EAI Endorsed Transactions
on Mobile Communications and Applications
Research Article EAI.EU

Influence of Internet of things on human psychology (internet of thoughts) for education, healthcare, and businesses

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Abstract

INTRODUCTION: The study investigated how technological innovations and Embedded Systems, processes, and Communication tools influence human psychology. The IoTs have succeeded to connect humans with things, and it is now preoccupied with understanding how humans react to these things by influencing our actions, reactions, and behavior.
OBJECTIVES: To identify items that IoTs use to influence human psychology in education, healthcare, and business and to find out how IoTs utilize AI, ML, Cloud computing, NLP, ICT tools, and big data technology to overpower human psychology.
METHODS: The methods "Behavior-oriented drive and influential function method" and the qualitative-quantitative method were used. The qualitative-quantitative method makes use of 3 research questions while behavior-oriented drive and influential function focus on statistical data.
RESULTS: The result indicates the least score of 12 out of 15 grades for all the measurements on a behavior-oriented drive and influential function and above 90% positive respondents for the qualitative-quantitative method.
CONCLUSION: The study concluded that the high dependency of humans on IoTs services is the reason for the IoTs influence on our thoughts, actions, and behavior.

Keywords: Internet of things, Human psychology "internet of thoughts", artificial intelligence, machine learning, big data, cloud computing, and natural language processing.

Received on 21 June 2022, accepted on 28 July 2022, published on 25 August 2022

doi: 10.4108/eetmca.v7i2.2627

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1. Introduction

Internet of Things (IoTs) has come with a new system referred to as a paradigm that changed the traditional way of thinking into an advanced technological approach. This new paradigm has caused a life of dependency on technology. The modern system is called IoTs which is a new technology that can assist medical doctors to make accurate and faster decisions [6, 7]. The new wave of the digital era has reoriented human thoughts, behavior, and culture. With smart systems all over, like cities, homes, pollution control mechanisms, advanced energy-saving systems, virtual classrooms, virtual health centers, online shops smart transportation systems, and smart industries. Human beings nowadays have acquired a new way of reasoning, thinking, behaving, and cultural transformation due to advancements in IoT.

Nowadays, modern technology has almost derailed human beings at every stage of life. Notwithstanding the ability of a system to help, support and ameliorate our living conditions, IoTs have drifted our minds to a high dependency [8]. The IoTs are one of the most reliable systems that have to reduce cost and minimize pressure in the health sector for the elderly. Following the outbreak of Convid-19, most systems have been transformed into virtual reality. With more dependency on technology, a new level of the internet of things is approaching human needs that play over our thinking, feelings, culture, and actions. The "internet of thought" is a new and upcoming technology that is changing the practices of organizations, institutions, corporations, and the social environment everywhere. Through modern algorithms via research, systems, processes, and application. New opportunities are arising from the advanced implementation of IoTs that focuses on human reasoning, thinking, actions and feelings through new systems and devices. Without IoTs it would have been impossible to think about the future [29]. Technology has advanced to a level that is now capable to learn human beings at short intervals and uses the same knowledge to learn to teach, correct our mistakes, advice, and even predict our next plans of action. The IoTs is an involving paradigm that seeks to connect different smart objects to larger needs [5]. These new developments in the "internet of thoughts" are due to system synchronization of NLP, ML, Big data, Cloud computing, ICT tools, and AI with IoTs. This build-up has put together techniques that predetermined and define human beings.

The IoTs have made us rely so much on technology that we start to belittle ourselves. One of the glaring examples is the use of IoTs in a smart city. The employee laxity can be blamed on the advances of IoTs [35].

1.1. Psychoanalytic Theory.

According to Psychoanalytic theory, human behavior about interaction with various inner components react concerning three principles according to the school of thought by Sigmund Freud [45]. Freud made a comparative analysis with the physics of thermodynamics to coin the term psychodynamics [43][44]. Freud converted heat into mechanical energy and proposed psychic energy that could be converted into behavior. Freud's theory places central importance on three principles such as dynamic, and unconscious psychological conflicts. Freud divided human thoughts into three important components of the id, ego, and superego. To Freud, the id acts according to human pleasure, the ego as the force ordering the human body to realistically meet the wishes of the id by adhering to the reality principle. While, the superego (conscience) falls to the moral judgment and societal rules upon the ego, thus forcing humans into the demands of the id to be met not only realistically but morally. According to Freud, the superego is the last function of humanity to develop into the embodiment of parental and social ideals established during childhood. To Freud, personality is based on the dynamic interactions of I'd, ego, and superego principles.

1.1.1. Psychoanalytic Theory and Internet of things (IoTs) on human psychology "internet of Thoughts (IoThs)

To explain human behavior in terms of psychoanalytic, this study examined the interaction of various components of humanity with advancements in the internet. Sigmund Freud founded the psychoanalytic draw on thermodynamics reaction to coin the term psychodynamics. Based on his idea of converting heat into mechanical energy the internet era has summed up his theory to advance unprecedented influence on humanity in today's world where everything is almost digitalized.

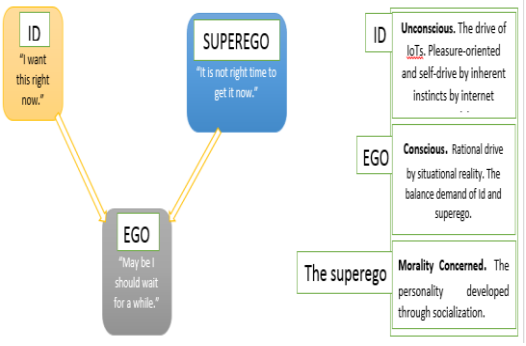

Figure 1. psychoanalytic theory and internet of things. Source: owner

Figure 1 represents the internet of things influence on human psychology "internet of thoughts" concerning human personality. The three significant components of Freud's theory are the id, ego, and superego. The internet of things has taken a grip on the id principle. The id principle, according to Freud, acts to the pleasure principle, providing instant gratification of its needs regardless of the characteristics of the external environment.

The services provided by the internet of things have been able to enhance a maximum pleasure principle by providing instant gratification of human needs regardless of the characteristics of the external environment. The internet of things has shown that situations changed due to the adaptation of different scenarios far off the origin of things. The second principle which is the ego has been irresistible to the first principles taking to the convenience, cost-effectiveness, and efficiency with the fulfillment of human wants and needs. According to Freud, the ego then must emerge to fulfill the wishes, demands, conditions, and irresistible requirement.s of the id under the environmental forces by adhering to the reality principle. Finally, the superego which represents the human conscience. The superego inculcates human moral judgment and societal rules upon the ego that forces the fulfillments of the id to be met not only uncontrollably but morally. The world has become very convenient, near-stress-free, and globally inclined to the advantage of internet transmission service. The environmental and societal rules on humans are irresistible with the internet of things easing access to almost everything connected with humanity.

1.2. Research questions

Many projects and studies have attempted to solve the problem of older people [30]. Technology applied 5G to healthcare based on IoTs [31]. There are previous studies that analyze the importance of digital technologies in supporting businesses [33, 34]. The uses of data related to healthcare are based on IoTs [32]. The following questions will be used to run the study and formulate research data from field works to show how IoTs influence human psychology.

Has IoTs changed the way we think, reason, study, shop, behave and consult our health issues?

Can IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools, and Al change our way of thinking and doing things?

Has IoTs with support from NLP, ML, Big data, cloud computing, ICT tools, and Al changes the business environment, educational settings, and healthcare sectors?

