the only example, is that of 'big data' and 'analytics' These relatively new technologies have high expectations to enhance organizational outcomes for the productivity and, consequently, are invested in heavily. However, such investments of information technology do not always lead to better modern organizational productivity outcomes. For example, Gartner reports that over half of technological big data projects fail to deliver the anticipated return on investment [1]. Further, technology can be utilized as a term information technology (IT) which is commonly advantageous in describing the software, wireless communication and unified electronics while accumulating the incorporation of media information like image, text, voice and data [2].

1.1. Problem Statement

The research question to be explored for this study is: "Utilizing Information Technology (IT), and how may the general productivity at businesses be Improved?". The principle technique for determining the primary research will be through an overview given to all information technology which should be used to evaluate the productivity of any business. The study will likewise determine with the primary bookkeeping accomplice to collect information in regards to the investigated subject of information technology.

1.2. Motivation

The purpose of this study is to break down the information technology (IT) and big data utilized at the appointing businesses and to decide whether there can be any enhancements made to the manner in

which their technology is utilized so as to expand profitability and productivity of the businesses. The mandatory alterations needed by institutes' organizational structures and the impact of information technology on the business organizations productivity. Finding the empirical studies on Information Technology in a Competitive organization setting for organizational productivity. How we can measure the Information technology competence through different models for the productivity of the organization. The significance of the relationship between IT and organizational productivity through the theoretical framework and is mediated by organizational learning.

2. BACKGROUND

Research into the business organizations use of IT observes that IT infrastructure itself is not sufficient for competitive advantage as infrastructure is too easily imitated by other organizations and an inability to properly utilize existing resources. Instead, existing research demonstrates that, when combined with organizational productivity [4], IT may be used to develop unique organizational capabilities which then enable enhanced organizational performance; organizations must know how, and be willing to use, these tools properly in the form of IT capabilities. In the participation and transmission of generation knowledge represents the information technology as an imperative strategy because of its proficiencies and magnitudes. The management's evolution with its applied & academic believes has instigated the solution to several management complications in latest decades. Consequently, of this evolution, the structural alterations in the roles of management, approaches of work in modern establishments afterwards the analyzing & processing of information which has been developed as a significant reserve for any organization but is a key proportion of the procedure of administration. Therefore, the occurrence of information technology discovers novel prospects for the managers of business organizations and also to invent the ranges to utilize in business strategies because of its usage for the improvement of organization's competitive spot [3].

While big data or organizational analytics technology may be a relevant modern example of technology for enhancing organizational performance, the issues encountered with their use in practice are not limited to these technologies [2]. More generally, there are examples where technologies lead to more organizational problems such as 'analysis paralysis' whereby managers spend too much time and effort analyzing an issue before action is taken which may prevent a timely response to that issue. There are also examples of organizations which spend an inordinate amount of resources collecting, organizing, and storing information that is never used to inform decision making, resources that can arguably be better used elsewhere with a higher return on investment thus gives the edge-cutting response to the productivity of that organization. "The imprudent integration of such IT systems may eventually lead to a less desirable competitive position within an industry". IT can become as much an impediment as an enabler of organizational performance and leader roles in other concerned organizations [2],[3]. These issues represent a salient challenge for modern organizations which are increasingly reliant on large scale IT systems for organizational productivity and performance.
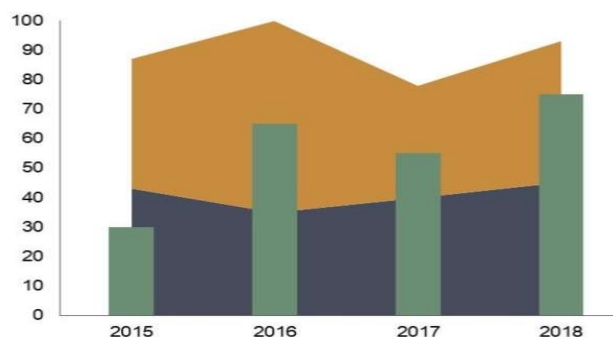

Figure 1: The overview graph of use of IT in the businesses over the past years [2].