The following questionnaires above give inside into the rule of IoTs on humans. These questionnaires were important to the paper as they help the author to be able to conclude with a lot of certainties without taking them aside

1.3. Stages of system software transformation of human psychology "internet of thoughts" for Education, healthcare, and businesses

These sections present stages of (IoTs) transformation, system software, and programs that radicalize human-objects response capabilities [36]. Following such a massive change in the power of connectivity, it has changed the way people reason, act, and react to social events, cultural exhibitions, political instincts, and economic activities**.**

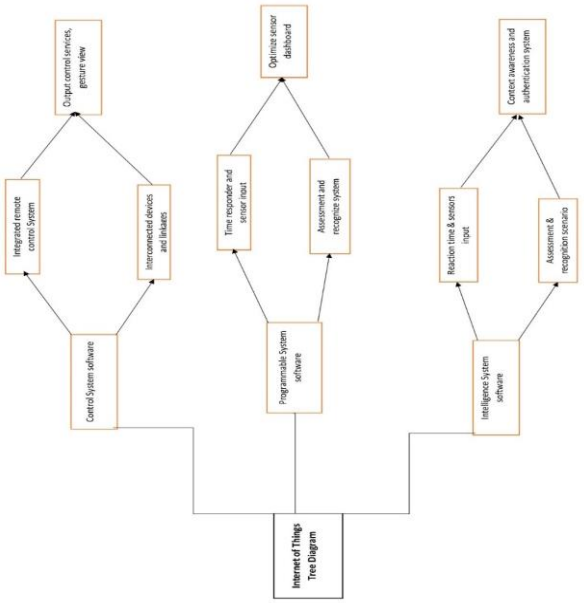

Figure 2. Stages of system software transformation of human psychology "internet of thoughts" for Education, healthcare, and businesses. Source: Owner

The system IoTs according to to figure 2 above, are built on 3 foundations namely, Control System Software, programmable System Software, and Intelligence System Software. The Control system software contains (an integrated remote control system and interconnected devices and linkages), and The Programmable system Software contains (Time responder and sensors input and assessment and recognized system). The intelligence system software contains (Reaction time & sensor input and assessment & recognition scenario). All the above stages enable the different forces that enable connectivity with objects, capturing devices, and return information capabilities. These stages allow software programmable control systems to offer the most convenient services and products for users. The

following stages have enabled ease with user-friendliness and are now dominating human desires and needs. The transformation stages have a strong pull factor very high and irresistible to most users and it is affecting users in many different ways. The way we think, act and respond to the situation is based on a digital system. A system providing a solution to the human race is to be of high morals but no single law bind the policies in which system software connect and is related to human [37].

1.4. Importance of IoTs on healthcare, education, and business sector.

Even though IoTs are radicalizing our natural thoughts by giving a different level of thinking, it has shown some extensive importance. The following paragraphs briefly explain the importance of IoTs in healthcare, business, and education.

Healthcare and IoTs. The new paradigm of IoTs has redefined healthcare by ensuring better care. The new era of IoTs with support from big data, AI, ML, NLP, ICT tools, and cloud computing has improved and secured a faster, reliable treatment, outcomes, and reduced costs for patients. There are better processes and workflows within the healthcare sector. There is improved performance and patient experience for healthcare providers.

Businesses and IoTs. The IoTs also facilitate the continuous optimization of business processes and even impact employee engagement and performance. In some modern industries, IoTs in business have instructed systems to autonomously execute transactions in supply chains with the meeting of conditions.

Education and IoTs. The rise of mobile technology and the IoT allows schools to improve the safety of their campuses, keep track of key resources, and enhance access to information in the learning environment. Teachers can even use this technology to create "smart lesson plans," rather than the traditional stoic plans of yesteryear.

1.5. Other importance of the internet of things to the society

These sections present the importance of IoTs to modern society. The importance is classified into different sections of human-related activities.

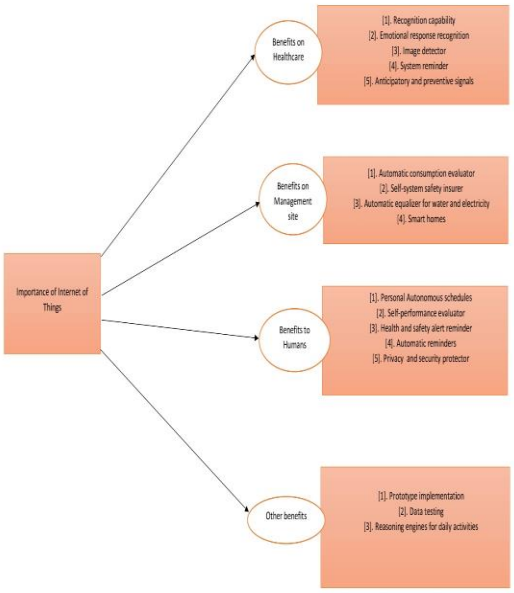

Figure 3. other importance of IoTs on human psychology for education, healthcare, and businesses. Source: Owner

Figure 3 above classified the importance of IoTs as benefits to healthcare, management systems, humans, and other class-related benefits. For the healthcare system, IoTs advance by providing (Recognition capability, Emotional response recognition, Image detector, System reminder, and Anticipatory and preventive signals). For management sites or system, IoTs advance by providing (Automatic consumption evaluator, Self-system safety insurer, Automatic equalizer for water and electricity, and smart homes). For humanity, IoTs advances by providing (Personal Autonomous schedules, Self-performance evaluator, Health and safety alert reminder, Automatic reminders, and Privacy and security protector). For other related fields such as system software and related applications that help with information flow and management systems with humans. The IoTs promote (Prototype implementation, Data testing, and Reasoning engines for daily activities).

2. Literature Review

This is **Era and Evolution of Internet of things (IoTs)**

This section provides details on information on old days without the internet of things and nowadays information with lots of data and applications of the internet of things. The sections divided into the old Era and New Era provides feature and detailed information found in these two separate eras.

2.1. Old Era before the 1990s

Before the 90s, the Internet of Things (IoTs) was far less developed with measures far below human thoughts and was less significant for technological reliance [46][47]. The IoTs dependency oriented desires are waving the need for skills acquisition. In the old era due to limited developments, availability, and application of IoTs, some nowadays benefit as identified by the feature of the new era of IoTs. Many items identified by this study were not available in the new trend of IoTs applied to human needs.
Following years behind, many factors and source data that are nowadays an open environment for new features that create and advance more efficient service were not there [48]. In this study, the following factors below, are those that could be referred to today as push factors, which really would have ensured and upheld some human daily needs and wants and satisfied them based on the internet of things services.

- No fast data collection,
- Limited Data sharing,
- Limited data verification,
- Little data analysis
- Little data acquisition,
- Little data effective integration,

All the above-limited elements could have enabled faster data-effective integration with the support of other information systems that help humans nowadays by advancing some important key roles in their lives. Today the world is a program to focus on certain areas that were not a priority to those in the past such as:

- Making business activities more efficient.
- Making social reasoning more effective in education and the modern healthcare system.
- Enabling education in a most reliable, informed, and accessible manner.

Before the coming of IoTs, data collection was simply with the help of human-human in a locally smart solutions system like phone-phone, or text-text. During the past era, human-object response capabilities were very low. Moreover, modern studies from literature review show that analytics and artificial intelligence (AI) applications were likely possible with human interaction between non-objects. There were glaring non-existing examples of changes in IoTs that could be called built cost-available flexible mergers of IoTs. They were not as realistic and impactful as today. Today, human needs are especially important emotionally, psychologically, and mentally in various ways. This is a determinant of data acquisition and transfer methods with commercial and public cloud services like 2D and 3D virtual simulation machines, smartphones, smart cities, smart homes, smart transport, and smart homes.

2.2. New Era and Evolution of Internet of things (IoTs)

The Internet of Things (IoTs) has developed measures far beyond human ideas and is pushing for technological reliance far more dangerous [38]. The IoTs dependency oriented desires are waving the need for skills acquisition. The following methods are observed in the new trend of IoTs for humankind.
Multiple factors and source data open room for new features that create and advance more efficient service. Some factors can be referred to as push factors that ensure and uphold some human daily needs and wants and satisfy their base on the internet of things services.

- Enable faster data collection,
- Enable faster Data sharing,
- Enable faster data verification,
- Enable faster data analysis
- Enable faster data acquisition,
- Enable faster data-effective integration.

Following technological advancements, IoTs with the support of other information systems that help play important key roles in humans could be measured based on the following remarks below.

- Making business activities more efficient.
- Making social reasoning more effective.
- Enabling education in a most reliable, informed, and accessible manner.

Since the advent of IoTs, data collection has been simplified with the help of smart solutions of human-object response capabilities. Moreover, modern studies show that analytics and artificial intelligence (AI) applications are likely possible with human interaction between objects and non-objects. These are examples of changes in IoTs called built cost-effective flexible mergers of IoTs. These are realistic and are impacting human names especially emotionally, psychologically, and mentally in various ways. This is measured via data acquisition and transfer methods with commercial and public cloud services like 2D and 3D virtual simulation machines, smartphones, smart cities, smart homes, smart transport, and smart homes.

2.3. Internet of things and human psychology “internet of thoughts) for education, healthcare, and businesses.

The section detail examines how IoTs influence humans. These authors [1], said they believe that there are negative thoughts at an uncontrollable and dangerous level that has led to a lack of cognitive thoughts due to excessive use of the internet. To these authors, human thoughts are not confident. These technological of IoTs are incredible technology system

that has given enough opportunity and created acknowledges to brilliant life [2]. From the moment to the declaration of Covid-19, a new way of working studying, and communicating has emerged [3]. According to [4], they explain the importance of IoTs concerning the effective and equitable distribution of energy resources.

Natural Language Processing and human psychology "internet of thoughts"

The digital era and IoTs have gradually adjusted the way we speak based on new learning tools. Most modern devices have different ways of communicating especially depending on the types of output system layout. It is observed that poorly structured devices have changed the real pronunciation and sounds of certain language words. There are shifts in language over time and, with modern computational technologies and digital data sources, cultural tides have tremendously changed [9]. The modern technology of IoTs brings about urbanization. Modern urban areas wipe about culture as it comes along with different environmental norms [10]. Conversions are easily classified and prepared for better understanding with the help of NLP [11]. There is advancement in interdisciplinary studies thanks to digital systems of NLP that have shaped human psychology [12].

Artificial Intelligence and human psychology "internet of thoughts".

Technological advancement has led to the development of human-type devices such as robots that have almost replaced human ability and activities in nature. The AI system can know a person more than he or she knows him or herself with the help of an information guarder [13]. Artificial intelligence with the health of health history can support persons with a mental challenge [14]. Challenges associated with social and emotional issues such as trauma, stress, and fear can easily be predicted with the help of AI [15]. Also, the modern developments in technology have greatly expanded into education that artificial intelligence is almost directing aspects of the pedagogical system [16].

Machine Learning and human psychology "internet of thoughts".

There is a serious disruption of human thoughts, especially with a new trend in learning, trading, shopping, and healthcare management systems. The information from ML systems can help in predicting the future [17], Observation is very important in our day-day activities [18]. That ML is teaching us the desires and doctrine of observation ability. Machine learning helps detect users' needs and measure their satisfaction [19]. The ability to understand the interaction between human emotion and the built environment is possible in urban areas thanks to ML, especially in China [20].

Cloud computing and human psychology "internet of thoughts".

The development of technology is an important asset that requires an understanding of different environmental needs. Cloud computing provides the best use of people's talents, by making things suitable [21]. The advanced development of 3D printing has greatly changed minds and put forth different ways of living [22]. More security and personal information thanks to cloud computing [23]. Cloud computing is a modern system that enhances user loyalty, a friendly atmosphere, and a secure mindset [24].

Big data and human psychology "internet of thoughts".

The growth of the population has come with increased data. Advance systems are capable of managing big data available within the healthcare sector, educational systems, and business environment. According to [25], said big data with the help of NLP can understand emotional expressions in people.

ICT Tools and human psychology "internet of thoughts".

Modern tools of information and communication technology have greatly changed human thoughts. Modern tools like alerts, signals, and vibrators have changed human thinking and reactions [26]. Modern ICT tools like smartphones, laptops, tablets, computers and the internet have helped the student to adjust to self-paced learning [27]. The advanced implementation of gaming within the educational system has greatly helped to reduce loneliness amongst students [28].

The various combinations of technological system with IoTs has to lead to admirable benefits within education as it enhances (Facilitate research Cut the cost of research, provide students with digital needs, Access, analyze & review students, Provide impression 7 understanding of students, Learn students through intuitive AI, Assess student's ability & predict results). In the business environment, the following benefits can be seen (Provide real-time insight about competitors, Cut the cost of marketing, Provide customers with what they need, Access, analyze & review customers, Provide impression & understanding of customers' needs and wants, Learn customer's needs & wants through intuitive AI, Assess customer's needs and wants by predictive sales). At the level of the healthcare sector, the following benefits are seen (Cut cost of clinical trials, Provide fast and accurate results, Access, analyze & review patients, Provide impression for the understanding of patient's situation, understand patient's feelings via EI, Assess patient's condition & forecast treatment).

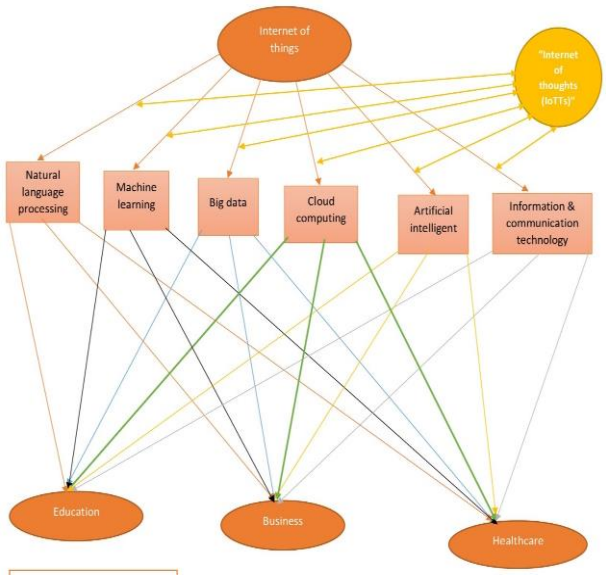

Figure 4. internet o things on human psychology for education, healthcare and business by owner

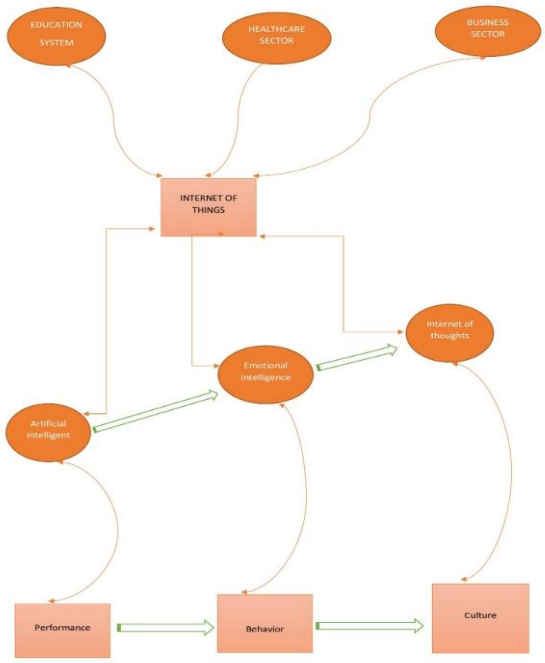

Figure 5. Stages of internet of things development into human psychology by owner

Figure 4 above, provide a detailed example combination of different technological tools that has to push ahead for systems to now focus on human thoughts to satisfy business needs, advance educational standards, and new developments in the healthcare sector. For decades, technology has been growing more focused on the satisfaction of human needs. It has reached a level that is bent on investigating human feelings, reactions, and altitudes.