Before addressing these points to start identifying a perception of productivity, it is vital to understand the great significance attained by pioneers in business organizational field due to chief engine for economic actions and IT being industrial demand for every business. The technology in the world of business has numerous meanings, although, running a business could be explained in five meaning: all the procedures that can be established to generate value to stakeholders, the comprised of electronics, human knowledge, material equipment, telecommunications, working methods & treatment which can be utilized to implement the organization's business activities [1].

3. IMPACT OF OUTDATED TECHNOLOGY AT BUSINESSES

Research into the modern organizations use of IT observes that IT infrastructure itself is not sufficient for competitive advantage as infrastructure is too easily imitated by other organizations and an inability to properly utilize existing resources. Instead, existing research demonstrates that, when combined with organizational productivity [4], IT may be used to develop unique organizational capabilities which then enable enhanced organizational performance; organizations must know how, and be willing to use, these tools properly in the form of IT capabilities.

Problems that can stem from using outdated technology include:

- **Data Security**: IT is continually evolving. It is switching to stay aware of new electronic dangers and destructive PC infections. These assaults against an organization's information can be a costly issue should something happen to the information stockpiling frameworks, and the more seasoned the product and innovation an organization is utilizing, the more outlandish it is to be satisfactorily secure enough to avert such attacks [6].
- **Data Loss:** On the off chance that there are numerous PCs inside an organization, all running various variants of programming, there is the potential that there can be information misfortune when information or yields are sent between them. More seasoned renditions might not have indistinguishable choices from the more up to date ones and this can bring about changes in arranging, just as loss of data completely.
- **Employee Productivity:** There is some chance that an organization's workers are utilizing obsolete technology, and are making some harder memories getting to the data they have to carry out their responsibility, they are turning out to be less gainful when they need to area off time to fill in data innovation demands.

The productivity of the auspicious and significant fields is deliberated as identical for the advanced industrial and developing countries' economy. Because it assists the dynamic involvement of the entrepreneurship in general economic progress of all countries [4]. Examples of specific technologies employed in organizations mainly include areas such as communication technology, knowledge repositories, databases, and analytical and computational capabilities which will consequently increase the productivity for any business to pursue. The perception of organizational creativity is utilized by any business organizations to react and acclimate the variables of environment to attain the inexpensive compensations over others. This is by the acceptance of fresh patterns of organization, progression of novel technology and establishment of relationship with other establishments as well as comprising the assistance to generate something different

Organizations prefer several kinds of new technology for the conversion of inputs to outputs. There is a resilient relation among the structures utilized in the organization and the production processes' size. It was also observed that the competence and efficacy of the organization mainly depends on the proportionality's amount amongst the organizational structure and technology [4]. Moreover, the usage of advanced technology is a distinct indication for all industrial sectors and facilitated modern technology for coordination among all resources & procedures. It also attains the access of business to the finest facility, products for customers, more elasticity to reach customers, achieving a greater value for business and complete coverage of markets. Because of the extreme competition, the globalization turns out to be the impacting the development and expansion of the global economy while opening the local market. Moreover, the global trends of technology have upsurged the indecision and hazards of

entrepreneurial organization as forecast markets. However, the increased fluctuations and string competition have improved the complexity of prediction about growth attainment.
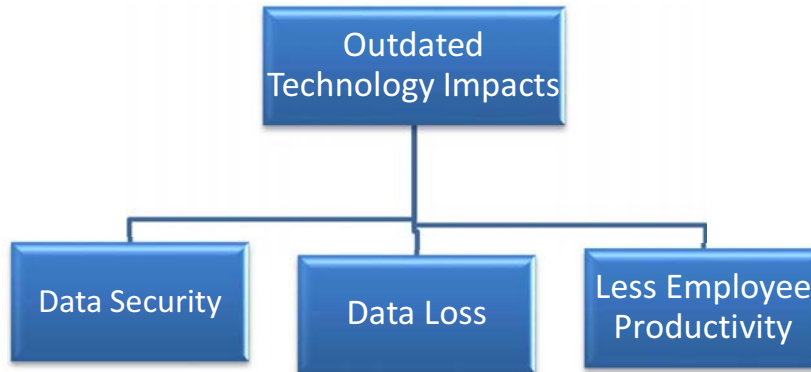

Figure 2: The impacts of outdated technology at the businesses.