2.4. Real world architecture of the internet of things influence on human psychology “internet of thoughts”

This section explained the step involve on a day to day changes in human desires and altitude from physical activities to the things engage in the internet of things.

In figure 5 above, we can see how technology walks through humans from physical activities which are our day-to-day performance by artificial intelligence software. The second step shows how human behaviors shift from being reality esteem into emotional intelligence through our learning of the system engineer characteristics of the internet of things. The last step indicates are change of our altitude into a modified attitude of a modernized culture with a promising further into a might be the stage of the “internet of thoughts". From these three changes, a lot has changed in human nature from the normal performance altitude to social behaviors and cultural level. The social world of digitalization is pushing humans to a level of unimaginable thinking.

2.5. Star model and IoTs on human psychology

The section explains how the STAR model involves different elements that push for the development of new performance, behavior, and culture due to the advancement of IoTs.

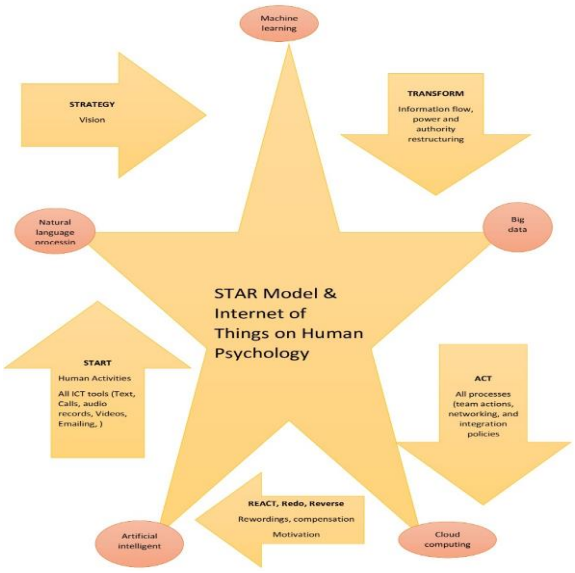

Figure 6. STAR Model and internet of things on human psychology by owner

Figure 6 represents a system of information movement throughout various system integrated application of NLP, big data, cloud computing, AI and ICT tools [49]. The system starts with NLP through people, HR to ml via vision. From human beings, enough data is assessed. The second stage is building a strategy based on the amount of information from humans. The third stage is transforming big data by enabling a well-defined structure that will be transferred to cloud computing by enabling a well-defined process that leads to rewarding Al and then back to NLP. The STAR model stands for 5G which the world is clamoring for. Every system has a start from NLP to ML to big data to cloud computing to AI.

2.6. Impact of internet of things to the governments, academicians and community dwellers

The Internet of things ensures the integrity and security of data from sensors to other connected devices that help governmental institutions to monitor, and evaluate educational institutions and businesses. Thanks to the internet of things, security standard tools are enabled through devices. Device identity management is a key consideration to secure IoTs services for uniform communications throughout a locality. The following are some of the general benefits of the internet of things to the government, academicians, and the community.

- The internet of things ensures a trusted ecosystem and mutual authentication for the global economy which helps both the government, academicians, and community dwellers.
- The internet of things teaches the global economy how device identities function which helps both the government, academicians and community dwellers reserve some trust. Without secure and transparent connectivity, there would be a call for concern to provide insights into almost all the happenings around.
- The internet of things has ensured public key cryptography basics. Reliability and transparency innovation is one of the most important functions that come along with the internet of things services.
- Provisioning device identities. The internet of things helps speed up industries' revenue increase by changing the way people work and advancing the emergence of new business models. Taxes expenses changes, community standards improve, and educational institutions receive more incentives

.

2.7. Challenges of internet of things to the government, academicians and community dwellers

- Unmet demand for skilled workers. The Internet of Things provides technological systems too rapidly. These rapid changes push the Universities, government agencies, and community dwellers to redress the need for new programs, training, and retraining programs that they fail to adapt. This change leads to the shortage of highly skilled specialists that ensure continuous growth. Building and maintaining IoTs systems required time and planning. When it comes to the Internet of Things services, the business and community required significant skill to close the gap but IoTs trend never stopped ruling.
- The disappearance of the market. Smart devices and accessories connected to the Internet are replacing the traditional marketplace. Some of the cultural values that were associated with the traditional marketplace are finding it difficult to merge with the new internet of things marketplace. Governments are now forced to spend more than they earned to preserve some of these cultural values. Some government tax systems that were directly associated with traditional marketplace find it difficult to merge with digital marketplaces.
- Gross privacy britches. Information stored in dataset systems has weaknesses and a lot of leakages. Different technologies advance a measure that is oriented to customer satisfaction with little concern for information security. For some reason, consumption of

certain goods has not been achieved due to concerns about policies.

- Forces a lot of pressure on employees. The IoTs have facilitated the continuous optimization of business processes which has negatively impacted employee engagement and performance. More is expected than before and it's exerting a lot of tension on employees to fulfill their tasks. In the past systems were manually upgraded and this usually provide much time for employees to adjust.

2.8. Measure to handle unprecedented negative impact of internet of things

- Duality of system technology implementation. The system administrator can set unit analysis measures in an organization that has set boundaries. This system can constantly be a monitor with backup serial A and B. When system A defaults, system be will pick on to allow a continuous flow. The duality system technology of the internet of things will store data as a product of human action in section A with a backup share folder in section B.
- Multimethod design and multiple data sources. Most challenges faced in maintenance are stormed from research. Identifying risks to the adoption process solution required a good understanding of design criteria. The ability to source a multimethod design and multi-design data source helps in advancing innovation. Understanding multiple sources allows for multiple solutions.
- Created an internal network of monitoring points that operate efficiently and effectively by monitoring services and improve the tactical efficiency and effectiveness of enforcement of regulation.
- Create data collection point. This is a data collection system using the application of sensors. The processed and storing variety in different systems for users enables the merging of previous existing monitoring networks to be able to retain information when required.

3. Results of findings

This section covers the research methodology that is put into this research study. Research methodology provides a brief description of the steps and procedures that were/are used in completing the study

3.1. Research Design

This research makes use of three research questions to find out the influence of IoTs on human psychology's "internet of thoughts" for education, healthcare, and businesses. The techniques used for data collection, sampling strategy, and data analysis for a quantitative method were mainly questionnaires distributed amongst groups of persons classified as men, women, and both. Before going into the strategies of data collection and analysis of quantitative and qualitative data applied collected analysis without a set of hypotheses developed. This current research process is human-centered, where human researchers design, conduct, analyses and interpret and then decide what to do next. This implies that the research is only allowed to interpret the qualitative and quantitative results from the sample field survey.

3.2. Data Source

The study makes use of both primary and secondary data. Data were collected from published audited reports, articles, journals, press briefings, and google sample questions survey, which were shared amongst groups and friends. For the study, percentages calculation was carried out to set up information and executes the statistical tests which are presented in discussed in detail.

3.3. Population Sample

The sample size of the study is 3 groups of people drawn from the defined population and it is arrived at by using data google form sample size questionnaires set to get a scientific sample size and judge which were a true representation of the total population. The 3 groups of respondents were made up of men, women and both.

Gender analysis

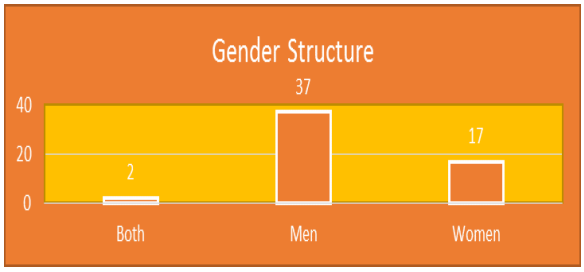

Figure 7. gender analysis and population sample by owner

From (fig 7) above, a total of 57 people responded to the sample questionnaires. Out of 57 respondents, 37 were men, 17 were women and 2 were of both sexes.

$$Eq = \frac{Sample\ Number}{Total\ Number\ of\ sample} \times 100$$

Both=)) $Eq = \frac{2}{56} \times 100$

Men=)) $Eq = \frac{37}{56} \times 100$

Women=)) $Eq = \frac{17}{56} \times 100$

To confirm if the total sample respondents correspond with a total of 56 participants, the above formulae were used. The sum of all the answers must sum up to a hundred. The equation just confirms that 4% were those who represent both (neither identify as men or women) while the sum of 66% represent men and 30% represent women.

3.4. Interpretation of findings of iots on human psychology "internet of thoughts"

This section presents findings from sample questionnaires that were dished out to determine the influence of IoTs n human psychology. The figures show the trends of the influence of IoTs on human psychology "internet of thoughts" for education, healthcare, and businesses with the help of research questions. This trend analysis will follow the following classified questionnaires **(Has IoTs change the way we think, reason, study, shop, behave and consult our health issues?, Can IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools, and Al change our way of thinking and doing things? and Has IoTs with support from NLP, ML, Big data, cloud computing, ICT tools, and Al really changes the business environment, educational settings, and healthcare sectors?**). Each questionnaire was examined with the help of a field survey from the various groups of populations.

$$Eq = \frac{Sample\ Number}{Total\ Number\ of\ sample} \times 100$$

Where,

Sno= Sample Number
AR= Age Range
Nno=Number of No (Unfavourable Response)
Nyes=Number of Yes (Favourable Response)
%no=Percentage of No (Unfavourable %)
%yes=Percentage of Yes (Favourable %)
Tns=Total Number of Sample

$$\text{Unfavorable Response} = \frac{Sample\ NO}{Total\ Number\ of\ sample} \text{ X } 100$$

Unfavorable Percentage= Percentage sample

$$\text{Favorable Response} = \frac{Sample\ YES}{Total\ Number\ of\ sample} \text{ X } 100$$

Mixed Percentage = Percentage sample

$$\text{Mixed Response} = \frac{Sample\ YES\ or\ NO}{Total\ Number\ of\ sample} \text{ X } 100$$

Mixed Percentage = Percentage sample

RQ1. When the first question was asked "Has IoTs changed the way we think, reason, study, shop, behave and consult our health issues?. The following statistic in the figure below was obtained based on the above formulae. The statistics were closely followed by the conceptual framework of Behavior oriented drive and influential function from IoTs on human psychology developed by the author to estimate the influence of IoTs on education, healthcare, and the business environment.

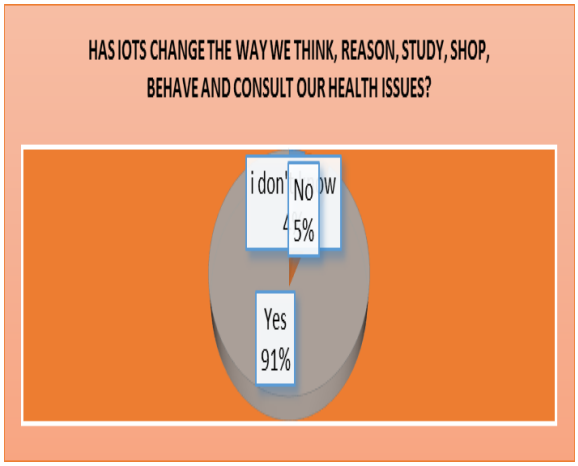

Figure 8. question one "Has IoTs change the way we think, reason, study, shop, behave and consult our health issues?"

From (fig 8) above, when the question was asked "Has IoTs changed the way we think, reason, study, shop, behave and consult our health issues?" Out of 56 total respondents, 91 % said Yes that IoTs has changed the way we think, reason, study, shop, behave and consult our health issues while 5% said No that IoTs has changed the way we think, reason, study, shop, behave and consult our health issues and 4% respondents said they don't if or not that IoTs has changed the way we think, reason, study, shop, behave and consult our health issues. Based on the statistical analysis 91% of respondents confirmed that IoTs influence human psychology while 5% of respondents said IoTs doesn't influence human psychology and 4% of respondents said they don't know if or not IoTs influence human psychology or not.

Convert percentage into digits. With the above formulae, we can convert the percentage value that represents participants into exact digits. The formulae will be as follows:

$$Eq = \frac{Sample\ Number\ \%}{Total\ Number\ of\ sample\ \%} \times Total\ respondents$$

I don't know=)) $Eq = \frac{4}{100} \times 56$

Men=)) $Eq = \frac{91}{100} \times 56$

Women=)) $Eq = \frac{5}{100} \times 56$

From the above conversion, the fraction that respond ended for men were=51, while those for women were=3 and those that said I don't know=2. From the beginning, the total number of respondents was 56. Therefore we can confirm the accuracy of the respondents as per figure 8.

RQ2. When the second question was asked "Can IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools and Al change our way of thinking and doing things?" The following statistic on the figure below was obtain base on the **Eq** = $\frac{Sample\ Number}{Total\ Number\ of\ sample}$ X 100 .The statistics were closely followed by the conceptual framework of Behavior oriented drive and influential function from IoTs on human psychology developed by the author to estimate the influence of IoTs on education, healthcare, and the business environment.

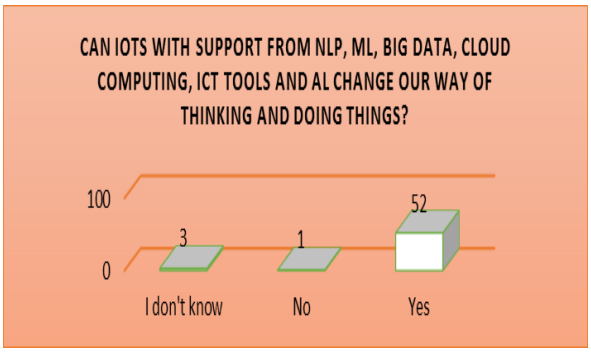

Figure 9. question two 'Can IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools and Al change our way of thinking and doing things?'