4. OBJECTIVES OF INFORMATION TECHNOLOGY (IT) AT BUSINESS:

i. Cost Reduction:

This implies that technology cannot be considered separately from the way that people behave within the organization, supporting the development in the MIS literature to investigate not just technology but also its use in practice. Technology and behavior must then also interact over time as technology influences the behavior of organizations and behavior influences organizational productivity as well as cost reduction policy through it.

ii. Time Reduction in Businesses:

Reducing the time required with new opportunities, afforded by enhanced technological capability, organizations must decide which paths to follow and in doing so embody the values and priorities of that organization in their future choices. Accordingly, organizational values influence technological investment [7] which in turn influences future choices that must be made on the basis of their organizational values and time efficient work. Moreover, the usage of advanced technology is a distinct indication for all industrial sectors and facilitated modern technology for coordination among all resources & procedures for time management. It also attains the access of business to the finest facility, products for customers, more elasticity to reach customers, achieving a greater value for business and complete coverage of markets in time process.

iii. Output Quality of Businesses:

Because of the extreme competition, the globalization turns out to be the impacting the development and expansion of the global economy while affecting the output quality by any business in the local market. Moreover, the global trends of technology [7] have upsurge the indecision and hazards of entrepreneurial organization as forecast markets. However, the increased fluctuations and string competition have improved the complexity of prediction about growth attainment. One way is having a developed technological perspective towards integrating more of the social context of people using technology. Information technology should then be thought of as both social and physical as technology both impacts output quality of any business in upward direction.
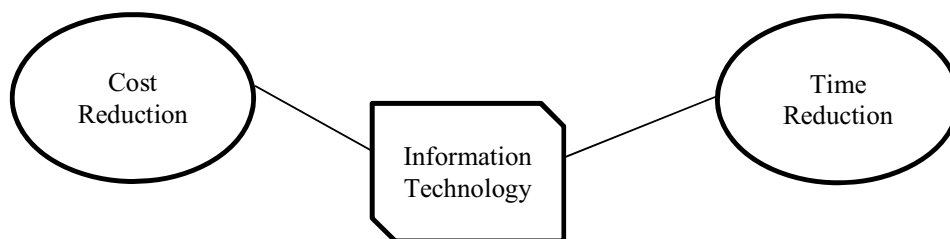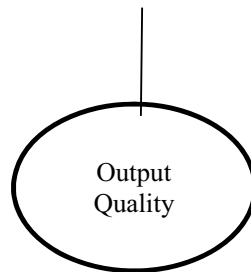
Figure 3: The objectives of information technology (IT) at the businesses.

5. PLANNING & IMPLEMENTATION OF INFORMATION TECHNOLOGY AT BUSINESSES:

It is often suggested that IT has become so ubiquitous an investment that it is assumed to provide value, increase productivity, and competitiveness as a matter of course. However, investments in IT have not always resulted in the expected gains [5]. An example comes in the form of big data. Here, it is argued that vast volumes of data are difficult for people to interpret and make sense of at these grand scales which may impede effective understanding and use of such information resulting in cherry-picking of data, and inability to identify patterns and make appropriate generalizations [8]. Failure to properly comprehend the data being relied upon to make organizational decisions may distort intentions and productivity role of organization, discourage the use of technological aids, or worse, set the scene for poor organizational decision making based on misunderstanding and misplaced confidence in the productivity processes, thus it effects the organizational setting. The simple existence of an information technology infrastructure is not sufficient for enhanced organizational processes as the potential for improper use of technology may undermine competitive positions. Technologies, such as big data, then need additional context to provide a competitive advantage whereas Knowledge is necessary but not sufficient for competitive use of IT resources. Unique organizational knowledge is what enables the organization to fully utilize IT resources and it is what endows IT with all the properties of a competitive advantage [2],[8].

The globalization and revolution of technology are the functional keys for the recent rivalry, furthermore, operating the modern technology is increasing as it upsurges the capacity of its resources and decreases the cost [7]. Thus, technologies have turned to be the key indicators for the productivity strategies and for seizing the market opportunities. Specifically, the upsurge of economic globalization claims the provision of fresh, enhanced and experienced invention and creativeness to attain the quality & quantity. The growing dependence on the information technology deeply influence the institutes, either due to its structure, form or because it offers the planned possibilities range just to progress the organization's sustained performance and to develop the informational technology's application as well.