From (fig 9) above, when the question was asked "Can IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools, and Al change our way of thinking and doing things?" out of a total of 56 respondents, 52 said yes that IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools, and Al can change our way of thinking and doing things while 1 respondent said No that IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools, and Al can't change our way of thinking and doing things and 3 respondents said they don't if IoTs with support from NLP, ML, Big data, Cloud computing, ICT tools, and Al can change our way of thinking and doing things.

Converting respondents into a percentage. With the above formulae, we can convert the percentage value that represents participants into exact digits. The formulae will be as follows.

$$Eq = \frac{Sample\ Number\ respondents}{Total\ Number\ of\ sample\ respondents} \times Total\ respondents$$

I don't know%=)) $Eq = \frac{3}{56} \times 100$

Yes%=)) $Eq = \frac{52}{56} \times 100$

No%=)) $Eq = \frac{1}{56} \times 100$

From the above conversion, the fraction that responded for Yes were=93%, while those for No were=2%, and those that said I don't know=5%. From the beginning, the total number of respondents was 56. Therefore we can confirm the accuracy of the respondents as per (figure 9) are 100%.

RQ3. When the last question was asked "Has IoTs with support from NLP, ML, Big data, cloud computing, ICT tools and Al really changes business environment, educational settings and healthcare sectors?" The following statistic on the figure below was obtain base on the **Eq** = $\frac{Sample\ Number}{Total\ Number\ of\ sample}$ X 100 .The statistics were closely followed by the conceptual framework of Behavior oriented drive and influential function from IoTs on human psychology developed by the author to estimate the influence of IoTs on education, healthcare and the business environment.

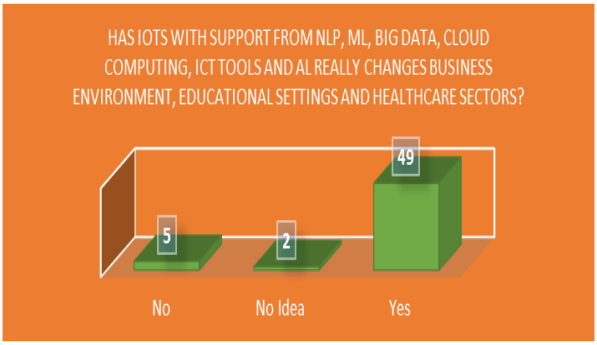

Figure 10. question three "Has IoTs with support from NLP, ML, Big data, cloud computing, ICT tools and Al really changes business environment, educational settings and healthcare sectors?"

From (fig 10) above, when the last question was asked "Has IoTs with support from NLP, ML, Big data, cloud computing, ICT tools, and Al changes the business environment, educational settings, and healthcare sectors?" out of 56 respondents, 49 said Yes that IoTs with support from NLP, ML, Big data, cloud computing, ICT tools, and Al has changed business environment, educational settings, and healthcare sectors while 5 respondents said No that IoTs with support from NLP, ML, Big data, cloud computing, ICT tools, and Al has not really changed business environment, educational settings and healthcare sectors and 2 respondents said No Idea if or not IoTs with support from NLP, ML, Big data, cloud computing, ICT tools, and Al has really changed business environment, educational settings, and healthcare sectors.

Converting respondents into a percentage. With the above formulae, we can convert the percentage value that represents participants into exact digits. The formulae will be as follows:

$$Eq = \frac{Sample\ Number\ respondents}{Total\ Number\ of\ sample\ respondents} \times Total\ respondents$$

No idea%=)) $\boldsymbol{Eq} = \frac{2}{56} \times 100$

Yes%=)) $\boldsymbol{Eq} = \frac{49}{56} \times 100$

No%=)) $\boldsymbol{Eq} = \frac{5}{56} \times 100$

From the above conversion, the fraction that responded for Yes were=87.5%, while those for No were=8.92%, and those that said No idea=3.57%. From the beginning, the total number of respondents was 56. Therefore we can confirm the accuracy of the respondents as per (figure 10) are 100%.

From the above questionnaires, we can therefore conclude that the internet of things has influenced human psychology. The majority of respondents determine the positive outcome of the findings.

4. Applied method

The paper is arranged into introduction, literature review, applied method, results, and discussion of findings and conclusion. The paper's findings help provide a brief description of all the steps and procedures that were used in completing the study. Section three discusses the study area, research design, and population of the study, sample size and sampling technique, a statistical tool for data analysis, variables measurement model specification of the study, analysis of study objectives, Validation techniques, and test significance. The importance of IoTs in healthcare, education, and business is seen here with the help of responses from field surveys.

We also selected some keywords determined by the authors as very important to society in understanding the influence of IoTs on human psychology "internet of thoughts". We called these elements or words "behavior-oriented driven and influential functions". Based on some selective ratings we offer each element or word a score of one up to five ratings. The rating was based on the author's choice to demonstrate the influence of IoTs on human psychology's "internet of thoughts". The Key Benefits of IoTs on human psychology based on Metrics Score range and key benefits score rate was classified into poor, fair, good, very good, and excellent. The behavior score defined the key benefits of IoTs of poor=1, fair=2, good=3, very good=4, and excellent=5.

This section provides details on how system application and use of IoTs have influenced the way we think, act and do our day-to-day activities. The following section daily explains with the help of statistical data and graphs the role of IoTs on human psychology for education, healthcare, and businesses.

4.1. Behavior-oriented drive and influential function from IoTs on human psychology.

In this section, we selected some keywords determined by the authors as very important to society in understanding the influence of IoTs on human psychology. We called these elements behavior oriented driven and influential functions. Based on some selective ratings we offer each a score of one up to five ratings. The rating is based on the author's choice. The Key Benefits of IoTs on human psychology are based on the Metrics Score range and key benefits score rate classified into poor, fair, good, very good, and excellent. The behavior score defined the gradient of the key benefits of IoTs below.

Push factors IoTs are products of the internet of things that provide good services for daily activities referred to in this study as dependent parameters. In the study dependent parameters are made (by making business activities more efficient, by making social reasoning more effective, and enabling education in a most reliable, informed, and accessibility). The metrics range is made up of numbers from (1, 2, 3, 4, 5) that help measure the level of influence of IoTs. The Behavior Score is a unique level determined in the Metrics Range of one up to five. Only a single value is allowed for each Metrics Range. The Benefits score rate is a grade allocated for each defined behavior score.

Formulae

The influence is symbolized as BIF = F(D) which is said "f of d" equal to $\int(D)^{\sum MR}_{MR} \times BS$ *.MR are related such that for every MR, there is a unique value of MR. That is, F(D) cannot have more than one value for the same d in MR. The said theory used function related in an element d as defined by MR to an influence F(D) to determine the influence behavior score.*

BIF=Behavior oriented drive and influential function from IoTs on human psychology
F=push factors IoTs
D=Dependent parameters
MR=Metrics Range
BS=Behavior Score
KBS=key benefits score
$Eq = \int(D)^{\sum MR}_{MR} \times BS$

Table 1. Metric range and key benefits score rate of IoTs. Source: Owner

Metric score range	1	2	3	4	5
key benefits score rate of IoTs	Poor	Fair	Good	Very good	Excellent

The metrics range score and key benefits score of IoTs help users to rate how influential a particular service provided by IoTs influences humans. Based on the need and value of the service, a rate is determined based on the author's view.

The benefits of IoTs are determined based on behavior scores (table 2).The Score Rate range from poor, fair, good, very good, and excellent. The behavior score defined the gradient of the key benefits of IoTs below.

Table 2. Behavior oriented drive and influential function from IoTs on human psychology. Source: Owner

Push Factors IoTs	**Dependent Parameter**	**Metrics Range**					***Behavior* score**				
Enable faster data collection.	By making business activities more efficient	1	2	3	4	5				4	
	By making social reasoning more effective	1	2	3	4	5				4	
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5					5
Enable faster data sharing	By making business activities more efficient	1	2	3	4	5					5
	By making social reasoning more effective	1	2	3	4	5					5
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5					5
Enable faster data verification	By making business activities more efficient	1	2	3	4	5				4	
	By making social reasoning more effective	1	2	3	4	5					5
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5					5
Enable faster data analysis	By making business activities more efficient	1	2	3	4	5				4	
	By making social reasoning more effective	1	2	3	4	5			3		
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5				4	
Enable faster data integration	By making business activities more efficient	1	2	3	4	5					5
	By making social reasoning more effective	1	2	3	4	5				4	
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5					5
Enable faster data acquisition	By making business activities more efficient	1	2	3	4	5				4	
	By making social reasoning more effective	1	2	3	4	5			3		
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5					5

Table 3. determination of *Behavior* score Influence of IoTs base on faster data collection. Source: owner

Push Factors IoTs	**Dependent Parameter**	**Metrics Range**				***Behavior* score**						**key benefits score rate of IoTs**
Enable faster data collection.	By making business activities more efficient	1	2	3	4	5				4		Very good
	By making social reasoning more effective	1	2	3	4	5				4		Very good
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5					5	Excellent

To determine the influence function for making business activities more efficient through fast data collection. The following statistics apply:

F=push factors IoTs, **D**=Dependent parameters, **MR**=Metrics Range (1, 2, 3, 4, 5), **BS**=Behavior Score (4) **KBS**=key benefits score

$$Eq = \int (D) \sum_{MR}^{MR} \times BS$$

$$\sum MR\,(1+2+3+4+5) = 15$$

$$MR = (5)$$

$$BS = (4)$$

$$\therefore \quad \sum_{MR}^{MR} \times BS \quad ::)) \quad {}^{15}_{5} \times 4 \quad = 12$$

To determine the influence of function for making social reasoning more effective through fast data collection, the following statistics apply

To determine the influence function for enabling education in a most reliable, inform and accessibility

F=push factors IoTs, **D**=Dependent parameters, **MR**=Metrics Range (1, 2, 3, 4, 5), **BS**=Behavior Score (5) **KBS**=key benefits score

$$Eq = \int (D) \sum_{MR}^{MR} \times BS$$

$$\sum MR\,(1+2+3+4+5) = 15$$

F=push factors IoTs, **D**=Dependent parameters, **MR**=Metrics Range (1, 2, 3, 4, 5), **BS**=Behavior Score (4) **KBS**=key benefits score

$$Eq = \int (D) \sum_{MR}^{MR} \times BS$$

$$\sum MR\,(1+2+3+4+5) = 15$$

$$MR = (5)$$

$$BS = (4)$$

$$\therefore \quad \sum_{MR}^{MR} \times BS \quad ::)) \quad {}^{15}_{5} \times 4 \quad = 12$$

through fast data collection, the following statistics apply

$$MR = (5)$$

$$BS = (5)$$

$$\therefore \quad \sum_{MR}^{MR} \times BS \quad ::)) \quad {}^{15}_{5} \times 5 \quad = 15$$

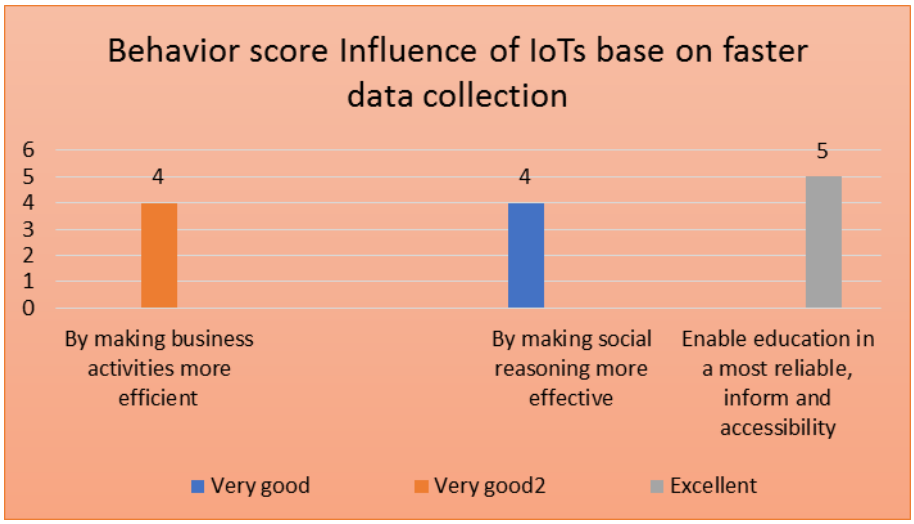

Figure 11. behavior score influence graph of fast data collection. Source: Owner

***Remarks**: from the above behavior influence factors IoTs base on fast data collection. We can say that internet of things have a very high influence on human psychology for education, healthcare and businesses. The results show key benefits score of very good, very good and excellent remarks of a metrics score of (4, 4, 5).*

4.2. Determination of *Behavior* score Influence of IoTs base on faster data acquisition

Table 4 determination of *Behavior* score Influence of IoTs base on aster data acquisition. Source: Owner

Push Factors IoTs	**Dependent Parameter**	**Metrics Range**					***Behavior* score**					**key benefits score rate of IoTs**
Enable faster data acquisition	By making business activities more efficient	1	2	3	4	5				4		Very good
	By making social reasoning more effective	1	2	3	4	5			3			Good
	Enable education in a most reliable, inform and accessibility.	1	2	3	4	5					5	Excellent

To determine the influence function for making business activities more efficient through enabling fast data acquisition. The following statistics apply

F=push factors IoTs, **D**=Dependent parameters, **MR**=Metrics Range (1, 2, 3, 4, 5), **BS**=Behavior Score (4) **KBS**=key benefits score

$$Eq=\int(D)\,{}^{\sum MR}_{MR}\times BS$$

$$\sum MR\,(1+2+3+4+5)=15$$

$$MR=(5)$$

$$BS=(4)$$

$$\therefore \quad {}^{\sum MR}_{MR}\times BS \quad ::)) \quad {}^{15}_{5}\times 4 \;=12$$

To determine the influence of function for making social reasoning more effective through enabling fast data acquisition, the following statistics apply

F=push factors IoTs, **D**=Dependent parameters, **MR**=Metrics Range (1, 2, 3, 4, 5), **BS**=Behavior Score (3) **KBS**=key benefits score

$$Eq=\int(D)\,\frac{\sum MR}{MR}\times BS$$

$$\sum MR\,(1+2+3+4+5)=15$$

$$MR=(5)$$

$$BS=(3)$$

$$\therefore \quad \frac{\sum MR}{MR}\times BS \quad ::)) \quad \frac{15}{5}\times 3 \quad =9$$

To determine the influence function for enabling education in a most reliable, inform and accessibility through enabling fast data acquisition, the following statistics apply

F=push factors IoTs, **D**=Dependent parameters, **MR**=Metrics Range (1, 2, 3, 4, 5), **BS**=Behavior Score (5) **KBS**=key benefits score

$$Eq=\int(D)\,\frac{\sum MR}{MR}\times BS$$

$$\sum MR\,(1+2+3+4+5)=15$$

$$MR=(5)$$

$$BS=(5)$$

$$\therefore \quad \frac{\sum MR}{MR}\times BS \quad ::)) \quad \frac{15}{5}\times 5 \quad =15$$