- **Evaluation of the Information Technology:**

The Evaluation of the information technology is the last stage to implementation where-in the growing dependence on the information technology deeply influence the institutes, either due to its structure, form or because it offers the planned possibilities range just to progress the organization's sustained performance and to develop the informational technology's application as well. Together, managers that support these recommendations would situate their organization well for high-performing learning organizations necessary to make the best out of IT investments [7]. As market requires quality & flexibility to cope up the demands and innovation is a key factor towards the achievement. The observation on technology is valid because the modern technological fluctuations moves in the shadow of modern organizations while leading role through the promotion of innovation.

- **Measuring Information Technology for productivity at business:**

Research into the relationships between IT and organizational productivity has shown that simplistic models of the organization do not easily capture real-world dynamics of the use of IT in practice over time. This research also provides managers insight into how to achieve greater return and lead on investment in IT infrastructure, especially in the face of ever greater reliance on data-based technologies, through the support of organizational learning perspectives. Technology may be viewed as a simple tool. However, technology is also more. It embodies our own values and decisions which then provide enhanced leverage to enact those values making technology an extension of ourselves. Researchers and practitioners alike should work towards building a comprehensive understanding that reflects these broad interdisciplinary issues. By crossing the traditional boundaries of operational experience and the siloed perspectives of organizational research specialties, a unified body of knowledge on the consequences of technology [7] in the organization may be further illuminated aiding organizations well into the future.

- **Training of employees for information technology:**

It is basic to train employees on any new data advances the business is actualizing into its business forms. At the point when the business is in the phases of building up a preparation program for its representatives utilizing new innovation, it is imperative to contemplate the working environment culture. The organization must recognize the frame of mind of influenced workers towards the selection of new innovation [8]. Training Program being structured will be distinctive relying upon climate the representatives are inclined to embracing new innovation and change or disinclined to it. One technique for aiding representative selection of new technologies is to hold instructional meetings with little quantities of people with access to the new innovation. This Method will guarantee a situation where representatives will feel great to pose any inquiries they may have [8].

6. CHALLENGES OF UTILIZING IT INFRASTRUCTURE TO INCREASE THE PRODUCTIVITY:

The challenges of IT utilization will only become more important as organizations are expected to increase their reliance on and utilization of organizational data processing systems. While automated forms of data analysis, such as statistical analyses, are good low-level tools, they are often inadequate for managers to 'get the big picture.' The development of this broad understanding is required to make informed organizational decisions and productivity at the highest level. Low-level analysis does not always provide this insight where more human perspectives are needed to answer the question 'what does this mean?' However, human analysis becomes problematic when datasets are very large, such as with big data. Big data databases can easily become so large that it would take human analysts too long to interpret manually. These situations then require a combination of automated analysis and human insight which is a combination that is often difficult to develop in practice [6]. For some organizations, this has already happened; for others, it may just be a matter of time. Such prognostication suggests that the issue of how to best utilize IT will go beyond the initial investments in technological infrastructure, beyond a simple enhancement of existing business processes, and will require entirely new ways of operating. Modern technology contributes to the strategic elasticity & efficiency in organizations and also to the capability for the production of products, high quality services, various market's low cost, escalating the customer response speed and reduction of the boarders, thus these things would definitely help out manager in achieving the goal and consequently become adopt a productivity role in the organizations [6].

Framework for understanding IT and business:

There has been colossal development in spending on IT interests in business associations, however what is the effect of this development in spending on the relative performance and productivity of organizations [5]. The improvement in business performance overall is one of the perceived net benefits of IT spending. The four major factors that play their role in the development of a productive business organization are below:

   i.   Business Strategy
   ii.   Business Processes

iii.   IT Strategy (Spending by businesses)
iv.   IT Processes

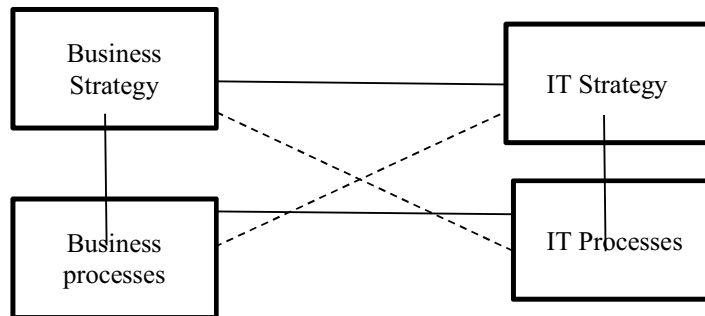The main crux of the study can be evaluated by a diagram below:

Figure 4: The framework of IT and business strategy in any organization.

Research on business productivity by IT:

- **Hypothesis (H1)**

The first hypothesis is: "Do you think upgraded/additional technology and/or information technology would increase your overall business productivity?" [9].

This question is imperative to decide how the Employees at the organization saw the measure of profitability being created from the present Information innovation accessible to them. Model answer is:

i.   New technologies for their day by day undertakings would be more cutting-edge as far as money related guidelines which change every now and again. The last bit of criticism expressed the electronic recording framework utilized by the firm was wastefully sorted out and now and then can take as long as 10 minutes to locate the right document or letter layout to send to their customers [3].

ii.   One of the models is that the old PCs likewise expressed that the machines solidify now and again and require a restart of the machine to fix this issue, regularly making the worker lose unsaved work.

- **Hypothesis (H2)**

"How willing are you to adopt and change to new Technology to increase the business productivity?". [9] Mostly businesses shown that there is potential to perhaps give extra preparing to the workers that saw the innovation as convoluted in its utilization. On the off chance that the representatives were to become familiar with utilizing the product, their speed should increment while not giving up on the nature of their work which will indirectly enhance the business productivity.

- **Hypothesis (H3)**

The last hypothesis is "Any burdens, inconveniences, wasteful aspects or issues associations have encountered with the present program or innovation you utilize in your everyday exercises. For example, old or moderate PCs, obsolete programming, excess capacities, hard to utilize programming and so forth." [8]. This hypothesis is designed to investigate any and all inefficiencies the company faced on a day to day basis that caused inefficiencies and disrupted productivity using the current information technology.

7. RESULTS

In result section of the research completed, areas that have not traditionally used IT have also started to embrace its use in the business organizations. Modern organizations are using technology in areas for examples include human resource management (HRM), customer relations management (CRM),

enterprise resource planning (ERP), and social media integration. It is not only the quantity of informational products that is growing but also the variety of information itself as together, these tools cover a vast swath of different data types and ranges of information for the management and productivity role for any organization.
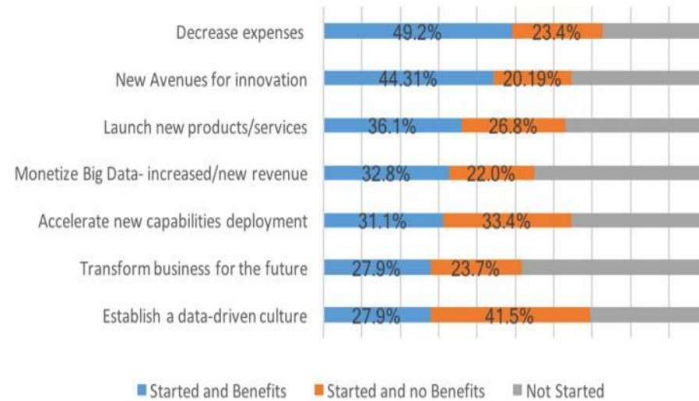

Figure 5: The initiative and success rate of IT and big data over the past years.

Data repositories, in general, have become central to many existing modern organization processes that rely on data transactions, reports, and analyses. Modern incarnations of data repositories often fall under the purview of knowledge management approaches. For example, tools that aid in information storage, organization, retrieval, and sharing are often characterized as 'big data' databases which are able to store very large quantities and varieties of data with high velocities of data transfer. This allows them to invent significant opportunities, elude pressures to survive and attain the progress in market. In this perspective, modern organization must be conscious of fact that creativity delivers a competitive dominance in the competition of local & global projects.
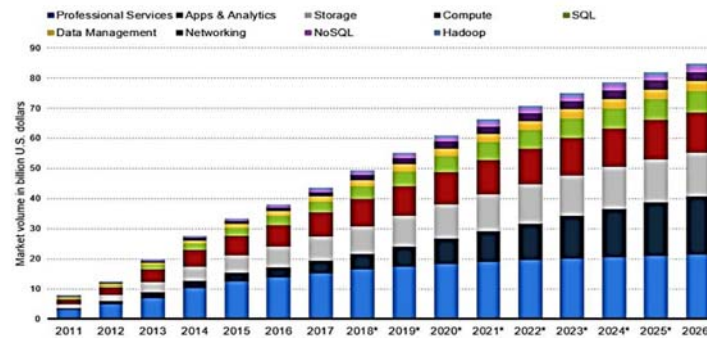