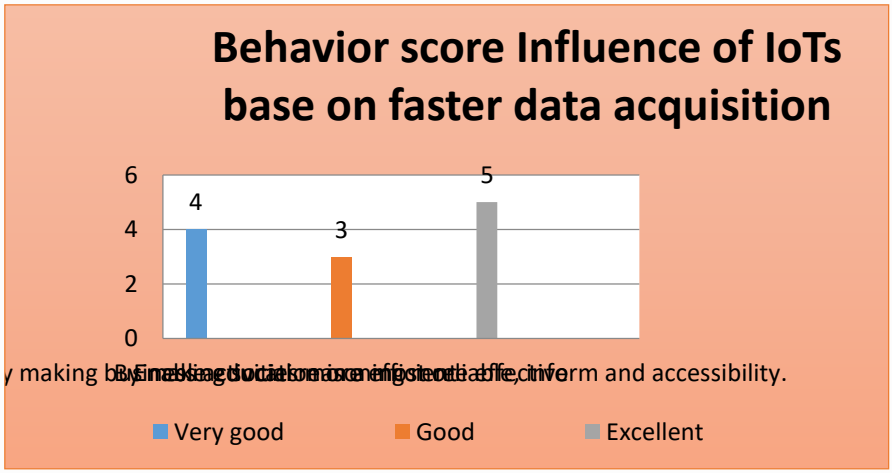

Figure 12. behavior score influence graph of fast data acquisition. Source: Owner

Remarks: *From the above behavior influence factors IoTs base on fast data acquisition. We can say that internet of things have a higher influence on human psychology for education, healthcare and businesses. The results show key benefits score rate of very good, good and excellent remarks of a metrics score of (4, 3, 5).*

In the above tables 3 and 4, we can see the first element objective of push factors IoTs dependent upon three objective features that are related to our day-day activities. These dependent parameters are measure base on a range of digits from one up to five. Each number represents a grade. The remarks for each grade is called behavior score. To determine the level of influence, we used the key benefit score rat.

To determine the influence of IoTs on human psychology, data collection was used here. Measuring how IoTs influence our way of thinking is based on how we can access data. Information is now key activity in today's world. With the capability of IoTs to connect with humans and objects, it has radicalize the way we think and act.

4.3. Key Benefits score rate of IoTs on human psychology base on Metrics Score and *Behavior* score.

The benefits of IoTs are determined based on behavior score (table 1). The score rate range from poor, fair, good, very good and excellent. The behavior score defined the gradient of the key benefits of IoTs below.

- They enable users of IoTs to ensure a smooth data security with tried and trusted solutions for education, healthcare and businesses.
- They enable users of IoTs to enhance efficient centralized management system that uphold higher standards and procedures
- needed for IoTs services.
- They enable users of IoTs to ensure cost-effective solutions with maximum support and help from existing challenges and services
- They enable effective use of available and predictable data with the help and support of edge computing and AI.

5. Discussion

Thought" is a human mental process that forms psychological associations and models of the world. With computer systems developing models and modeling systems software every day, human psychology has been greatly influenced especially with the new technology of IoTs. One of the advantages that IoTs have over humans is their ability to connect living things and nonliving. This process has way far beyond human capacity and it's influencing the way humans think, act and behave. Cognitive psychology is of the areas as per Psychoanalytic theory in which IoTs have engaged so deeply to influence human ways of think, acting, and doing things. With IoTs, it's very easy nowadays to identify and resolve differences with items of similar nature. The tense situation humans face when in an encounter to identify a preferred choice has been averted to internet service. The inherent feelings arose during a moment of identifying amongst alternatives that have been replaced with internet service providers. Identifying someone's mental health based on his or her origin is almost diminishing thanks to the adaptive device. Nowadays, most owners help customers by providing high-quality resolution on certain products than others. This has made it easier for internet service to influence human choice. Advances in IoTs have a strong grip on human intuitive attention, decision making, learning, judgment, reasoning, thinking, and cognitive processes. Making a choice is quite easier nowadays than before. Insights of things are now very easy to grasp with the help of IoTs.

According to Freud's theory, Id of humanity identifies an object, the human emotions immediately receive the urge to get that object or snatch it by any means. The irrational may lead to the conflict between the body feeling ego and human emotions superego to respond to Id. The advancement in internet service has advanced its services through the internet of things to influence the id, ego, and superego. System artificial intelligence influences emotions, the eyes identify, and the superego pushes the body.

6. Conclusion

From the literature review, it is obvious that software management processes, system, and programs passes through all phases of the software development life cycle and have a here percentage of influence on humans. From the evolution of different systems based on different functions, it is possible to use a combination of the behavior drive and influential function and research questionnaires to understand human feelings, actions, and possibly human thoughts as indicated in the study. The literature review has shown that most of these elements of NLP, AI, ML, big data, ICT tools, and cloud computing has an inelastic influence on human day-day activities. These items with the support from IoTs have successfully connected almost all objects around us and have moved to the next level of understanding how we perceived the relationship with these objects. If it's successfully capture the way we think and react, it is very easy for system administrators to control our day-day lives thereby bridging the rule to private living. From the findings based on questionnaires, the majority of respondents accepted IoTs influence human psychology. How way of thinking is now controlled by the modern era of technology and we only enjoy the comfort. These, therefore, conclude that humans are not independent of their actions in a nearly advanced digitalization.

Based on statistics from questionnaires and determinants of behavior score influence of the internet of things on human psychology for education, healthcare and businesses, there's high influence. Findings indicates a minimum score of 12 out of 15 grades for all the measurements on a behavior-oriented drive and influential function and above 90% positive respondents for the qualitative-quantitative method influence of internet of things on human psychology. Both the experiment and survey questions indicate that human depends very much on the products and services of the internet of things for their day-to-day activities. Both the questionnaires and behavior drive and influential function indicated a high influence as no factors or questionnaire image with average influence or negative influence of internet of things on human psychology for education, healthcare, and businesses. The results did not indicate in any instance that IoTs do not influence human thinking, reactions, and behavior. From the statistics, it's urgent to set some rules and regulations for companies providing systems with high impact factor influence on the internet of things. Since the world has moved to a technological

era where everything is almost digital and reliance on products and services of the internet of things is becoming part of human resources and livelihood. There is also a need to sensitize and orientate users on limitations and the impact this dependency will have on their lives and neighboring environment. Even though the experiment shows that some dependent parameters vary in their influence, they still exhibit control of our day-day activities. Depending on the product of the internet of things as indicated by the study the influential function varies.

Declaration material use

"All data underlying the results are available as part of the article and no additional source data are required."
Repository Manually Methodology materials for Influence of Internet of things on Human Psychology "Internet of Thought"
https://doi.org/10.5281/zenodo.596654
DOI: 10.5281/zenodo.596654
https://zenodo.org/record/5966549#.Yfx2ntWZPIU

List of Abbreviations

IoTs=Internet of things
NLP=Natural Language Processing
ICT=Information communication technology
EI=Emotional Intelligence
ML=Machine Learning
AI=Artificial Intelligence

Acknowledgements

This paper would not have been possible without the support my AGH University of Science and technology Krakow, Poland. My special thanks to the Doctoral school.
Thanks to the dean of management of Faculty of management department of AGH University of Science and technology. Special thanks to Nsom Renatha for her endless support to the main author. She is a wonderful woman with a good heart. I acknowledge Lilian Kuyiena Song for her morale support.

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