Figure 6: The growth and market forecast of IT and big data technologies from 2011 to 2026.

Therefore, competition on the basis of cost reduction is no longer possible. As market requires quality & flexibility to cope up the demands and innovation is a key factor towards the achievement. The observation on technology is valid because the modern technological fluctuations moves in the shadow of modern organizations while leading role through the promotion of innovation.
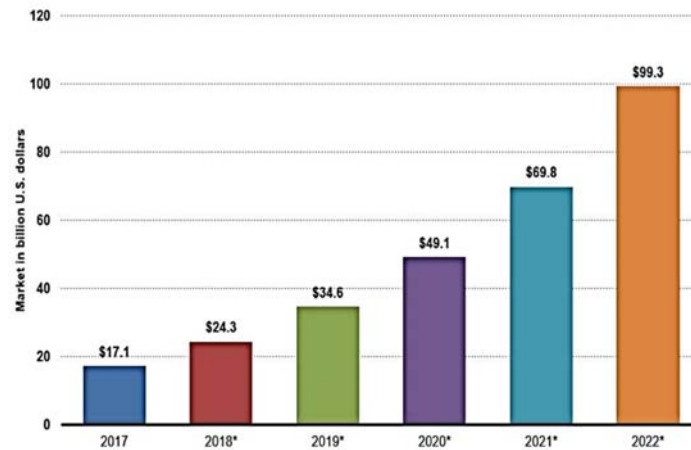
Figure 7: The predicted size of IT and big data economic market in the future.

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8. DISCUSSION

While improving IT to expand business productivity, it is imperative to examine a wide range of parts of information technology and the effect it has on the businesses. Organizational studies, on the other hand, contend that technology [6] should be thought of from a broader, less concrete perspective. Seeing the organizations from the social constructivist view, allows us to see how technologies reflect human agency and so embody the choices of the organization. The author suggests that technologies can then be shifted by the user as they become integrated into the modern organization and their application directed to create the desired productivity outcome.

- Recommendation is that organizations update the present PCs used by their workers. The issue of old moderate PCs was the most raised situated inefficiency found. The obsolete technology using broad creation time [8]. Be that as it may, the issue itself takes a great deal of the specialist' time to fix the issues with their work physically in an association, so there ought to be refreshed innovation utilizing by the association so as to expand the productivity of the business.
- Production speed was another significant viewpoint to consider in the organization's everyday productivity too. This additionally realized there is a high respect from top administration to stay with the IT current [9]. A potential danger was additionally found as the old PCs. Because of the company's utilization of redistributed data innovation experts, fix of breaking down PCs requires additional time since they should be taken off-site to be fixed. It was likewise evident that the company's old PCs were costing the firm cash by virtue of them breaking down more regularly [10].

9. CONCLUSION

Thus, they chase numerous creative and innovative procedures and approaches while adding a substantial role of informational technology (IT) and big data in the administration of such practice. The basic purpose of this research is the detection of the effects caused by the application of information technology in elating the leading business productivity. Numerous managers of great organizations have discovered an extremely competitive yet successful place in market through their productivity capabilities by making these organizations to work as if these were minor businesses [8]. This is possible only by finding smaller units whole allowing the creation of a team having extremely innovative

capabilities that lack the restrictions which are presumed to occur while working in larger organizations. The benefits of the self-leading any project is great enthusiasm and motivation to develop the entrepreneurship in action and strengthened continuously properties is done through units called business incubators, a specialized units include a place to work, equipment and various other services in addition to management consulting to start a small work to develop a new product based on the pioneering idea.

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